International Conference of the Modernization of Chinese Medicine & Health Products

國際現代化中醫藥及健康產品會議

15-16/8/2024

Organiser

MCMIA 現代化中醫藥國際協會

Leading Collaborating Organisation

HKTDC 香港貿發局

Collaborating Organisations

香港中文大學 The Chinese University of Hong Kong

香港城市大學 City University of Hong Kong

香港浸會大學 HONG KONG BAPTIST UNIVERSITY

一帶一路中醫藥發展聯盟 The Belt and Road Alliance for Traditional Chinese Medicine

The Hong Kong Polytechnic University 香港理工大學

香港科技大學 The Hong Kong University of Science and Technology

香港大學 The University of Hong Kong

HKAIM

國際藥學會有限公司 International Association of Materia Medica Limited

International Conference of the Modernization of Chinese Medicine & Health Products (ICMCM) 2024

國際現代化中醫藥及健康產品會議 2024

Welcome Message

On behalf of the Modernized Chinese Medicine International Association (MCMIA), I warmly welcome you to the 23rd International Conference of the Modernization of Chinese Medicine & Health Products (ICMCM).

Every year, well-known experts and industry leaders from all over the world gather in Hong Kong to share their insights on the latest developments and research findings of traditional Chinese medicine (TCM) and health products. The theme of this year's Conference is "Industry-University-Research Collaboration and Clinical Research on Traditional Medicine". In addition to discussing industry-university-research collaboration in Chinese medicine and traditional medicine/TCM clinical research, the Conference also focuses on the prospects of Chinese medicine among Belt and Road markets.

TCM is an important part of Chinese culture. The Belt and Road Initiative's (BRI) focus on TCM has deepened the global understanding of Chinese culture, strengthened ties between China and other countries, as well as facilitating the development of the traditional medicine ecosystem in the world.

As a key link and the prime platform for the BRI, Hong Kong can capitalise on its unique advantages to connect Mainland China with other Belt and Road markets and actively participate in the development of the BRI and the Guangdong-Hong Kong-Macao Greater Bay Area.

Riding on last year's success, this year, ICMCM is once again held in hybrid format, enabling more participants to join this annual international conference. The 20th International Postgraduate Symposium on Chinese Medicine takes place on the second day of the conference. This year, more than 150 research papers from local universities as well as from Singapore Nanyang Technological University, Shanghai University of TCM, Southern Medical University, Guangzhou Medical University, etc., have been received.

This year's Conference continues to be funded and supported by the Professional Services Advancement Support Scheme (PASS) under the Commerce and Economic Development Bureau of the Hong Kong SAR Government. We would like to thank the Hong Kong Trade Development Council and all collaborating organisations for working with us for more than 20 years to establish ICMCM as an international platform for Chinese medicine. These organisations are The University of Hong Kong, The Chinese University of Hong Kong, Hong Kong Baptist University, The Hong Kong Polytechnic University, The Hong Kong University of Science and Technology, City University of Hong Kong, the Hong Kong Association for Integration of Chinese-Western Medicine, China Association of Chinese Medicine-Chinese Medicine Experimental Pharmacology Association, The Belt and Road Alliance for Traditional Chinese Medicine and International Association of Materia Medica.

I wish you all a successful Conference.

Lawrence Lo

President

Modernized Chinese Medicine International Association (MCMIA)

歡迎辭

本人謹代表現代化中醫藥國際協會 (MCMIA)，歡迎各位出席第二十三屆「國際現代化中醫藥及健康產品會議」(ICMCM)。

ICMCM 每年雲集全球專家，共同探討中醫藥及健康產品的最新發展趨勢和科研成果，並分享成功經驗及各國法規等。今年 ICMCM 的會議主題為「傳統醫藥產學研合作與臨床研究」，內容除了探討中醫藥產學研合作、傳統醫學 / 中醫臨床研究外，還集中討論「一帶一路」市場為中醫藥帶來的展望和機遇。

中醫藥是中華文化的重要組成部分，是「一帶一路」倡議其中的一個發展重點，它對深化世界各地對中華文化的了解，加強中國與各國之間的合作聯繫起著重要的作用，同時對促進全球傳統醫藥的發展有著不可或缺的作用。

作為「一帶一路」的重要聯繫地及主要平台，香港可發揮自身獨特優勢，連繫中國內地與其他「一帶一路」市場，積極參與「一帶一路」及粵港澳大灣區的發展。

承接過去的成功經驗，今年會議繼續以線上線下融合模式舉行，務求讓更多海內外的業界人士可以參與到此項國際年度盛會。此外，於會議第二天舉辦的「第 20 屆國際研究生中醫藥研討會」，今年共收到超過 150 篇研究論文，參與的大學除本地大學外，也有新加坡南洋理工大學、上海中醫藥大學、南方醫科大學及廣州中醫藥大學等。

今屆會議再次獲得香港特別行政區政府商務及經濟發展局轄下的專業服務協進支援計劃 (PASS) 資助舉辦。我們特別感謝香港貿易發展局以及所有合作機構二十多年來對會議的支持及貢獻。這些合作機構包括香港大學、香港中文大學、香港浸會大學、香港理工大學、香港科技大學、香港城市大學、香港中西醫結合醫學會、中華中醫藥學會中藥實驗藥理分會、一帶一路中醫藥發展聯盟及國際藥學會有限公司。

我祝願各位在今屆的會議中收穫豐碩，滿載而歸！

現代化中醫藥國際協會
會長
魯展雨

Welcome Message

Welcome to the 23rd International Conference of the Modernization of Chinese Medicine & Health Products (ICMCM).

This premier Conference is organised by the Modernized Chinese Medicine International Association (MCMIA) in association with the Hong Kong Trade Development Council and 10 scientific research institutions and industry associations.

Themed "Industry–University–Research Collaboration and Clinical Research on Traditional Medicine", this year's ICMCM brings together scholars and experts from renowned medical schools, research institutions, pharmaceutical companies and organisations from Hong Kong, Mainland China and overseas to discuss the latest industry developments, challenges and opportunities as well as share their research findings on using Chinese medicine to treat various diseases.

Conference topics include exploring the latest development trends of Chinese medicine in the Guangdong–Hong Kong–Macao Greater Bay Area and Belt and Road markets, and the global impact of blending Chinese and Western medicines.

The 20th International Postgraduate Symposium on Chinese Medicine takes place on the afternoon of the second day of ICMCM, offering postgraduate students interested in TCM the opportunity to present their latest research papers. To foster academic exchanges and research collaboration in TCM, a Poster Session, which debuted last year, returns and runs concurrently with the Conference.

ICMCM serves not only as a platform for Chinese medicine insights but also as a catalyst for innovation and collaboration in the industry. I wish you all a rewarding Conference.

Margaret Fong

Executive Director

Hong Kong Trade Development Council

歡迎辭

歡迎各位出席由現代化中醫藥國際協會（MCMIA）聯同香港貿易發展局，以及十間科研機構和行業協會攜手舉辦的第二十三屆「國際現代化中醫藥及健康產品會議 」（ICMCM）。

今年會議以「傳統醫藥產學研合作與臨床研究」為主題，邀請來自香港、中國內地及海外享負盛名的醫藥學院、科研機構、藥廠及藥業組織的學者及專家，討論在產學研合作下最新的業界發展、挑戰及機遇，以及公佈以中藥治療不同疾病的臨床研究結果。

論壇議題包括探討中醫藥由粵港澳大灣區走到「一帶一路」，以及中西醫結合治療如何影響全球等。

「第 20 屆國際研究生中醫藥研討會」於會議第二天下午舉行，為矢志投身中醫藥業的研究生提供專屬平台發表最新的研究論文。為推廣中醫藥學術交流及研究合作，去年會議首度增設的海報環節，今年繼續與會議同步舉行。

「國際現代化中醫藥及健康產品會議」不只為與會者帶來中醫藥業最新見解，亦有助促進業界創新及合作。我深信各位定必能夠從中獲益良多。

香港貿易發展局總裁

方舜文

International Conference of the Modernization of Chinese Medicine & Health Products (ICMCM) 2024
國際現代化中醫藥及健康產品會議 2024
Industry-University-Research Collaboration and Clinical Research on Traditional Medicine
傳統醫藥產學研合作與臨床研究

Date & Time 日期及時間 : 15 / 8 / 2024 (Thursday 星期四) 9:30am – 5:45pm
16 / 8 / 2024 (Friday 星期五) 9:30am – 5:05pm

Venue 地點 : Room N101B, Hong Kong Convention and Exhibition Centre & Online Streaming
香港會議展覽中心會議室 N101B 及線上直播
(*Attendees are welcomed to participate in either format 歡迎參會人士以親身或線上出席*)

Languages 語言 : English and Putonghua 英語及普通話
(*With simultaneous interpretation service 設即時傳譯服務*)

CME Credits 註冊中醫進修學分 : 15/8: AM Session 上午環節 Total 共 2 credits 學分
PM Session 下午環節 Total 共 4 credits 學分
16/8: AM Session 上午環節 Total 共 3 credits 學分
(*16/8 PM Session 下午環節 : No credit will be granted for Postgraduate Symposium 研究生研討會不設學分*)
Click here for details 按此查看詳情

Poster Session 海報環節 : To promote academic exchanges & research collaborations in TCM, a poster session running alongside the conference will be held in the adjacent room N106-8. Click here for details
為推廣中醫藥學術交流及研究合作，海報環節將在會議室 N106-8 與會議同期舉行。按此查看詳情

Registration 登記 : https://www.hktdc.com/event/icmcm/en

15 / 8 / 2024 (Thursday 星期四)

9:30 - 10:00 **Opening Ceremony** 開幕典禮
(*Tea Reception & Registration starts at 9am 招待茶會及登記於早上 9 時開始*)

Session 1: Keynote Speech
第一節：主題演講

Moderators 主持人 :
- **Prof. Zhixiu LIN**, Director and Professor, School of Chinese Medicine, The Chinese University of Hong Kong
  香港中文大學中醫藥學院院長、教授 林志秀教授

- **Prof. Hongxi XU**, Distinguished Professor, Shanghai University of Traditional Chinese Medicine
  上海中醫藥大學首席教授 徐宏喜教授

Remarks: The organiser reserves the right to make changes to the programme without prior notice
註：主辦機構保留對會議程序調動之權利而不作另行通知

10:15 - 10:55	**Clinical-based New Chinese Herbal Medicine Drug Development: Cases Sharing and Future Directions** **基於臨床的中藥新藥研發：個案分享及未來展望** **Prof. BIAN Zhaoxiang,** Hospital Chief Executive, Hong Kong Chinese Medicine Hospital & Director, Centre for Chinese Herbal Medicine Drug Development, Hong Kong Baptist University 香港中醫醫院醫院行政總監、香港浸會大學中藥創新研發中心主任 卞兆祥教授	
10:55 - 11:35	**International Standards Promote High-quality Development of Traditional Chinese Medicine** **國際標準促進中醫藥高質量發展** **Prof. SHEN Yuandong,** Chair of ISO/TC 249 Traditional Chinese Medicine 國際標準化組織中醫藥技術委員會（ISO/TC 249）主席 沈遠東教授	
11:35 - 12:15	**Opportunities and Challenges of Chinese Medicines Research** **中藥研究的機遇與挑戰** **Prof. Chun-Tao CHE,** Harry H.S. Fong Professor of Pharmacognosy, and Director of the World Health Organization Collaborating Centre for Herbal Medicines, College of Pharmacy, University of Illinois Chicago, U.S.A. 美國伊利諾大學藥學院 Harry H.S. Fong 天然藥物學教席教授及世界衛生組織植物藥學合作中心主任 車鎮濤教授	
12:15 - 13:00	**Lunch Break** 午膳時間	
	Session 2: Industry-University-Research Collaboration on Traditional Medicine/Chinese Medicine 第二節：中醫藥產學研合作	
	Moderators 主持人： - **Prof. FENG Yibin**, Professor and Director, School of Chinese Medicine, The University of Hong Kong 香港大學中醫藥學院院長及教授 馮奕斌教授 - **Prof. Vivian WONG, JP, Vice President, Modernized Chinese Medicine International Association** 現代化中醫藥國際協會副會長 黃譚智媛教授	
13:00 - 13:30	**Modern Application of Traditional Chinese Medicine (TCM) Prescriptions in Functional Health Foods** 經典方劑在功能性健康食品的現代 化應用研究 **Dr. Frank MA,** Vice President and Chief Scientific Innovation Officer of Infinitus (China) Co. Ltd. 無極限（中國）有限公司副總裁 馬軍博士	

Remarks: The organiser reserves the right to make changes to the programme without prior notice
註：主辦機構保留對會議程序調動之權利而不作另行通知

13:30 - 14:00	**Innovative Collaboration in TCM Products: Cross-regional Development in the Greater Bay Area** 中醫藥產品創新合作：大灣區跨區域交流與發展 **Dr. ZHOUJIE,** Director of Evidence-based Research Institute of TCM of the GBA 中醫藥大灣區循證研究院院長 **周傑博士**	
14:00 - 14:30	**Research on the Antioxidant Activity and Antiviral Effects of Red Ginseng** 紅參抗氧化活性及抗病毒的功效研究 **Ms. ZHU Qianjing**, Researcher, Basic Technology Research Department, China R&D Center, JungKwanJang 正官庄中國研發中心基礎技術研究部研究員 **朱倩靜女士**	
14:30 - 15:00	**Research on the Therapeutic Substances and Creation of the Artificial Substitutes for Endangered Chinese Animal Medicinal Materials** 若干瀕危動物藥材藥效物質及高技術替代品研究 **Prof. Shi-Shan YU**, Chairman of the State Key Laboratory of Bioactive Substance and Function of Natural Medicines, Institute of Materia Medica, Chinese Academy of Medical Sciences and Peking Union Medical College (IMM, CAMS & PUMC) 中國醫學科學院 & 北京協和醫學院藥物研究所 天然藥物活性物質與功能國家重點實驗室主任 **庾石山教授**	
15:00 - 15:30	**Experiences in the Internationalization of SHUTCM** **中醫藥教育國際化的經驗分享** **Prof. Jing SHU**, Vice President, Shanghai University of Traditional Chinese Medicine 上海中醫藥大學副校長 **舒靜教授**	
15:30 - 15:45	**Tea Break** 茶聚	

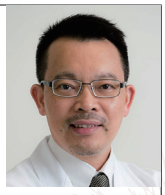
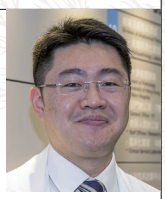
Session 3: Clinical Research on Traditional Medicine/Chinese Medicine
第三節：傳統醫學 / 中醫臨床研究

Moderators 主持人：

- **Prof. ZHANG Hongjie**, Professor, School of Chinese Medicine, Hong Kong Baptist University
  香港浸會大學中醫藥學院教授 **張宏杰教授**

- **Prof. Clara Bik San Lau**, Professor, Department of Pharmacology and Pharmacy & School of Chinese Medicine, LKS Faculty of Medicine, The University of Hong Kong
  香港大學藥理及藥劑學系和中醫藥學院教授 **劉碧珊教授**

Remarks: The organiser reserves the right to make changes to the programme without prior notice
註：主辦機構保留對會議程序調動之權利而不作另行通知

15:45 - 16:15	**In Quest for Clinical Evidence on Effectiveness of Chinese Medicine** **眾裏尋他千百度：中醫藥臨床療效證據的求索** **Prof. Zhixiu LIN**, Director and Professor, School of Chinese Medicine, The Chinese University of Hong Kong 香港中文大學中醫學院院長、教授 林志秀教授	
16:15 - 16:45	**Repurposing Chinese Medicines for Modern Use: 2 Cases of Diabetes Trials** **中藥再開發：2 個糖尿病臨床試驗案例** **Dr. CHAN Kam Wa**, Assistant Professor, Hong Kong Baptist University 香港浸會大學助理教授 陳錦華博士	
16:45 - 17:15	**Research Progress on Yinuo Capsule** **益諾膠囊的研究進展** **Prof. Hongxi XU**, Distinguished Professor, Shanghai University of Traditional Chinese Medicine 上海中醫藥大學首席教授 徐宏喜教授	
17:15 - 17:45	**Molecular Mechanisms of SNS in Inhibiting Depression-induced Breast Cancer Growth and Metastasis** **經典名方四逆散抑制抑鬱介導乳腺癌生長轉移的分子機制** **Prof. WANG Zhiyu**, Deputy Department Head and Professor, Breast Disease Hospital, Guangdong Provincial Hospital of Chinese Medicine 廣東省中醫院乳腺病醫院副院長、教授 王志宇教授	
	End of Day 1 Conference 第一天會議結束	

Remarks: The organiser reserves the right to make changes to the programme without prior notice
註：主辦機構保留對會議程序調動之權利而不作另行通知

16/8/2024 (Friday 星期五)

Session 4: Successful Cases Sharing
第四節：成功個案分享

Moderators 主持人：

- **Dr. SETO Sai Wang**, Associate Director, Research Centre for Chinese Medicine Innovation (RCMI), The Hong Kong Polytechnic University
  香港理工大學中醫藥創新研究中心副主任 司徒世宏博士

- **Mr. Edward YAU**, Vice President, Modernised Chinese Medicine International Association
  現代化中醫藥國際協會副會長 邱福榮先生

09:30 - 10:00	**Chinese Medicine Artificial Intelligence Techniques Help Eczema Diagnosis and Treatment** **中醫人工智能助力濕疹診治** **Prof. CHANG Chen**, Founder, Chinese Essence Medical Group 德善醫療集團 (德善堂中醫) 創辦人 張琛教授	
10:00 - 10:30	**Ginsenoside Rg1 Exerts Anti-eczema Effects in Pharmacological Models** **人參皂苷 Rg1 在藥理模型上有抗濕疹作用** **Prof. YU Zhiling**, Professor, School of Chinese Medicine, Hong Kong Baptist University 香港浸會大學中醫藥學院教授 禹志領教授	
10:30 - 11:00	**Market Forecast and Prospect of External Traditional Chinese Medicine in "One-Belt-One-Road" Markets** **中醫藥舒緩痛症的百年經驗及「一帶一路」市場展望** **Prof. Timothy Tin Lok TAM**, Chief Operation Officer, Ling Nam Medicine Factory (HK) Ltd. 嶺南藥廠（香港）有限公司營運總監 **譚天樂教授**	
11:00 - 11:30	**Integrative Chinese and Western Medicine in Digestive Diseases: How to Make a Global Impact?** **消化疾病的中西醫結合治療：怎樣打造全球影響力？** **Prof. Justin Che-Yuen WU**, Associate Dean (Health Systems), Faculty of Medicine, The Chinese University of Hong Kong 香港中文大學醫學院副院長 (醫療系統) 胡志遠教授	
11:30 - 12:00	**Industry-University-Research Collaboration Helps Secondary Development of Tongkang Tablets** **產學研助力童康片產品二次開發** **Ms. PEI Hong**, General Manager, GKH Pharmaceutical Ltd. 廣州康和藥業董事總經理 裴紅女士	

Remarks: The organiser reserves the right to make changes to the programme without prior notice
註：主辦機構保留對會議程序調動之權利而不作另行通知

12:00 - 12:30	**Inheritance and Exploration: New Application of TCM Prescriptions in Ginseng Products** **傳統中醫藥人參品類的古方傳承和創新探索** **Ms. Ivy JIA**, General Manager, Tong Han Chun Tang Co. Ltd 童涵春堂總經理 **賈曉薇女士**	
12:30 - 14:00	**Lunch Break** 午膳時間	
Session 5: The 20th International Postgraduate Symposium on Chinese Medicine 第五節：第 20 屆國際研究生中醫藥研討會 • Co-ordinator 統籌單位 : Hong Kong Baptist University 香港浸會大學		
14:00 - 17:00	**The 20th International Postgraduate Symposium on Chinese Medicine** **第 20 屆國際研究生中醫藥研討**	
17:00 - 17:05	**Closing Remarks 閉幕總結** **Prof. Vivian WONG,** JP, Vice President, Modernized Chinese Medicine International Association **現代化中醫藥國際協會副會長 黃譚智媛教授**	
End of Day 2 Conference 第二天會議結束		

Remarks: The organiser reserves the right to make changes to the programme without prior notice
註：主辦機構保留對會議程序調動之權利而不作另行通知

ICMCM 2024 Organising Committee 籌委會

Prof. Clara Bik San LAU, Modernized Chinese Medicine International Association
現代化中醫藥國際協會 劉碧珊教授

Ms. Denise SUEN, Modernized Chinese Medicine International Association
現代化中醫藥國際協會 孫亮女士

Mr. Edward YAU, Modernized Chinese Medicine International Association
現代化中醫藥國際協會 邱福榮先生

Mr. Harry YEUNG Kwok Chun, Modernized Chinese Medicine International Association
現代化中醫藥國際協會 楊國晉先生

Conference Organising Committee 會議籌備委員會

Co-conference Chairmen 會議聯席主席

Prof. Zhixiu LIN, Director and Professor, School of Chinese Medicine, The Chinese University of Hong Kong
香港中文大學中醫學院院長、教授 林志秀教授

Prof. Hongxi XU, Distinguished Professor, Shanghai University of Traditional Chinese Medicine
上海中醫藥大學 首席教授 徐宏喜教授

Committee Members 委員會成員

Prof. FENG Yibin, Director, School of Chinese Medicine, The University of Hong Kong
香港大學 中醫藥學院院長 馮奕斌教授

Prof. HUANG Yu, City University of Hong Kong
香港城市大學 黃聿教授

Dr. SETO Sai Wang, The Hong Kong Polytechnic University
香港理工大學 司徒世宏博士

Prof. Vivian WONG, JP, Modernized Chinese Medicine International Association
現代化中醫藥國際協會 黃譚智媛太平紳士

Prof. Karl TSIM, Hong Kong University of Science and Technology
香港科技大學 詹華強教授

Mr. Harry YEUNG, Modernized Chinese Medicine International Association
現代化中醫藥國際協會 楊國晉先生

Prof. ZHANG Hongjie, Hong Kong Baptist University
香港浸會大學 張宏杰教授

(Name listed in alphabetical order 以英文姓氏順序排列)

Organiser 主辦機構：

MCMIA 現代化中醫藥國際協會

Leading Collaborating Organisation 主要合作機構：

HKTDC 香港貿發局

Collaborating Organisations 合作機構：

香港中文大學 The Chinese University of Hong Kong

香港城市大學 City University of Hong Kong

香港浸會大學 HONG KONG BAPTIST UNIVERSITY

一帶一路中醫藥發展聯盟
The Belt and Road Alliance for Traditional Chinese Medicine

THE HONG KONG POLYTECHNIC UNIVERSITY 香港理工大學

香港科技大學 THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

香港大學 The University of Hong Kong

HKAIM

國際藥學會有限公司
International Association of Materia Medica Limited

This material / event is funded by the Professional Services Advancement Support Scheme of the Government of the Hong Kong Special Administrative Region
此物品 / 活動由香港特別行政區政府的專業服務協進支援計劃資助。

PASS 專業服務協進支援計劃 Professional Services Advancement Support Scheme

政府資助計劃 Government-funded programme

Session 1
第一節

Keynote Speech
主題演講

Clinical-based New Chinese Herbal Medicine Drug Development: Cases Sharing and Future Directions
基於臨床的中藥新藥研發：個案分享及未來展望

Prof. BIAN Zhaoxiang, Hospital Chief Executive, Hong Kong Chinese Medicine Hospital &
Director, Centre for Chinese Herbal Medicine Drug Development,
Hong Kong Baptist University
香港中醫醫院醫院行政總監、香港浸會大學中藥創新研發中心主任 卞兆祥教授

ABSTRACT 摘要

（只提供英文版本）

Low productivity has become a great challenge of pharmaceutical industry, while the R&D paradigm is required to be changed. A new R&D model, namely, clinical-based new Chinese Herbal Medicine (CHM) drug development, has been proposed based on our 20 years practice. Two cases, CDD-2101 for constipation and CDD-2107 for Bag3opathy, are shared in this talk. The path to the clinical-based new CHM drug development has been summarized. Compared with the mainstream R&D model, target-based drug development, the clinical-based new CHM drug development take the advantage of proof-of-concept study of CHM in-human at the early stage of drug discovery, which could reduce the risk of clinical trial failure and improve the R&D productivity.

Speaker's Biography 講者簡介

Professor BIAN Zhaoxiang
Hospital Chief Executive, Hong Kong Chinese Medicine Hospital
Director, Centre for Chinese Herbal Medicine Drug Development, Hong Kong Baptist University

Professor Bian Zhaoxiang is a leading expert in Chinese medicine clinical studies, a respected research scientist in the field of gut dysbiosis, and a relentless advocate for incorporating Chinese medicine into a holistic healthcare system.

Since joining Hong Kong Baptist University (HKBU) in 2001, Professor Bian has held various positions, including the Tsang Shiu Tim Endowed Professor in Chinese Medicine Clinical Studies, Director and Chair Professor of the Clinical Division, Director of the Centre for Chinese Herbal Medicine Drug Development, Director of the Chinese EQUATOR Centre, and Director of the Vincent VC Woo Chinese Medicine Clinical Research Institute.

卞兆祥教授
醫院行政總監 , 香港中醫醫院
中藥創新研發中心主任 , 香港浸會大學

卞兆祥教授是成就卓著的中醫藥臨床研究專家、腸道微生態失調領域的中醫藥研究學者，以及把中醫藥與醫療衛生健康管理體系結合的積極倡導者。
自 2001 年加入香港浸會大學（浸大）以來，卞教授出任多個職位，包括曾肇添中醫藥臨床研究教授、臨床部主任及講座教授、中藥創新研發中心主任、EQUATOR 中國中心主任，以及吳文政中醫藥臨床研究所所長。

International Standards Promote High-quality Development of Traditional Chinese Medicine
國際標準促進中醫藥高質量發展

Prof. SHEN Yuandong, Chair of ISO/TC 249 Traditional Chinese Medicine
國際標准化組織中醫藥技術委員會（ISO/TC 249）主席 沈遠東教授

ABSTRACT 摘要

The International Organization for Standardization's Technical Committee on Traditional Chinese Medicine (ISO/TC 249) has published 110 ISO international standards, covering the fields of Chinese material medica and its finished products, medical devices, terminology and informatics, and services. The formulation of international standards has accelerated the scientific and technological innovation of Traditional Chinese Medicine, promoted the social and economic benefits of the industry, and had an important impact on the high-quality development of Traditional Chinese Medicine.

國際標準化組織中醫藥技術委員會（ISO/TC 249）已發布了 110 項 ISO 中醫藥國際標準，涵蓋了中藥、中醫醫療器械、信息術語、服務等領域。國際標準的制定加速推動了中醫藥科技創新，促進了中醫藥產業的社會與經濟效益，對中醫藥高質量發展產生了重要影響。

Speaker's Biography 講者簡介

Prof. SHEN Yuandong

- Chair, ISO/TC249 Traditional Chinese medicine
- Former Deputy Director, Shanghai Municipal Health Bureau
- Director, Institute of international standardization on Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine
- Vice Chair, sub-committee of TCM standardization of China Association for Standardization
- Chair, the "Shanghai Standard" Evaluation Committee
- Chair, Shanghai TCM Standardization Committee
- Advisor for the Planning of Hong Kong TCM Hospitals

Prof. Shen Yuandong has long been engaged in hospital management and health administration. He ever served as the president of Shuguang Hospital and the former Deputy Director of Shanghai Municipal Health Bureau, also Director of the Shanghai TCM Development Office. During his tenure, he placed great emphasis on standardization work. In 2002, as the pioneer, he firstly led the implementation of ISO quality management system in the national Class A tertiary TCM hospital and published the Guide to the Implementation of International Quality Management Standards for Hospitals in 2003.

He has extensive experiences in the internationalization and standardization of TCM. He has served as Secretary-General, Vice Chair, and Chair of ISO/TC249. Under his leadership, ISO/TC249 established 6 Working Groups and established 9 liaisons with other international organizations. A total of 110 international standards for TCM has been published. He is also a consultant of the World Health Organization (WHO) on traditional medicine, responsible for managing the Chinese expert group for the development of International Classification of Diseases (WHO ICD11-ICTM).

As the chief editor, he published ISO Standards for Traditional Chinese Medicine: Theory and Practice and History, Present and Prospect of World Traditional Medicine (English Edition). He has won several awards, including the Shanghai Innovation Contribution Award for Standards (Individual) in 2022, the Shanghai Outstanding Contribution Award for Traditional Chinese Medicine in 2020, and the Shanghai Science and Technology Award (Third Prize) in 2013.

沈遠東教授

- 國際標准化組織中醫藥技術委員會（ISO/TC249 ）主席
- 原上海市衛生局 副局長
- 上海中醫藥大學中醫藥國際標準化研究所 所長
- 中國標準化協會中醫藥標準化分會 副會長
- “上海標準”評價委員會 主任委員
- 上海市中醫藥標準化技術委員會 主任委員
- 香港中醫院籌劃專家顧問

長期從事醫院管理和衛生事業管理工作，曾任曙光醫院院長、原上海市衛生局副局長（兼上海市中醫藥發展辦公室主任），在任期間十分重視標準化工作，2002 年主持全國首家三甲中醫院貫標 ISO 質量管理體系，并于 2003 年編著出版《醫院國際質量管理標準實施指南》。在中醫藥國際化和國際標準化領域有著豐富的經驗，歷任 ISO/TC249 秘書長、副主席、主席，在他的推動下，ISO/TC249 先後成立了 7 個工作組，發展了 9 個國際聯絡組織，共發布了 110 項中醫藥國際標準。擔任世界衛生組織傳統醫學顧問，負責國際疾病分類代碼項目（WHO ICD11-ICTM）中國專家組的管理工作。主編《ISO 中醫藥國際標準理論研究與實踐》《世界傳統醫學歷史、現狀與未來（英文版）》。獲上海市標準創新貢獻獎個人獎（2022 年）、上海市中醫藥杰出貢獻獎一等獎（2020 年）、上海市科學技術獎三等獎（2013 年）等。

Opportunities and Challenges of Chinese Medicines Research
中藥研究的機遇與挑戰

Prof. Chun-Tao CHE, Harry H.S. Fong Professor of Pharmacognosy, and Director of the World Health Organization Collaborating Center for Herbal Medicines,
College of Pharmacy, University of Illinois Chicago, USA
美國伊利諾大學藥學院 Harry H.S. Fong 天然藥物學教席教授及
世界衛生組織植物藥學合作中心主任 車鎮濤教授

ABSTRACT 摘要

Herb-based products are becoming an integral part of health management not only in the East, but also in the Western world. Notwithstanding the booming of herbal markets, there are challenging issues and concerns about the quality, safety, and effectiveness of herbal products. Overcoming these hurdles could help facilitate the modernization and globalization of Chinese medicines. This presentation will take a close look at the scientific challenges. Some of these difficulties are unlikely to be overcome within a short period of time, yet there are wide-open opportunities for industry-university collaborative research to help meet the demands for high-quality Chinese medicine products.

近年來，全球對植物藥的興趣日隆，中藥產品大行其道，市場方興未艾。社會相當關注產品的質量、安全和療效，也成為中藥現代化和邁向國際的關鍵。本講擬從科研角度探討開發中藥的挑戰。面對挑戰之際，也開敞了業界與學界合作科研的機遇，共同努力發展高質產品。

Speaker's Biography 講者簡介

Dr. Che is the Harry H.S. Fong Professor of Pharmacognosy and director of the World Health Organization Collaborating Center for Herbal Medicines at the College of Pharmacy, University of Illinois Chicago. Prior to the current posts, he was the director of the School of Chinese Medicine at the Chinese University of Hong Kong. His research lies in the botany, chemistry, and pharmacology of herbal medicines, including the discovery of potential pharmaceutical substances from medicinal plants and the analysis and standardization of plant-based preparations. Over 340 scientific papers have been published in the areas of pharmacognosy, natural products, and Chinese/ herbal medicines.

車鎮濤教授，現任美國伊利諾大學藥學院天然藥物學講座教授，兼該校世界衛生組織植物藥學合作中心主任，也是香港中文大學中醫學院前任院長。長期從事中藥及天然藥物的植物學、化學和藥理學研究工作，分析藥用植物的有效成份和標準化，已發表科研論文三百餘篇。

Session 2
第二節

Industry-University-Research Collaboration on Traditional Medicine/Chinese Medicine
中醫藥產學研合作

Modern Application of Traditional Chinese Medicine (TCM) Prescriptions in Functional Health Foods
經典方劑在功能性健康食品的現代化應用研究

Dr. Frank MA, Vice President and Chief Scientific Innovation Officer of Infinitus (China) Co. Ltd.
無限極（中國）有限公司副總裁、首席科創官 馬軍博士

ABSTRACT 摘要

Traditional Chinese Medicine (TCM) prescriptions not only play a significant role in treating diseases but also demonstrate their unique value in the field of disease prevention and health care. Inspired from the insights of these TCM prescriptions, we have carefully developed a variety of health-preserving formulae and products that cater to the lifestyles and health needs of modern people. To prevent and reduce the risk of chronic diseases, these health-preserving formulae not only inherit the essence of classical TCM prescriptions but also integrate modern nutritional concepts. On top they have also gone through rigorous clinical trials to verify their health benefits. We are committed to combining traditional wisdom with modern technology, continuously researching and innovating to revitalize the classical formulas of TCM in modern society and contribute to the health of all humanity.

中醫經典方劑不僅在治療疾病方面發揮重要作用，更是在疾病預防和保健領域展現其獨特的價值。我們從經典方劑中汲取靈感，精心研發了多種養生配方和產品，以滿足現代人的生活方式和健康需求。這些養生配方不僅繼承了經典方劑的精髓，更融入了現代營養學的概念，來預防和降低慢性病的風險。此外，這些養生配方經過了嚴謹的人體臨床試驗，來驗證其對健康的益處。我們致力於將傳統智慧與現代科技結合，透過不斷的研究與創新，讓中醫經典方劑在現代社會煥發新的生機，為全人類的健康事業貢獻力量。

Speaker's Biography 講者簡介

Dr. Frank Ma
Vice President and Chief Scientific Innovation Officer of Infinitus (China) Co. Ltd.

- Ph.D. in Chemistry from Peking University, China. Chinese Registered Dietitian (Chinese Nutrition Society).
- Worked in Procter & Gamble R&D department for 16 years, from scientist, senior scientist, director to general manager across all R&D relevant functions.(technology, formulation, process, quality etc.)
- Worked in Yiling Pharmaceutical for 6 years to develop TCM products, as the dean of healthy research institute, vice GM & GM.
- Worked in eDaixi (O2O startup company) for 2 years as the supply chain VP.
- 24 years of R&D experience in FMCG and TCM health product, leading the team to develop

more than 100 listed products.

- More than 50 patents in the United States, Canada, Europe etc. and China.
- As an expert consultant of FFC Functional Food Conference, China Functional Food Network and other related industry associations.

馬軍 博士

無限極（中國）有限公司 副總裁 首席科創官

- 北京大學化學博士
- 註冊營養師（中國營養學會註冊）
- 在寶潔從事快消品研發 16 年，歷任研究員、高級研究員、總監、總經理，並涵蓋日化研發相關所有部門（技術、配方、工藝、法規、質量等）。
- 在以嶺藥業從事草本大健康產品研發和業務板塊管理 6 年，擔任大健康研究院院長，並兼任業務板塊副總經理、總經理。
- 在創業公司 e 袋洗擔任供應鏈副總裁 2 年，負責管理洗滌工廠、倉儲、物流及服務相關板塊。
- 24 年快消品科研經驗，領導團隊開發上市產品超百款。
- 超 50 項美國、加拿大、歐洲、墨西哥和中國發明專利和實用新型專利。
- 長期擔任 FFC 功能性食品大會、中國功能食品網等相關行業協會的專家顧問。

Innovative Collaboration in TCM Products: Cross-regional Development in the Greater Bay Area
中醫藥產品創新合作：大灣區跨區域交流與發展

PDr. ZHOUJIE, Director of Evidence-based Research Institute of TCM of the GBA
中醫藥大灣區循證研究院院長 周傑博士

ABSTRACT 摘要

China is accelerating the modernization and internationalization of Traditional Chinese Medicine (TCM). In this context, the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) has emerged as a pioneering region. This report will use the GBA as a case study to discuss the series of favourable policies supporting the international expansion and accelerated introduction of TCM, and to share innovative cooperative models for the development of TCM in the Greater Bay Area.

在國家加速推進中醫藥現代化和國際化的大背景下，以粵港澳大灣區這一先鋒陣地為縮影，圍繞「走出去」和「引進來」的系列利好政策，探討中醫藥在灣區發展的創新合作模式。

Speaker's Biography 講者簡介

Dr. Zhou Jie

- Director of Evidence-based Research Institute of TCM of the Greater Bay Area
- Founder and General Manager of Guangzhou Evidence-Based Medical Science and Technology Co., Ltd.
- Senior pharmaceutical engineer, PhD. in Chinese Medicine from Guangzhou University of Chinese Medicine, AMP participant at China Europe International Business School.
- Vice President of Guangdong Association of Traditional Chinese Medicine
- Advisor of Macau Institute for Translational Medicine and Innovation.

Dr. Zhou Jie previously worked at a Fortune 500 state-owned TCM pharmaceutical company, where she held various senior management positions in production, sales, marketing, medical affairs, and R&D. She focused on the full industry chain of TCM new drug development and the cultivation of major products.

Dr. Zhou Jie is responsible for the Drug Administration of Guangdong Province's research projects on *Post-Market Risk Monitoring Systems for New Decoction Pieces*, *Feasibility Study Model on Pharmaceutical Preparations of Medical Institutions*, *Revision on Registration & Filing of Pharmaceutical Preparations of Medical Institutions Regulatory*, *Regulatory Science Research on Greater Bay Area initiative on Import of Drugs and Medical Devices*.

周傑 博士

中醫藥大灣區循證研究院院長

廣州循證醫藥科技有限公司創始人、總經理

周傑，廣州中醫藥大學中醫學博士，製藥高級工程師，中歐國際工商學院 AMP，國家藥監局高研院培訓專家。兼任廣東省中藥協會副會長，澳門轉化醫學創新研究院顧問。曾任職於世界五百強國有中藥製藥企業，歷任生產、行銷、市場、醫學、研發等中高層管理職位，深耕中藥新藥研發與大品種培育的全產業鏈構建。

先後承擔了廣東省藥監局《新型飲片（中藥配方顆粒、中藥破壁飲片）上市後風險監測體系構建及示範性研究題》、《廣東省醫療機構製劑註冊與備案實施細則修訂》、《醫療機構中藥製劑成藥性研究》、《基於“港澳藥械通”政策的進口產品監管科學研究》等課題。在醫療機構製劑申報、成藥性評估以及新藥轉化方面擁有豐富的實戰經驗。

Research on the Antioxidant activity and Antiviral Effects of Red Ginseng
紅參抗氧化活性及抗病毒的功效研究

Ms. ZHU Qianjing, Researcher, Basic Technology Research Department,
China R&D Center, JUNGKWANJANG
正官庄中國研發中心基礎技術研究部研究員 朱倩靜女士

ABSTRACT 摘要

In modern society, with the improvement of people's living standards, health issues have received increasing attention, especially against the backdrop of the epidemic, which has prompted a resurgence in public health awareness. Red ginseng, as a famous traditional herb in the East, has attracted widespread attention in Asia and around the world, being extensively used in the field of traditional Chinese medicine. In addition to its unique medicinal value, red ginseng also possesses antioxidant activity and antiviral properties.

This presentation will introduce the research progress on the antioxidant activity and antiviral effects of red ginseng. In the antioxidant activity study, a rat model of Qi deficiency was established using a weighted swimming test, followed by oral administration of low, medium, and high doses of red ginseng extract (100, 200, 300 mg/kg) for 14 days. The results showed that the swimming time of rats increased after taking red ginseng, and the levels of lactate (LA) and lactate dehydrogenase (LDH) in the blood were significantly reduced. Red ginseng improved mitochondrial dysfunction in the skeletal muscles of Qi deficiency rats by activating AMPK and PGC1α expression. After taking red ginseng, the levels of malondialdehyde (MDA) and reactive oxygen species (ROS) in the skeletal muscles of rats decreased, while the activities of superoxide dismutase (SOD) and glutathione peroxidase (GSH-PX) increased. Blood tests on rats showed no abnormalities, indicating that red ginseng has good antioxidant capacity in Qi deficiency rats without any side effects.

In the antiviral study, mice were orally administered low, medium, and high doses of red ginseng extract (200 mg, 400 mg, 600 mg/kg) for 14 days, followed by exposure to human coronavirus 229E (HCoV-229E) in a dark and humid environment. The results showed that mice taking medium and high doses of red ginseng extract were more active than those in the control group that did not receive red ginseng extract. In terms of improving lung indicators, mice in the high-dose group showed significant improvement in lung indicators. Significant improvements were observed in lung tissue stained with HE and viral load testing in the medium and high-dose groups. Additionally, the administration of red ginseng extract reduced the expression levels of inflammation-related cytokines (IL-1β, IL-6, IL-12, TNF-α, IFN-ϒ), and promoted the expression levels of immune cells CD4+ T cells, CD8+ T cells, and B cells. These results indicate that red ginseng has a significant preventive effect on coronavirus pneumonia caused by HCoV-229E and related virus attack pulmonary syndrome, and provide laboratory evidence for clinical use.

The above research results have laid a scientific foundation for the study of red ginseng. At the same time, it is hoped that red ginseng can play an important role in the health of people around the world.

在現代社會，隨著人們生活水平的提高，健康問題日益受到關注，特別是在疫情背景下，全民的健康意識再次覺醒。紅參作為東方傳統中著名的草藥，在亞洲乃至全世界範圍內備受矚目，被廣泛應用于中醫藥領域，除了其獨特的藥用價值，紅參還具有抗氧化活性，抗病毒的作用。
本次發表將對紅參的抗氧化活性和抗病毒的功效研究進行介紹。抗氧化活性研究：建立大鼠負重游泳，製造氣虛模型後將以紅參提取物低，中，高劑量組（分別為 100、200、300mg/kg), 連續口服給藥 14 天，測定大鼠的抗氧活性指標。結果表明，氣虛的大鼠在服用紅參後游泳時間變長，且血液中的 LA(乳酸）和 LDH（乳酸脱氫酶）含量顯著減少。紅參通過激活 AMPK 和 PGC1 α 表達改善氣虛大鼠骨胳肌綫粒體功能障礙。服用紅參後大鼠骨胳肌內的 MDA（丙二醛）和 ROS（活性氧）的含量降低，但 SOD(超氧化物歧化酶) 和 GSH-PX（谷胱甘肽過氧化物酶）的活性升高。對大鼠的血液指標進行檢測，結果顯示無任何异常。根據上面的實驗結果説明紅參在氣虛的大鼠體內具有良好的抗氧化能力且無任何副作用。
抗病毒研究：小鼠分別口服低，中，高劑量組（分別為 200mg、400mg、600mg/kg）紅參提取物 14 天后置于陰暗潮濕的環境中再注射人冠狀病毒 229E(HCoV-229E), 觀察小鼠的狀態。結果發現服用中高劑量組紅參提取物的小鼠比沒有服用紅參的對照組顯得更加活躍，觀察小鼠的肺指標，服用紅參提取物高劑量組的小鼠肺指標得到了顯著的改善，通過 HE 染色的肺組織和病毒載量測試中在中高劑量組中可以看到明顯的改善效果，同時紅參提取物的服用也降低了炎症相關的細胞因子水平的表達（IL-1 β ，IL-6, IL-12, TNF- α ，IFN- ϒ），促進了免疫細胞 CD4+ T cell,CD8+ T cell 及 B cell 的表達水平。這些實驗結果表明了紅參對 HCoV-229E 引起的冠狀病毒性肺炎及相關病毒發作性肺綜合征具有顯著的預防效果，並為臨床用藥提供了實驗室依據。
以上的研究結果為紅參的研究奠定了科學基礎 , 同時也希望紅參能為世界各地的人的健康發揮重要作用。

Speaker's Biography 講者簡介

Name
Zhu Qianjing

Education
2018-2021 KyungHee University Master of Science in Food & Nutrition
2014-2018 KyungHee University Bachelor of Science in Food & Nutrition

Work experience
Yeasen Biotechnology (Shanghai) Co., Ltd.
2021-2023 Antibody Researcher Mainly engaged in the research of monoclonal antibodies such as chicken monoclonal antibody and rabbit monoclonal antibody

Korea Ginseng Corporation (JungKwanJang)
2024-Present Basic Technology Research Researcher Mainly engaged in the study of active ingredients and pharmacological effects of red ginseng

Brief Biodata
Zhu Qianjing, master graduated from Kyung Hee University of Korea, majoring in food and nutrition, senior health manager, currently Jilin Hanzheng Ginseng Co., LTD. (JungKwanJang)

China R&D Center basic technology research Department researcher. She has been engaged in the field of biology and health food for many years, mainly involved in the research and development of monoclonal antibodies, the active ingredients of red ginseng and pharmacology-related animal and clinical research.

姓名
朱倩靜

教育背景
2018 年 -2021 年　慶熙大學　食品營養學 (分子營養學) 碩士
2014 年 -2018 年　慶熙大學　食品營養學　學士

工作經歷
上海翌聖生物科技股份有限公司
2021 年 -2023 年 抗體研究員 主要從事雞單抗，兔單抗等單克隆抗體的研究

吉林韓正人參有限公司（正官莊）
2024 年 - 至今 基礎技術研究部研究員 主要從事紅參的活性成分及藥理作用研究

個人簡介
朱倩靜，碩士畢業于韓國慶熙大學食品營養學專業，高級健康管理師，現任吉林韓正人參有限公司（正官莊）中國研發中心基礎技術研究部研究員一職。從事生物及健康食品領域多年，主要涉及單克隆抗體研發領域，紅參的活性成分及藥理相關的動物和臨床研究。

Research on the Therapeutic Substances and Creation of the Artificial Substitutes for Endangered Chinese Animal Medicinal Materials

若干瀕危動物藥材藥效物質及高技術替代品研究

Prof. Shi-Shan YU, Chairman of the State Key Laboratory of
Bioactive Substance and Function of Natural Medicines,
Institute of Materia Medica, Chinese Academy of Medical Sciences and
Peking Union Medical College (IMM, CAMS & PUMC)
中國醫學科學院 & 北京協和醫學院藥物研究所
天然藥物活性物質與功能國家重點實驗室主任 庾石山教授

ABSTRACT 摘要

Throughout history of Traditional Chinese Medicine (TCM), endangered animal medicinal materials, including musk, bear bile, and Saigae tataricae Cornu (antelope horn), have held a central position in managing critical and acute health conditions. Their effectiveness is underpinned by their unique therapeutic attributes, swift onset of action, and profound curative potential. Researching and developing substitutes for endangered Chinese animal medicinal materials constitutes a pressing national priority and is of great importance to safeguarding the welfare of wild and endangered animal populations and ensuring the sustained development of TCM.

Academician De-Quan Yu's groundbreaking invention of "Artificial Musk" has offered a pioneering research model and a wealth of instructive experience, paving the way for the development of artificial substitutes for endangered Chinese animal medicinal materials. Building upon this foundation, we have further developed and refined the research strategy, encompassing several critical stages: (1) Undertaking exhaustive analysis to define the structural attributes, types, contents, and relative proportions of chemical constituents within endangered Chinese animal medicinal substances. (2) Developing multifaceted pharmacological modeling system capable of deciphering traditional indications and reflecting the empirical wisdom inherent in TCM practice. (3) Establishing correlations among traditional indications, biological activities, and chemical compositions of these materials. (4) Identifying and quantifying the individual efficacies contributed by each component, thereby enabling the validation of the key therapeutic substances. (5) Integrating cutting-edge techniques from chemistry, enzymology, and associated disciplines to facilitate the environmentally friendly preparation of the key therapeutic substances. (6) Optimizing and restructuring formulations based on empirical and statistical evidence, to create chemically and pharmaceutically equivalent artificial substitutes for endangered Chinese animal medicinal materials.

Through extensive research, we have successfully elucidated the key therapeutic substances in bear bile and antelope horn. Consequently, we created artificial substitutes—referred to as "Artificial Bear Bile Powder" and "Artificial Antelope Horn Powder"—which replicate the comparable chemical composition and distinctive therapeutic properties of their natural equivalents. Presently,

the Artificial Bear Bile Powder has satisfactorily completed Phase II clinical trials, proving to be clinically equivalent and comparably safe to the conventionally used drained bear bile powder, exhibiting a reduced frequency of adverse reactions. The Artificial Antelope Horn Powder has finished its preclinical research phase and progressed to the Pre-IND stage. These research efforts are expected to decisively tackle the enduring supply issues surrounding bear bile and antelope horn as medicinal resources, and hold considerable significance for the preservation of endangered species and the advancement of sustainable practices in traditional Chinese medicine.

Key words: endangered Chinese animal medicinal materials, unique therapeutic substances, original artificial substitutes, Artificial Bear Bile Powder, Artificial Antelope Horn Powder.

References:

1. Pharmacopoeia of the people's Republic of China (2010, 2015, 2020), volume 1.
2. Convention on international trade in endangered species of wild fauna and flora, appendices I, II.
3. Di-Xiu Mu, Qing-Rong Wang, Ying Sun, *et al*. Traditional Chinese medicine resources and modern biological technology. Central South Pharmacy, 2017, 15 (5): 635-638.
4. Jun-De Li. System study of endangerment medicinal animals in China. China Journal of Chinese Materia Medica, 2006, 26 (11): 728-730.
5. Yong Li, Yuhong Huang, Nan Feng, *et al*. Artificial bear bile: a novel approach to balancing medical requirements and animal welfare. Engineering, doi: 10.1016/j.eng.2023.09.017.

熊膽、羚羊角和麝香等瀕危動物藥材在臨床上起著不可或缺的作用，為安宮牛黃丸、紫雪、片仔癀等 300 餘種經典名方的主要藥味，因稀缺和動物保護，其使用受限，導致許多名優中成藥限產或斷供，使許多經典名方可能被迫失傳。因此，揭示其藥效物質、創制動物源藥材替代品是我國醫藥領域亟需解決的重大難題和需求。加速推進替代品的研發不僅是緩解資源危機、保障中醫藥傳承與可持續發展的內在要求，也是應對國際生物多樣性保護的挑戰、提升國家責任形象的戰略選擇。

藥物所于德泉院士領銜研製的人工麝香是首個瀕危動物藥材替代品研究的成功範例。瀕危動物藥材替代品研製中的關鍵科學問題包括：**（1）複雜體系中化學成分的系統闡釋和精准表徵；（2）傳統功效與現代疾病的映射關係；（3）化學成分與療效的系統相關性研究；（4）獨特療效物質的確定；（5）獨特療效物質的高效綠色製造；（6）高技術替代品的研製等。**因此，只有多學科交叉融合，建立基于系統思維的新研究模式，才能解決上述關鍵科學問題，創制出瀕危動物藥材高技術替代品。

本課題組首次應用多學科及自創技術，科學解密了瀕危動物藥材熊膽和羚羊角複雜體系作用的黑匣子，創制出與原藥材有效成分一致、藥效等同的人工熊膽粉和仿生羚羊角粉，其質量穩定、可控。人工熊膽粉已完成 II 期臨床研究，結果顯示其與引流熊膽粉臨床等效，安全性相近，不良反應發生率更低，可替代引流熊膽粉使用。仿生羚羊角已完成臨床前研究和 Pre-IND 溝通交流。成果對瀕危動物的保護和中醫藥事業的發展具有重大的社會效益和經濟價值。

關鍵詞：瀕危動物藥材；獨特療效物質；高技術替代品；人工熊膽粉；仿生羚羊角粉

參考文獻：

1. 中國藥典（2010 年版，2015 年版，2020 年版）一部 .
2. 瀕危野生動植物種國際貿易公約（CITES）附錄 I 和附錄 II.

3. 穆帝秀，王清蓉，孫瑩，陳新 . 中藥資源與現代生物技術，中南藥學 , 2017, 15 (5): 635-638.
4. 李軍德 . 論我國瀕危藥用動物的系統研究 . 中國中藥雜誌 , 2006, 26 (11): 728-730.
5. Yong Li, Yuhong Huang, Nan Feng, *et al*. Artificial bear bile: a novel approach to balancing medical requirements and animal welfare. Engineering, doi: 10.1016/j.eng.2023.09.017.

Speaker's Biography 講者簡介

Professor Shi-Shan Yu is a full professor and a doctoral supervisor at the Institute of Materia Medica, Chinese Academy of Medicial Sciences & Peking Union Medical College (IMM, CAMS & PUMC). He received his Ph.D. in Medicinal Chemistry in 1993 from Peking Union Medical College. After the postdoctoral research at University of Vienna, Austria (1995-1996), he joined the IMM, CAMS & PUMC as an associate professor in 1995 and was promoted to full professor in 1998. He was the deputy director of IMM, CAMS & PUMC (2011-2023), and has been the chairman of the State Key Laboratory of Bioactive Substance and Function of Natural Medicines since 2011. He is the executive director of the Council of Chinese Pharmaceutical Association (CPA), the chairman of Chinese Herbal Medicine and Natural Drug Specialized Committee of CPA, and a committee member of Chinese Pharmacopeia Commission, he is also the chief editor of *Journal of Asian Natural Products Research*.
His main research interests focus on the discovery, structures and functions of bioactive substances from natural medicines, and the development of innovative drugs based on natural products, and his perseverance for scientific research has him make a series of achievements. He has published more than 170 research papers in peer-reviewed/reputed international SCI journals such as *Angew. Chem. Int. Ed., Signal Transduct. Target. Ther., Chem. Sci*., etc., and 27 licensed patents. His research achievement won the first prize of National Science and Technology Progress Award one time, the second prize of National Science and Technology Progress Award two times, and he is also the winner of The Ho Leung Ho Lee Foundation for Science and Technology Progress Prize.

庾石山，博士，中國醫學科學院藥物研究所研究員、博士生導師。現任“天然藥物活性物質與功能”國家重點實驗室主任。國家傑青、長江學者。兼任中國藥學會理事會常務理事、中國藥學會中藥和天然藥物專業委員會主任、國家藥典委員會標準物質專業委員會副主任和 SCI 期刊《Journal of Asian Natural Products Research》主編。

主要從事天然藥物化學和創新藥物研究，取得系列創新成果：

1. 首次應用多學科及自創技術，科學解密了瀕危動物藥材熊膽和羚羊角複雜體系作用的黑匣子，創制出熊膽和羚羊角的高技術替代品人工熊膽粉和仿生羚羊角粉。實現人工麝香規模化生產，解決國家重大需求與瀕危動物保護的難題。

2. 創建動植物藥材複雜體系中大分子和微量活性物質的發現與製造新技術體系，實現了過去難以發現和獲取的活性物質的高效發現與製造，推動天然藥物研究的發展。

3. 攻克有毒藥用植物毒效成分研究難題，發現新結構和毒效化合物數量居國際首位，闡明了多個重要活性分子的作用靶蛋白和新穎的分子機制，為質量安全標準制定及新藥研發奠定基礎。

以第一完成人獲國家科技進步二等獎 1 項和省部級一等獎 3 項。以主要完成人獲國家科技進步一等獎和

二等獎各 1 項。獲何梁何利科學與技術進步獎。以通訊（含共同通訊）作者在 *Angew. Chem. Int. Ed.*，*Signal Transduct. Target. Ther.*，*Chem. Sci*. 等國際著名期刊發表 SCI 論文 180 餘篇。授權國際國內發明專利 27 項。

Experiences in the Internationalization of SHUTCM
中醫藥教育國際化的經驗分享

Prof. Jing SHU, Vice President,
Shanghai University of Traditional Chinese Medicine, China
上海中醫藥大學副校長 舒靜教授

ABSTRACT 摘要

How to adapt to the pace of development in the new era, tell the story of traditional Chinese medicine to the world, enable the world to share the achievements of traditional Chinese medicine, and better promote the internationalization of traditional Chinese medicine is a major issue we have to face. Now taking the current situation of the internationalization of education in Shanghai University of Traditional Chinese Medicine and the problems encountered in its development as the starting point, I would like to talk about the reform and development of the internationalization of education in traditional Chinese medicine.

如何適應新時代的發展步伐，向世界講好中醫藥的故事，讓世界分享中醫藥的成果，更好地推動中醫藥國際化是我們需要推動的重要工作。我想以上海中醫藥大學教育國際化的現狀和發展中遇到的問題為出發點，談談中醫藥教育國際化的改革與發展。

Speaker's Biography 講者簡介

Shu Jing, MD, vice president of Shanghai University of Traditional Chinese Medicine. The deputy director of the Education Committee of the China Association of Integrative Medicine, the chairman of the Foreign Education Research Committee of the National Association of Higher Education of Traditional Chinese Medicine, and the deputy director of the Medical Education Branch of Shanghai Medical Association. Research achievements have won 3 first prizes of National Teaching Achievement, the special prize and 6 first prizes of Shanghai Teaching Achievement, 2 policy research prizes of Science and Technology Award of China Association of Chinese Medicine, etc.

舒靜，醫學博士，主任醫師。上海中醫藥大學副校長。中國中西醫結合學會教育工作委員會副主任委員，全國中醫藥高等教育學會對外教育研究會理事長，上海市醫學會醫學教育分會副主任委員等職務。研究成果獲國家教學成果一等獎 3 項、上海市教學成果特等獎、一等獎 6 項，中華中醫藥學會科學技術獎政策研究獎 2 項等。

Session 3
第三節

Clinical Research on Traditional Medicine/ Chinese Medicine
傳統醫學 / 中醫臨床研究

In Quest for Clinical Evidence on Effectiveness of Chinese Medicine
眾裏尋他千百度：中醫藥臨床療效證據的求索

Prof. Zhixiu LIN, Dr. Kam Leung Chan
School of Chinese Medicine and Hong Kong Institute of Integrative Medicine, CUHK
香港中文大學中醫學院，香港中西醫結合醫學研究所
林志秀教授、陳錦良博士

ABSTRACT 摘要

Hong Kong Institute of Integrative Medicine at The Chinese University of Hong Kong (HKIIM) was established in 2014, with its mission to construct clinical evidence on the effectiveness and safety of Chinese medicine for common disease through conducting clinical trials. Over the past decade, we have successfully secured more than 9 external research grants, completed 8 clinical trials, and with 7 studies are currently ongoing. We have published around 15 research articles based on the clinical research. In this talk, we will introduce the work that have been completed and are ongoing in the HKIIM, demonstrating our steadfast endeavors for establishing clinical evidence on Chinese medicine.

香港中西醫結合醫學研究所成立於 2014 年，為香港中文大學屬下的一個研究單位。我們將工作的重點放到實行中西醫結合臨床試驗。至今為止，我們已經構建了一套完善的臨床試驗的常規管理和操作程序，包括完成了研究人員的 GCP 培訓，掌握了申請香港衛生署臨床試驗批文的手續，建立了臨床試驗的相關硬件設備等。 在過去的九年中，我們獲取各類研究基金共 9 項，已經完成了 8 個隨機對照雙盲試驗，目前進行中的臨床試驗共 7 項，並發表相關學術論文共 15 篇。本演講將重點介紹幾個已經完成和即將完成的中醫藥臨床試驗的經驗和結果，也希望通過這些分享，促進和其它兄弟院所的相互瞭解和研究合作。

Speaker's Biography 講者簡介

Professor Zhi-xiu Lin

Professor Lin is the Director of the School of Chinese Medicine and Hong Kong Institute of Integrative Medicine, CUHK. He is a registered Chinese Medicine Practitioner (HK), professor, and doctoral supervisor. His main research interests include: (1). Pharmacological studies on Chinese medicines for psoriasis, eczema, pancreatic cancer, prostate cancer and neuroprotection; and (2). Clinical trials on effectiveness and safety of Chinese medicine for some common diseases, such as atopic dermatitis, psoriasis, macular edema, dry eye disease, allergic rhinitis, urticaria and long-COVID.

林志秀教授

林教授現任香港中文大學中醫學院及香港中西醫結合醫學研究所所長。他是香港註冊中醫師、教授、博士生導師。主要研究領域包括：(1) 中醫藥治療銀屑病、濕疹、胰腺癌以及神經保護中藥的藥理研究和產品

開發；和 (2) 中藥治療異位性皮膚炎、乾癬、黃斑水腫、乾眼症、過敏性鼻炎、蕁麻疹、長效新冠等常見疾病的有效性和安全性臨床試驗。

更獲國家教學成果一等獎 3 項、上海市教學成果特等獎、一等獎 6 項，中華中醫藥學會科學技術獎政策研究獎 2 項等。

Repurposing Chinese Medicines for Modern Use: 2 Cases of Diabetes Trials
中藥再開發：2 個糖尿病臨床試驗案例

Dr. CHAN Kam Wa, Assistant Professor,
Hong Kong Baptist University
香港浸會大學助理教授 陳錦華博士

ABSTRACT 摘要

Chinese medicine has been well-used for thousands of years. How could we effectively translate the accumulated wisdom in the clinical practice of traditional Chinese medicine to manage the disease burden that we are facing? The conventional model of developing new drugs from basic science, preclinical studies to clinical trials takes time and the yield is unsatisfactory. The reversed approach could be a more efficient way in repurposing Chinese medicines. Here we present 2 previous diabetes-related studies that used this approach and being shown effective in diabetic kidney disease.

中醫藥已經被廣泛使用數千年。如何有效地將臨床過程中累積的智慧轉化成應對現代重大疾病負擔的治療？傳統的新藥開發模式需經過基礎科學、臨床前研究到臨床試驗，需要較長時間，而且產量不理想。逆向開發模式方法可能是再開發中藥的更有效方法。在此，我們介紹過往兩項糖尿病相關的研究。這些研究皆使用了逆向開發模式並證明對糖尿病腎病有效。

Speaker's Biography 講者簡介

（只提供英文版本）

Chris is a clinical scientist focusing on integrative clinical services and research of infectious disease, respiratory disease, diabetes, chronic kidney disease, and other internal medicine conditions. He is the designer and coordinator of multiple clinical trials and cohorts which showed that add-on Chinese medicine reduces kidney function decline in diabetes, and was associated with mortality reduction in COVID and acute exacerbated chronic obstructive pulmonary disease. Chris has published over 30 original articles in international peer-reviewed medical journals, including the Kidney International, Clinical Journal of the American Society of Nephrology, Phytomedicine and American Journal of Chinese Medicine as the first/ corresponding author.

Research Progress on Yinuo Capsule
益諾膠囊的研究進展

Prof. Hongxi XU, Distinguished Professor,
Shanghai University of Traditional Chinese Medicine
上海中醫藥大學首席教授 徐宏喜教授

ABSTRACT 摘要

Yinuo Capsule, approved by the CFDA in 2006 as a Class 5 TCM-based new drug, is made from Motherwort (*Leonurus ja ponicus Houtt*.), and is primarily used to treat bleeding after medical abortion. Using modern separation techniques combined with mass spectrometry, we systematically identified the main chemical components of Yinuo Capsules and established methods for measuring their content, ensuring the stability, safety, and efficacy. Further research revealed that the main components, such as stachydrine and leonurine, have pharmacological effects including regulating uterine smooth muscle, promoting angiogenesis, and inhibiting mast cell-mediated allergic inflammation.

益諾膠囊是 2006 年由國家藥監局批准上市的“中藥五類新藥”，是一種以中藥益母草為原料的單味藥製劑，主要用于治療藥物流產後出血。我們通過現代分離技術結合質譜分析，系統地鑒定了益諾膠囊中的主要化學成分，建立了主要成分的含量測定方法。在此基礎上，進一步對益諾膠囊進行深入研究，發現其主要成分包括水蘇碱和益母草碱，具有調節子宮平滑肌、促進血管生成和抑制肥大細胞介導的過敏性炎症等藥理作用。

Speaker's Biography 講者簡介

Distinguished Professor

Prof. Xu Hongxi is a leading expert in Chinese Medicine, Pharmacology, and Phytochemistry. He is a distinguished professor at Shanghai University of Traditional Chinese Medicine and holds important roles in various academic committees. He has published 415 articles, cited 20,154 times, with an H-index of 75. Notably, he's been recognized as a "Highly Cited Chinese Researcher" for ten consecutive years and is ranked among the “Top 2% of Scientists” globally by Stanford University. Prof. Xu Hongxi is currently the Editor in Chief of Acta Materia Medica (AMM) and an Editorial Board Member of more than 20 scientific journals. He has also edited and published eight books, including "Pharmacology of Chinese Medicines" and "Toxicology of Chinese Medicines."

徐宏喜教授

上海中醫藥大學首席教授，香港大學榮譽教授、香港中文大學榮譽教授。

徐宏喜教授為國家中組部特聘教授，國務院學位委員會中藥學學科評議組秘書長、國家藥典委委員、一帶一路中醫藥發展聯盟主席。發表 SCI 論文 410 多篇，H 指數 75。入選斯坦福大學“終身科學影響力排行榜”、“全球 2% 頂尖科學家榜單”、連續 10 年入選“中國高被引學者”。先後到訪 100 多個國家和地區的院校和機構，進行學術交流，推動中醫藥國際化。

Molecular Mechanisms of SNS in Inhibiting Depression-induced Breast Cancer Growth and Metastasis
經典名方四逆散抑制抑鬱介導乳腺癌生長轉移的分子機制

Prof. WANG Zhiyu, Deputy Department Head and Professor,
Breast Disease Hospital, Guangdong Provincial Hospital of Chinese Medicine
廣東省中醫院乳腺病醫院副院長、教授 王志宇教授

ABSTRACT 摘要

Through Meta analysis, we demonstrated that depression is an independent risk factor for breast cancer recurrence and metastasis. Clinically, SNS could improve the depression score and quality of life of breast cancer patients. Molecular elucidation revealed that SNS and its active ingredient naringenin could inhibit breast cancer growth and metastasis via modulating liver cholic acid/ estrogen metabolism pathway, spleen MDSCs mobilization and GRP78/LRP5 stem signaling.

系統性分析證實憂鬱是乳癌復發和死亡的獨立風險因素，四逆散可改善乳癌患者憂鬱評分和生活質量，四逆散及其活性化合物柚皮素等可透過調控膽汁酸 / 雌激素代謝通路、脾臟 MDSCs 動員和應激乾性路徑 GRP78/LRP5 抑制乳癌生長轉移。

Speaker's Biography 講者簡介

Professor Zhiyu Wang, deputy dean of the Affiliated Breast Disease Hospital of Guangdong Provincial Hospital of Traditional Chinese Medicine, National Qi Huang Young Scholar, Outstanding Young Scientist of Guangdong Province. Prof. Wang has been granted more than 30 research projects, including five from National Natural Science Foundation of China. He has been awarded the second prize for Scientific Research by the National Ministry of Education and Guangdong Province. As corresponding author, he has published more than 50 papers in peer-reviewed journals including Mol Psychiatry, J Adv Res, and J Nanobiotech, with citation over 3,000 times.

王志宇，教授，博士生導師，廣東省中醫院乳房病專科醫院副院長，全國首屆青年岐黃學者、廣東省傑青。主持國自然 5 項，獲得廣東省科技進步二等獎等省部級獎項 6 項。在 Mol Psychiatry、J Adv Res 等雜誌通訊發表 SCI 論文 50 餘篇。

Session 4
第四節

Successful Cases Sharing
成功個案分享

Chinese Medicine Artificial Intelligence Techniques Help Eczema Diagnosis and Treatment
中醫人工智能助力濕疹診治

Prof. CHANG Chen, Founder, Chinese Essence Medical Group
德善醫療集團 (德善堂中醫) 創辦人 張琛教授

ABSTRACT 摘要

Artificial intelligence (AI) technology is increasingly used in the medical field, Chinese Essence Medical Group focus on the development and application of AI in traditional Chinese medicine (TCM), especially for eczema diagnosis and treatment. The Group wants to find precise and objective indicators to evaluate the efficacy of TCM, which would help promote TCM to the world. By collecting and analyzing the patients' eczema morphology and the four diagnostic information, the AI brain of TCM would give reference diagnosis and provide clinical treatment protocol for TCM practitioner, particular for the less experienced one.

近些年人工智能技術越來越多應用在醫學領域，德善醫療集團致力於開發及應用中醫人工智能，特別是在濕疹的診斷及治療方面。集團一直試圖尋找精準、客觀的指標去評價中醫療效，為中醫藥國際化添磚加瓦。中醫人工大腦在收集及分析病人濕疹形態以及中醫四診信息後，為臨床醫師尤其是年輕醫師提供參考診斷以及臨床治療方案。

Speaker's Biography 講者簡介

Dr. Michelle Chang, the founder of Chinese Essence Medical Group, became interested in Chinese medicine at a young age when her mentor gave her significant inspiration. As she pursued her interest in Chinese medicine, Dr. Chang enrolled in a part-time course offered by the Department of Extra-Mural Studies at The University of Hong Kong. She went on to obtain her Bachelor of Chinese Medicine from The University of Hong Kong. Dr. Chang then earned a Master of Science degree in Chinese Medicines and Herbal Drugs, as well as a PhD in Chinese Medicine, both from The Chinese University of Hong Kong. In 1999, inspired by the Hong Kong SAR government's initiative to establish Hong Kong as a global hub for Chinese medicine, Dr. Chang further embarked on her career in the field. She founded Chinese Essence Medical (德善堂中醫) in 2000 and further grew her business by establishing Chinese Essence Health Management (德善健康管理), Chinese Essence Hair Care (德善健髮), and Tak Yue Medicine (德譽製藥) into Chinese Essence Medical Group (德善醫療集團), focusing on offering comprehensive integrated Chinese and Western medicine services. The Group is now one of the biggest private Chinese medicine companies in Hong Kong. For her dedications to the Chinese medicine sector, Dr. Chang

has received numerous accolades including the Greater Bay Area Outstanding Young Female Entrepreneur Award and the 3rd Golden Bauhinia Women Entrepreneur Award.

Dr. Chang once said, “The most valuable moment as a doctor is helping patients.” Even as her responsibilities have grown as a female entrepreneur, she insists on performing front-line medical practice and teaching apprentices.

Dr. Chang is pioneering the modernization and technicalization of Chinese medicine sectors recently through collaborating with research institutes on AI diagnostics. In addition to establishing the system of “precision Chinese medicine practices”, Dr. Chang is dedicated to integration of Chinese and Western medicine.

德善醫療集團創辦人張琛中醫師，年輕時受恩師啟蒙，對中醫藥感興趣，後來半工讀，於港大校外課程修讀中醫學。先後取得香港大學中醫全科學士，香港中文大學中藥及草藥學理學碩士，香港中文大學中醫藥學哲學博士。1999 年響應特區政府「中藥港」政策投身中醫行業，二千年創業成立德善堂中醫，隨後建立德善健康管理、德善健髮及德譽製藥，形成德善醫療集團，提供全面一站式中西醫結合醫療服務，集團目前是香港比較大規模的私人中醫藥企業。張琛醫師亦因此屢獲殊榮，先後獲得「大灣區傑出青年女企業家」及「第三屆金紫荊女企業家 卓越企業管理獎」。

她曾經說過：「能夠幫助到病人，就是作為一個醫生最有價值的時候。」即使身兼女企業家，仍然堅持前線行醫授徒。

張琛醫師與時並進，近年引領中醫行業現代化、科技化，與科研機構合作發展 AI 診斷。除了創建「精準中醫」體系外，還致力中西醫結合。

Ginsenoside Rg1 Exerts Anti-eczema Effects in Pharmacological Models
人參皂苷 Rg1 在藥理模型上有抗濕疹作用

Prof. YU Zhiling, Professor, School of Chinese Medicine,
Hong Kong Baptist University
香港浸會大學中醫藥學院教授 禹志領教授

ABSTRACT 摘要

It was found that ginsenoside Rg1 exerts anti-eczema effects in a mouse model without overt toxicity. I was further found that the compound inhibits M2 macrophage polarization, in which AMPKα inactivation is involved, in mouse lesional skin and in cultured cells. These novel findings indicate that ginsenoside Rg1 can be developed into an effective and safe anti-eczema agent. This study was supported by Laboratory JaneClare Limited.

研究發現，人參皂苷 Rg1 在小鼠模型上有抗濕疹作用，且無明顯毒性。進一步研究發現，人參皂苷 Rg1 在小鼠皮損組織和體外培養細胞上均能抑制 M2 巨噬細胞極化，其作用與 AMPKα 失活有關。這些新的研究結果表明，人參皂苷 Rg1 可開發成有效且安全的抗濕疹藥物。本研究得到珍卡兒藥妝有限公司的資助。

Speaker's Biography 講者簡介

YU Zhiling

Professor, Hong Kong Baptist University

Prof. Yu received his undergraduate education at Henan University of Traditional Chinese Medicine, and obtained his PhD degree in biochemistry from the Hong Kong University of Science and Technology. Prof. Yu is known for his research in herbal pharmacology, and in processing of Chinese medicinal materials.

禹志領

中藥學士（河南中醫學院），生物化學博士（香港科技大學）。

香港浸信會大學教授，珍卡兒中醫透皮治療實驗室負責人。

主要從事抗癌、抗發炎中藥理研究、中藥炮製研究及中藥產業化研究等。

Market Forecast and Prospect of External Traditional Chinese Medicine in “One-Belt-One-Road” Markets
中醫藥舒緩痛症的百年經驗及「一帶一路」市場展望

Prof. Timothy Tin Lok TAM, Chief Operation Officer,
Ling Nam Medicine Factory (HK) Ltd.
嶺南藥廠（香港）有限公司營運總監 譚天樂教授

ABSTRACT 摘要

On December 31, 2021, the State Administration of Traditional Chinese Medicine and the Office of the Leading Group for Promoting the Construction of the “Belt and Road” National Policy which jointly formulated the “Development Plan for Promoting the High-Quality and Integration of Traditional Chinese Medicine into the “Belt and Road” countries includes China, ASEAN, West-Asia, Middle Asia, South Asia, Middle-East Europe and commonwealth of independent states between 2021-2025. The policy ultimately aims to build 30 high-quality overseas centers for traditional Chinese medicine in cooperation with countries co-building the "Belt and Road Initiative", promulgate 30 international standards for traditional Chinese medicine, create 10 overseas communication brand projects for traditional Chinese medicine culture, and build 50 international cooperation base for traditional Chinese medicine, build a number of national traditional Chinese medicine service export bases, strengthen the construction of overseas registration service platforms for traditional Chinese medicine products. Such as Ointment, Liniment and Patch, etc. have a prolong history and what are the past, present and future of the External TCM in those “Belt and Road” countries.

2021 年 12 月 31 日，國家中醫藥管理局和推進「一帶一路」建設工作領導小組辦公室共同製定了《推進中醫藥高質量融入共建“一帶一路”發展規劃 (2021-2025 年)》， 目標在「十四五」時期，與共建「一帶一路」國家 , 這些國家包括中國、東盟 10 國、西亞 18 國、南亞 8 國、中亞 5 國、獨聯體 7 國、中東歐 16 國合作建設 30 個高質量中醫藥海外中心，頒布 30 項中醫藥國際標準，打造 10 個中醫藥文化海外傳播品牌項目，建設 50 個中醫藥國際合作基地，建設一批國家中醫藥服務出口基地，加強中藥類產品海外註冊服務等。如一些外用的中藥產品，例如藥膏、藥油膏貼已有悠久的歷史。這些產品在「一帶一路」國家的現在、過去與未來、會作一闡述。

Speaker's Biography 講者簡介

(只提供英文版本)

Timothy completed his Postgraduate study in Chemistry from The Chinese University of Hong Kong. He is currently a Chartered Chemist (CChem) and Certified Practising Chemist (CPChem) of Royal Australian Chemical Institute. He is also corporate member of Royal Australian Chemical Institute (MRACI) and Association of Official Analytical Chemists (MAOAC). Prof. Tam also be the Committee Member of Chinese Medicines Development Fund, Chinese Medicine Committee and Government Chinese Medicines Testing Institute. In addition, Prof. Tam currently is the Adjunct Professor and Chairman of Food and Health Departmental Advisory Committee, THEi, Part-time Lecturer of Division of Chinese Medicines, The Baptist University of Hong Kong and several Guest Lecturer, Speakers in various seminars and conferences local and overseas. He has extensive experience in Quality Management System Auditing, such as GMP, ISO 9000, ISO/IEC 17025 and product registration.

Integrative Chinese and Western Medicine in Digestive Diseases: How to Make a Global Impact?
消化疾病的中西醫結合治療：怎樣打造全球影響力

Prof. Justin Che-Yuen WU, Associate Dean (Health Systems),
Faculty of Medicine, The Chinese University of Hong Kong
香港中文大學醫學院副院長 (醫療系統) 胡志遠教授

ABSTRACT 摘要

(只提供英文版本)

To implement integrative Chinese and Western medicine in digestive diseases, we focus on diseases that fulfil these criteria: 1. common, chronic or recurrent in nature, 2. no effective treatment, 3. marked side effects or high costs with the use of conventional Western medicine, 4. presence of well accepted Chinese medicine treatment with high demand in the public. In CUHK, we have pioneered integrative model that is based on high-quality evidence, respect of Chinese medicine theoretical basis, multi-disciplinary team with mutual respect and trust. The approach addresses three fundamental questions of integrating Chinese and Western medicine: effectiveness, safety and practicalities.

Speaker's Biography 講者簡介

(只提供英文版本)

Prof. Wu is an international academic leader in gastroenterology. He is currently the President of Asian Pacific Digestive Week Federation, Past President of Asian Pacific Association of Gastroenterology, Scientific Chairman of Asia Neurogastroenterology and Motility Association, and the Past President of Hong Kong Society of Gastroenterology. He is the founding director of Hong Kong Institute of Integrative Medicine of CUHK, which serves the mission of fostering cooperation between Western and Chinese medicine in the health system. He is also serving as a member in the Board of Chinese Medicine Hospital and Advisory Committee of Chinese Medicine Development Fund.

Industry-University-Research Collaboration Helps Secondary Development of Tongkang Tablets
產學研助力童康片產品二次開發

Ms. PEI Hong, General Manager,
GKH Pharmaceutical Ltd.
廣州康和藥業有限公司董事總經理 裴紅女士

ABSTRACT 摘要

Tongkang Tablets is a pure traditional Chinese medicine patent medicine independently developed by Guangzhou Kanghe Pharmaceutical. It is mainly used to treat repeated upper respiratory tract infections in physically weak children and to improve the immunity of children. It has been included in the "Pediatrics of Traditional Chinese Medicine" in the higher medical and pharmaceutical college textbooks of the national "12th Five-Year Plan", "13th Five-Year Plan", and "14th Five-Year Plan", the "22 specialties and 95 diseases - TCM diagnosis and treatment plans" of the National Administration of Traditional Chinese Medicine, and the "Guiding Principles for Pediatric TCM Medical Techniques and Proprietary Chinese Medicines Use" jointly compiled by the Maternal and Child Health Care Department of the National Health Commission and the National Administration of Traditional Chinese Medicine; in 2021, the "Domestic Guidelines for Diagnosis and Treatment of Pediatric Cough" positioned Tongkang Tablets as a therapeutic drug for "qi deficiency cough" in repeated respiratory tracts in children. Because Tongkang Tablets is a sugar-coated chewed tablet, and the compliance of children under 1 year old taking it is relatively poor, therefore, our company further improved the dosage form of Tongkang Tablets to the granular form, and carried out research on the substance basis and action mechanism of the function, pharmacological and toxicological research, established product quality standards and characteristic spectra, etc., and through a large number of clinical research and human use experience, it was improved into a more suitable granular formulation for children to apply to the National Medical Products Administration for approval number.

童康錠為廣州康和藥業自主研發的純中藥的專利藥，主要用於治療體弱兒童反復上呼吸道感染和提高兒童免疫力。先後被國家「十二五」、「十三五」、「十四五」高等醫藥院校教材《中醫兒科學》、《中西醫結合兒科學》、國家中醫藥管理局《22 個專業 95 個病種－中醫診療方案》、國家衛計委婦幼保健司及國家中醫藥管理局合編的《兒科中醫醫療技術及中成藥用藥指導原則》收載；2021 年《國內小兒咳嗽診療指南》將童康片定位為兒童反復呼吸道屬「氣虛咳嗽」治療藥。因童康片為糖衣咀嚼片，1 歲以下兒童服用依從性較差，因此我司對童康片劑型進一步改良為顆粒劑型，並開展作用物質基礎和作用機理的研究、藥理毒理學研究、建立產品品質標準和特徵圖譜等，並通過大量臨床研究和人用經驗，改良成更適宜兒童服用的顆粒劑向國家藥監局申請批准文號。

Speaker's Biography 講者簡介

Pei Hong, Female, licensed pharmacist, graduated from the Pharmacy Department of Guiyang College of Traditional Chinese Medicine in 1982 and received a bachelor's degree. Currently, she is the director and general manager of Guangzhou Kanghe Pharmaceutical Co., Ltd.

In 1986, I was one of the editorial board members of this book and participated in the compilation and publication of "Basic of Identification of Traditional Chinese Medicine", a supporting teaching material for colleges and universities; published more than 10 papers such as "HPLC-ELSD method for determining the content of flaccidoside II in Diwu" (Chinese medicinal materials, 2013 (10): 1632-1634.); participated in the invention of "the method for simultaneously preparing W1 and W3 from Diwu medicinal materials" and other 3 patents in 2013.

In July 1998 and June 1999, the "puerarin injection" developed by participation respectively won the "Guangdong Province Excellent New Product Award" and "Guangzhou City Scientific and Technological Progress Award", and I respectively won the individual second prize and third prize.

In 2012, I presided over the special project of "Quality Control Technology Research of Diwu Fengshi'an Capsule, a new type of traditional Chinese medicine in the fifth category" in Guangdong Province's major scientific and technological projects; in 2017, the special project "Research and Application of Triterpenes and Saponins Components of Traditional Chinese Medicine and Natural Medicine" participated by Guangzhou Kanghe Pharmaceutical Co., Ltd. respectively won the second prize of the National Scientific and Technological Progress Award and the first prize of Guangdong Province Scientific and Technological Award, and I won the individual first prize and second prize.

裴紅，女士，執業藥師，1982 年畢業於貴陽中醫學院藥學系，獲學士學位。現任廣州康和藥業有限公司董事總經理。

1986 年本人為本書的編委之一參與編寫、出版《中藥鑑定基礎》高校輔助教材；發表“HPLC-ELSD 法測定地烏中 flaccidoside II 的含量”（中藥材 , 2013 (10): 1632-1634 .）等論文 10 餘篇；2013 年參與發明「從地烏藥材中同時製備 W1 和 W3 的方法」等 3 個專利。

1998 年 7 月、1999 年 6 月參與研發的“葛根素注射劑”分別獲“廣東省優秀新產品獎”和“廣州市科學技術進步獎”，本人分別榮獲個人二等獎和三等獎。

2012 年本人主持廣東省重大科技專項「中藥五類新藥地烏風濕安膠囊品質管制技術研究」計畫；2017 年，廣州康和藥業有限公司參與的「中藥和天然藥物的三萜及其皂苷成分研究與應用」計畫分別獲得國家科技進步二等獎及廣東省科學技術一等獎，本人榮獲個人一等獎及二等獎。

Inheritance and Exploration: New Application of TCM Prescriptions in Ginseng Products
傳統中醫藥人參品類的古方傳承和創新探索

Ms. Ivy JIA, General Manager, Tong Han Chun Tang Co. Ltd.
童涵春堂總經理 賈曉薇女士

ABSTRACT 摘要

Adhering to the health philosophy of "Dietary nourishment is better than medicinal nourishment" , exploration on the modern application of TCM prescriptions under the concept of food and medicine homology has never stopped, especially in the Ginseng category. The Research and results of the representative Ginseng product series from a TCM brand with over 200 years' history, with its unique and validated effects, showcase the perfect fusion of traditional Chinese medicine with modern science.

中醫藥一直傳承“以養代藥，調養優先”的健康主張。近年來，通過古方新創的理念，結合現代科創，積極進行創新探索，推動藥食同源類食品的研發和創新，特別是人參品類的食品創新。通過君臣佐使的組方理念，中國 200 多年的中醫藥老字號人參產品實驗功效顯著，展現了傳統中醫藥與現代科創的完美結合。

Speaker's Biography 講者簡介

Ms Ivy JIA

Dec.2015-Sep.2022 **General Manager, Innovative Product and Marketing Center, Yuyuan Inc. Ltd.**

Oct.2022-Present **General Manager, Tong Han Chun Tang Co. Ltd.**

As the new Chief of TONG HAN CHUN TANG, one of the oldest TCM brands in Shanghai with a history of 241 years, Ms. Ivy JIA devotes to the inheritance and innovation of Traditional Chinese Medicine (TCM). Under her lead, TONG HAN CHUN TANG is exploring new ways for the application of traditional prescriptions under the concept of food and medicine homology, to promote the modernization of TCM.

賈曉薇女士

2015.12—2022.09 豫園股份 C2M 及好產品行銷中心 總經理

2022.10—至今 童涵春堂 公司總經理

作為上海最早的國藥老字號之一，擁有 241 年歷史品牌的新一代掌門人，賈曉薇女士致力於中醫藥的傳承及藥食同源產品的創新，以古方新創，推動傳統中醫藥現代化。

Poster Session
海報環節

ABSTRACTS INDEX

Code	Presenting Author[1] / Corresponding Author[2]	Title
PS-01	**Grace Gar-Lee YUE[1]** *The University of Hong Kong* *The Chinese University of Hong Kong* **Clara LAU Bik-san[2]**	**Anti-tumor effects of Patrinia villosa (an authenticated herb of Bai Jiang Cao) in colon cancer preclinical models**
PS-02	**Yuen Ching Karry CHEUNG[1]** *The Hong Kong Polytechnic University* **Sai Wang SETO[2]**	**Pharmacological actions of Danggui Buxue Tang (DBT) on oxygen-glucose reperfusion (OGD/R)-insulted mouse brain endothelial (bEnd.3) cells**
PS-03	**Dan CHEN[1]** *Zhejiang University* **Jiawei LING[2]**	**Isolation, purification and characterization of the hepatoprotective polysaccharides from Dendrobium loddigesii Rolfe**
PS-04	**Huihai YANG[1]** *The Hong Kong Polytechnic University* **Terence Kin-Wah LEE[2]**	**Integrated network pharmacology, molecular docking and biological validation revealed the inhibitory effect of a benzoxazinone derivative ZAK-I-57 in hepatocellular carcinoma**
PS-05	**Chengwen ZHENG[1]** *The University of Hong Kong* **George Pak-Heng LEUNG[2]**	**Investigation of the anti-colon cancer efficacy and mechanisms of Amauroderma rugosum water extract and its polysaccharides**

Anti-tumor effects of *Patrinia villosa* (an authenticated herb of Bai Jiang Cao) in colon cancer preclinical models

Grace Gar-Lee Yue[a], Huihai Yang[b], Tao Zheng[b], Kwan-Ho Wong[c], Man-Ching Li[c], Hoi-Yan Wu[d], Hung-Kay Lee[e], David Tai-Wai Lau[c], Pang-Chiu Shaw[b,d], Clara Bik-San Lau[a,b,f,*]

[a] *Department of Pharmacology and Pharmacy, Li Ka Shing Faculty of Medicine, The University of Hong Kong;*

[b] *Institute of Chinese Medicine, The Chinese University of Hong Kong;*

[c] *Shiu-Ying Hu Herbarium, School of Life Sciences, The Chinese University of Hong Kong;*

[d] *Li Dak Sum Yip Yio Chin R & D Centre for Chinese Medicine, The Chinese University of Hong Kong;*

[e] *Department of Chemistry, The Chinese University of Hong Kong;*

[f] *School of Chinese Medicine, Li Ka Shing Faculty of Medicine, The University of Hong Kong.*

**Correspondence: Clara Bik-San Lau, email: cbslau@hku.hk*

Abstract:

In traditional Chinese medicine, Bai Jiang Cao (BJC, 敗 醬 草) has long been used for treating gastrointestinal disorders. It is also commonly prescribed alone or in complex prescriptions by Chinese medicine practitioners for colorectal cancer patients in Hong Kong SAR and in mainland China. Nevertheless, BJC can refer to various species, such as *Patrinia scabiosifolia* (敗醬), *Patrinia villosa* (白花敗醬), *Patrinia heterophylla* (異葉敗醬) and *Patrinia monandra* (少蕊敗醬), etc. The authentication of these *Patrinia* species poses challenge, particularly with the processed herbal materials.

Our studies have successfully authenticated the four aforementioned medicinal *Patrinia* species using morphological and chemical characterization, as well as DNA barcoding markers. The species identity by traditional morphological authentication was in good agreement with both chemical and molecular results [1]. Besides, since *P. villosa* (PV) can be more commonly purchased in herbal markets in Hong Kong SAR than the other species, PV aqueous extract was prepared and then being evaluated for its anti-tumor effects in colon cancer cell-based and tumor-bearing mouse models.

PV aqueous extract was shown to exert potent anti-tumor and anti-metastatic efficacy in human HCT116 colon cancer metastasis mouse model and murine Colon-26 allograft mouse model [2]. Furthermore, the mechanistic studies revealed the regulation of TGF-β-smad2/3-E-cadherin, and FAK-cofilin pathways induced by PV aqueous extract in colon cancer cells [2]. Lastly, an active

component of PV aqueous extract has also been identified for inhibiting colon cancer cells growth [3].

In conclusion, our team has successfully established the comprehensive authentication methods for identifying four *Patrinia* species. The findings from our studies also provide scientific evidences to support the use of PV in colon cancer management.

References:

1. Wong, KH, *et al*. *Scientific Reports*. 2024;14(1):6566.
2. Yang, H, *et al*. *Phytomedicine*. 2023;117:154900.
3. Yang, H, *et al*. *Frontiers in Chemistry*. 2023;11:1195883.

Acknowledgment:

The authors would like to thank Chun-Kwok Wong, Ping-Chung Leung, Julia Kin-Ming Lee, Si Gao, Dandan Hu, Ma-Ho Tong, Chuen-Fai Ku, Cheuk-Kit Ngai for their contributions.

Pharmacological actions of Danggui Buxue Tang (DBT) on oxygen-glucose reperfusion (OGD/R)-insulted mouse brain endothelial (bEnd.3) cells

Karry Yuen-Ching Cheung [a, c], Hei-Yin Wong [b, c], Bun Tsoi [a, c], Sai-Wang Seto [a, c, d, *]

[a] *Department of Food Science and Nutrition, The Hong Kong Polytechnic University, Hong Kong SAR, China;*

[b] *Department of Applied Biology and Chemical Technology, The Hong Kong Polytechnic University, Hong Kong SAR, China;*

[c] *Research Centre for Chinese Medicine Innovation, The Hong Kong Polytechnic University, Hong Kong SAR, China;*

[d] *NICM Health Research Institute, Western Sydney University, Penrith, NSW, 2751, Australia*

**Correspondence: Dr. Seto Sai Wang, saiwang.seto@polyu.edu.hk*

Abstract:

Danggui Buxue Tang (DBT), a traditional Chinese herbal formula comprising Astragali Radix and Angelicae Sinensis Radix, is widely used among menopausal women in Asia due to its reported estrogenic effects. Despite its popularity, the pharmacological impact of DBT on cerebral endothelial cells remains uncertain. This study aimed to investigate the effects of DBT on blood-brain barrier (BBB) breakdown by OGD/R injury in an in vitro model with mouse brain endothelial (bEnd.3) cells.

The effects of DBT on bEnd.3 cell proliferation were assessed using MTT. Its protection against BBB breakdown was examined by western blot and transendothelial electrical resistance (TEER) values. Reactive oxygen species (ROS) level was evaluated by DCFDA stain. Results indicated that DBT (0.01-3 mg/ml) concentration-dependently increased bEnd.3 cell proliferation (***$p < 0.001$). OGD/R injury significantly reduced cell viability by 50%, which DBT (0.01-3 mg/ml) effectively attenuated (***$p < 0.001$). DBT treatment preserved membrane integrity, evidenced by restored expression of ZO-1 and Claudin-5 (*$p < 0.05$) and increased TEER values (****$p< 0.0001$). Moreover, DBT significantly decreased ROS levels (****$p < 0.0001$) in a dose-dependent manner (0.3-3 mg/ml).

This study provided evidence for the therapeutic effectiveness of DBT for vascular dementia via multifaceted therapeutic approach, including protection of BBB integrity and oxidative stress suppression. In recent years, hormone replacement therapy (HRT) has long been the only treatment for distressing menopausal symptoms. However, its clinical use in menopause symptoms management has been questioned as the evidence is growing for the increased risks associated with chronic HRT. Further investigation will delve into the underlying mechanisms and clinical trials

will be conducted to substantiate the potential of DBT as an innovative solution for managing menopausal symptoms while mitigating the risks associated with chronic HRT use.

Isolation, purification and characterization of the hepatoprotective polysaccharides from Dendrobium *loddigesii* Rolfe

Dan Chen [a], Boyu Li [a], Yongbo Wang [a], Yong Chen [a,b], Xuesong Liu [a,b], Tengfei Xu [a,b], Jiawei Ling [a,b*]

[a] *State Key Laboratory of Advanced Drug Delivery and Release Systems, College of Pharmaceutical Sciences, Zhejiang University, Hangzhou, Zhejiang, 310058, China;*

[b] *Cangnan County Qiushi Innovation Research Institute of Traditional Chinese Medicine, Wenzhou, Zhejiang Province, 325899, China.*

**Correspondence: Jiawei Ling, lingjiawei@zju.edu.cn*

Abstract:

Introduction: The rising incidence of liver diseases, particularly those induced by drugs and environmental toxins, underscores the urgent need for safer, more effective therapeutic interventions. Liver injury, characterized by its complex pathophysiology, can lead to severe outcomes, including acute liver failure, highlighting the limitations of traditional therapies, which often entail adverse effects. This backdrop fuels the exploration of alternative treatments, especially those derived from natural sources like polysaccharides extracted from medicinal plants, which are recognized for their antioxidative and anti-inflammatory properties. This study focuses on *Dendrobium loddigesi*i Rolfe polysaccharides (DLPs), evaluated for their hepatoprotective effects against carbon tetrachloride (CCL4)-induced liver injury in murine models.

Materials and Methods: A thorough analysis was conducted, including the extraction and structural characterization of DLPs, along with the assessment of *in vivo* efficacy through serum biochemical markers, liver histopathology, and metabolomic profiling.

Results: DLPs significantly mitigate liver injury markers such as ALT, AST, and AKP, reduces hepatocyte necrosis, and inflammation. Metabolomic insights reveal the role of DLPs in modulating lipid metabolism, essential for managing inflammatory responses and oxidative stress. The study also notes potential prebiotic-like effects of DLPs, enhancing gut microbiota diversity, suggesting a beneficial modulation of the gut-liver axis.

Conclusions: These findings underscore DLPs' potential as a natural therapeutic agent, meriting further clinical trials to assess its efficacy and safety in liver protection.

References:

1. G. Li, H. Chen, F. Shen, S.B. Smithson, G.L. Shealy, Q. Ping, Z. Liang, J. Han, A.C. Adams, Y. Li, D. Feng, B. Gao, M. Morita, X. Han, T.H. Huang, N. Musi, M. Zang, Targeting hepatic serine-arginine protein kinase 2 ameliorates alcohol-associated liver disease by alternative splicing control of lipogenesis, *Hepatology* 78(5) (2023) 1506-1524.
2. C. De Tymowski, F. Dépret, E. Dudoignon, N. Moreno, A.M. Zagdanski, K. Hodjat, B. Deniau, A. Mebazaa, M. Legrand, V. Mallet, Ketamine restriction correlates with reduced cholestatic liver injury and improved outcomes in critically ill patients with burn injury, *JHEP Rep* 6(2) (2024) 100950.
3. X. Chao, M. Niu, S. Wang, X. Ma, X. Yang, H. Sun, X. Hu, H. Wang, L. Zhang, R. Huang, M. Xia, A. Ballabio, H. Jaeschke, H.M. Ni, W.X. Ding, High-throughput screening of novel TFEB agonists in protecting against acetaminophen-induced liver injury in mice, *Acta Pharm Sin* B 14(1) (2024) 190-206.
4. H. Niu, J. Ma, I. Medina-Caliz, M. Robles-Diaz, E. Bonilla-Toyos, M. Ghabril, M.I. Lucena, I. Alvarez-Alvarez, R.J. Andrade, Potential benefit and lack of serious risk from corticosteroids in drug-induced liver injury: An international, multicentre, propensity score-matched analysis, *Aliment Pharmacol Ther* 57(8) (2023) 886-896.
5. Y. Sun, Q. Nie, S. Zhang, H. He, S. Zuo, C. Chen, J. Yang, H. Chen, J. Hu, S. Li, J. Cheng, B. Zhang, Z. Zheng, S. Pan, P. Huang, L. Lian, S. Nie, Parabacteroides distasonis ameliorates insulin resistance via activation of intestinal GPR109a, *Nat Commun* 14(1) (2023) 7740.

Integrated network pharmacology, molecular docking and biological validation revealed the inhibitory effect of a benzoxazinone derivative ZAK-I-57 in hepatocellular carcinoma

Shakeel Ahmad Khan [a], Huihai Yang [a], Terence Kin-Wah Lee [a,b]

[a] *Department of Applied Biology and Chemical Technology, The Hong Kong Polytechnic University*

[b] *bState Key Laboratory of Chemical Biology and Drug Discovery, The Hong Kong Polytechnic University*

**Correspondence: Shakeel Ahmed Khan shakilahmad56@gmail.com*

Terence Kin-Wah Lee, terence.kw.lee@polyu.edu.hk

Abstract:

Introduction: Hepatocellular carcinoma (HCC) is a leading cause of cancer-related deaths worldwide[1]. Although targeted therapies, such as sorafenib, have demonstrated improved survival benefits, they are modest[2]. Therefore, there is an urgent need to discover novel therapeutic agents for the treatment of HCC. Amidst this landscape, the development of novel therapeutic agent is crucial. This study investigated the therapeutic potential of benzoxazinone derivatives, which have emerged as promising candidates owing to their impressive efficacy and safety profiles.

Materials and Methods: This study explored the potential of benzoxazinone derivatives as innovative agents against HCC through a comprehensive approach integrating synthesis, network pharmacology, molecular docking, and extensive in vitro and in vivo evaluations. Derivatives were synthesized and characterized, followed by computational prediction of target interactions and mechanistic pathways. The anticancer activity of the compound was assessed using cell viability assays in HCC cell lines and western blotting to assess its impact on protein expression and antitumor efficacy in HCC xenografts derived from PLC/PRF/5 and patient-derived tumor xenograft (PDTX#1).

Results: ZAK-I-57 emerged as a standout compound, demonstrating optimal drug-likeness and pharmacokinetic properties that complied with ADMET standards. Molecular docking studies revealed strong affinities for key oncogenic targets, which were substantiated by western blotting assays showing the downregulation of the proliferative markers EGFR and c-MYC and upregulation of the apoptotic marker Bax. *In vitro* and in vivo evaluations confirmed ZAK-I-57's potent antitumor activity, significantly reduced tumor volume and weight, surpassed the performance of sorafenib, and maintained an excellent safety profile without notable systemic toxicity.

Conclusions: ZAK-I-57 presents a promising and innovative strategy for HCC treatment as demonstrated through network pharmacology, molecular docking, and both *in vitro* and *in vivo* assessments, supports its potential as a targeted therapeutic option for HCC (US-provisional patent (US63/657,193).

References:

1. Josep M. Llovet, *et al*. nature reviews clinical oncology, 2024. 21: 294-311.
2. Shikun Jiang, et al. Life Sciences, 2020.258:118252.

Investigation of the anti-colon cancer efficacy and mechanisms of Amauroderma rugosum water extract and its polysaccharides

Chengwen ZHENG [a], George Pak-Heng Leung [a,*]

[a] *Department of Pharmacology and Pharmacy, The University of Hong Kong, Hong Kong SAR, China*

**Correspondence: Prof. George Pak-Heng Leung, gphleung@hku.hk*

Abstract:

Introduction: Colorectal cancer is the second most common cause of cancer-related deaths globally[1]. The serious adverse effects of conventional chemotherapeutic drugs make their use in clinical settings difficult. *Amauroderma rugosum* (AR) is a basidiomycete from the *Ganodermataceae* family. AR has been shown to have antioxidant, anti-inflammatory, neuroprotective, and antimicrobial properties. AR extracts have been shown to inhibit the proliferation of lung, liver, and breast cancer cells, but the data was preliminary and generated from *in vitro* studies [2]. The objectives of this study were to evaluate the anti-colon cancer effects of AR water extract (ARW) using *in vitro* and *in vivo* models, as well as the underlying mechanisms of action. Since polysaccharides are one of the main components of AR, the anti-colon cancer effect of AR polysaccharide (ARPS) was also explored.

Materials and Methods: HCT116 and Caco-2 colon cancer cell lines were used as *in vitro* models to investigate the cytotoxic effects of ARW and ARPS. Mitochondrial membrane potential and apoptosis status of the cells were stained with JC-1 and Annexin V-FITC dye, respectively, and then quantified using flow cytometry. The *in vivo* anti-colon cancer effects of ARW and ARPS were studied using a tumor xenograft mouse model. Their mechanisms of action were studied using network pharmacology and Western blot analysis.

Results: ARW and ARPS exhibited cytotoxic effects on HCT116 and Caco-2 colon cancer cells. Following ARW and ARPS treatment, mitochondrial membrane potential decreased while apoptotic cell numbers increased. Oral ARW and ARPS treatment reduced tumor size growth in xenograft tumor-bearing mice. Following 48 hours of ARW treatment, protein levels of phosphor-JNK and cleaved caspase 9 increased.

Conclusions: *In vitro* and *in vivo* experiments demonstrated that ARW and ARPS have anti-colon cancer properties. They lowered mitochondrial membrane potential and triggered apoptosis by upregulating JNK phosphorylation and caspase 9 cleavage.

References:

1. Ionescu, V.A., et al., Colorectal Cancer: From Risk Factors to Oncogenesis. Medicina (Kaunas), 2023. 59(9).
2. Zheng, C.W., T.M.Y. Cheung, and G.P.H. Leung, A review of the phytochemical and pharmacological properties of Amauroderma rugosum. The Kaohsiung Journal of Medical Sciences, 2022. 38(6): p. 509-516.

MCMIA Foundation 現代化中醫藥國際基金

HKTDC 香港貿發局

Programme Book

會議手冊

The 20th International Postgraduates Symposium on Chinese Medicine (IPSCM)

第二十屆國際研究生中醫藥研討會

Hong Kong Convention and Exhibition Centre

香港會議展覽中心

August 16, 2024 (Onsite & Online Symposium)

ISBN 978-988-75370-2-1

The 20th International Postgraduate Symposium on Chinese Medicine
第二十屆國際研究生中醫藥研討會

TABLE OF CONTENT

Welcome Message

Dear participants,

On behalf of the Organizing Committee of the 2024 International Postgraduate Symposium on Chinese Medicine (IPSCM), I would like to extend my warmest welcome to all the students and friends participating in this event.

This year marks the 20th consecutive meeting of IPSCM. As always, its objective is to provide a forum for postgraduate students who are engaged in Chinese medicine research to communicate with each other about their research advance, to enhance their communication and presentation skills, and to broaden their horizons in Chinese medicine and beyond.

I am pleased to say that there will be about one hundred young scientists and friends from Hong Kong, Macau, Mainland China, and Singapore to join the event this year. In addition, nearly 150 abstracts, including 10 oral and 136 poster presentations applications, have been published in the Programme Book printed alongside the main ICMCM's Conference Proceedings. Tianjiang Cup Li Shizhen Youth Outstanding Thesis Award will be presented to ten of the presenters in showing our appreciation and recognition of the students' achievements.

The Organization Committee of the 20th IPSCM is composed of the representatives from six universities in Hong Kong, University of Macau, Shanghai University of Traditional Chinese Medicine and Nanyang Technological University. We are thankful for their time and efforts on the tremendous organizing work.

Last but not least, we would like to express our greatest gratitude to the organization from the Modernized Chinese Medicine International Association (MCMIA), and the Hong Kong Trade Development Council (HKTDC), as well as the generous support from Jiangyin Tianjiang Pharmaceutical Co., Ltd. Without their support, the organization of this meeting would not be possible. We would also like to express our heartfelt gratitude to all the participating higher education institutions. Without your full support, the 20th IPSCM would not have been possible to succeed. I wish the 20th IPSCM a great success and hope all of you enjoy the day!

Yours truly,

Prof. ZHANG Hongjie

Convener, Academic advisory Board of the 20th IPSCM,

Cheung On Tak Endowed Professor in Chinese Medicine, Associate Dean of School of Chinese Medicine, Director of Teaching and Research Division, Hong Kong Baptist University

Email: zhanghj@hkbu.edu.hk

ORGANIZING COMMITTEE

Hong Kong Baptist University
Prof. ZHANG Hongjie (Convenor), School of Chinese Medicine
Mr. CHEN Baisen (Chairman)
Mr. LAM Ka Hei Terence
Ms. BU Ling
Ms. HAN Ruixuan
Ms. YU Xiaofei

The Chinese University of Hong Kong
Prof. LIN Zhixiu, School of Chinese Medicine
Ms. WU Yulin

The University of Hong Kong
Prof. FENG Yibin, School of Chinese Medicine
Ms. ZHANG Xiuying
Ms. CHEN Yuanyuan

The Hong Kong University of Science and Technology
Prof. TSIM Karl, School of Science
Mr. YE Yutong
Ms. Dilidaer Ajiaikebaier

The Hong Kong Polytechnic University
Dr. Seto Sai-wang, Department of Applied Biology and Chemical Technology
Ms. KWOK Carsten Tsun Ka
Mr. HAU Patrick Pak Ting

City University of Hong Kong
Prof. HUANG Yu, Department of Biomedical Sciences
Mr. CHEN Qinghua
Mr. DONG Peihua

University of Macau
Prof. WANG Yitao, Institute of Chinese Medical Sciences

Shanghai University of Traditional Chinese Medicine
Prof. XU Hongxi, School of Pharmacy
Ms. SUN Xueyang

Nanyang Technological University
Ms. ZHANG Catherine, NTU Chinese Medicine Clinic
Mr. Chiang John

ACKNOWLEDGEMENTS

The Organizing Committee of the 20th International Postgraduate Symposium on Chinese Medicine is grateful for the generous support of the following institutions and sponsors who made this symposium become possible (in no particular order):

The Chinese University of Hong Kong
School of Chinese Medicine; Institute of Chinese Medicine

The University of Hong Kong
School of Chinese Medicine

Hong Kong Baptist University
School of Chinese Medicine

The Hong Kong University of Science and Technology
Division of Life Science

The Hong Kong Polytechnic University
Department of Applied Biology and Chemical Technology

City University of Hong Kong
Department of Department of Biomedical Sciences

University of Macau
Institute of Chinese Medical Sciences

Shanghai University of Traditional Chinese Medicine
School of Pharmacy

Jiangyin Tian Jiang Pharmaceutical Co., Ltd.

This material / event is funded by the Professional Services Advancement Support Scheme of the Government of the Hong Kong Special Administrative Region
此物品 / 活動由香港特別行政區政府的專業服務協進支援計劃資助。

PROGRAMME

Date: 16-08-2024 Time:14:00-17:00 Venue: Room N101B / ZOOM

Time	Event
12:30 - 14:00	**Registration**
14:00 - 14:20	**Opening Ceremony & Scholarship Ceremony** — MCMIA Foundation Fellowship Awards Presentation Ceremony — IPSCM Opening Ceremony
14:20 - 14:33	**O-01 Rhapontin alleviates C-reactive protein induced diabetic kidney disease through SMAD3-ACSM3 mediated ferroptosis** *By Wang Yifan, The University of Hong Kong*
14:33 - 14:46	**O-02 Feasibility and effects of Traditional Chinese Medicine lifestyle medicine program for depression: A pilot randomized controlled trial** *By Ruan Jia Yin, The Hong Kong Polytechnic University*
14:46 - 14:59	**O-03 Sophoricoside, from Fructus Sophorae, promotes hair growth via activation of M4 muscarinic AChR in dermal papilla cells** *By Yuen Ka Wing Gary, The Hong Kong University of Science and Technology*
14:59 - 15:12	**O-04 Intelligent TCM Medicinal Materials Recommendation System for Non-alcoholic Fatty Liver Disease Based on Knowledge Graph and RKGE Model** *By Gu Tianyu, Shanghai University of Traditional Chinese Medicine*
15:12 - 15:25	**O-05 Preclinical study on the anti-proliferative, anti-metastatic effects of Broussoflavonol F and its underlying mechanisms in colon cancer** *By ZHU Yiying, The Chinese University of Hong Kong*
15:25 - 15:45	**Break & poster presentation**
15:45 - 15:58	**O-06 Oral - gut microbes and TCM tongue in pre-diabetes and type 2 diabetes and dynamic change characteristics of progress** *By Deng Jialin, Shanghai University of Traditional Chinese Medicine*
15:58 - 16:11	**O-07 Bioactivity Potency Evaluation, Target Identification, and Mechanism Elucidation of Arylnaphthalene Lignan Compounds as Anticancer and Antiviral Agents** *By Abdullah Al Mamun, Hong Kong Baptist University*
16:11 - 16:24	**O-08 Chemical profiling and comparative pharmacokinetics of an herbal prescription (CDD-2103) in normal and colitis mice** *By Cheng Ka Wing, Hong Kong Baptist University*
16:24 - 16:37	**O-09 Study on active components and mechanism of total alkaloids of Leonurus in anti-allergic asthma** *By Zheng Yannan, Shanghai University of Traditional Chinese Medicine*
16:37 - 16:50	**O-10 Targeting delivery of miR-146a via IMTP modified milk exosomes exerted cardioprotective effects by inhibiting NF-κB signaling pathway after myocardial ischemia-reperfusion injury** *By Meng Wanting, Shanghai University of Traditional Chinese Medicine*
16:50 - 16:55	**Break**
16:55 - 17:00	**Award Presentation Ceremony**

ORAL PRESENTATION INDEX

Code	Presenter	Title
O-01	**Wang Yifan** *The University of Hong Kong*	**Rhapontin alleviates C-reactive protein induced diabetic kidney disease through SMAD3-ACSM3 mediated ferroptosis**
O-02	**Ruan Jia Yin** *The Hong Kong Polytechnic University*	**Feasibility and effects of Traditional Chinese Medicine lifestyle medicine program for depression: A pilot randomized controlled trial**
O-03	**Yuen Ka Wing Gary** *The Hong Kong University of Science and Technology*	**Sophoricoside, from Fructus Sophorae, promotes hair growth via activation of M4 muscarinic AChR in dermal papilla cells**
O-04	**Gu Tianyu** *Shanghai University of Traditional Chinese Medicine*	**Intelligent TCM Medicinal Materials Recommendation System for Non-alcoholic Fatty Liver Disease Based on Knowledge Graph and RKGE Model**
O-05	**ZHU Yiying** *The Chinese University of Hong Kong*	**Preclinical study on the anti-proliferative, anti-metastatic effects of Broussoflavonol F and its underlying mechanisms in colon cancer**
O-06	**Deng Jialin** *Shanghai University of Traditional Chinese Medicine*	**Oral - gut microbes and TCM tongue in pre-diabetes and type 2 diabetes and dynamic change characteristics of progress**
O-07	**Abdullah Al Mamun** *Hong Kong Baptist University*	**Bioactivity Potency Evaluation, Target Identification, and Mechanism Elucidation of Arylnaphthalene Lignan Compounds as Anticancer and Antiviral Agents**
O-08	**Cheng Ka Wing** *Hong Kong Baptist University*	**Chemical profiling and comparative pharmacokinetics of an herbal prescription (CDD-2103) in normal and colitis mice**
O-09	**Zheng Yannan** *Shanghai University of Traditional Chinese Medicine*	**Study on active components and mechanism of total alkaloids of Leonurus in anti-allergic asthma**
O-10	**Meng Wanting** *Shanghai University of Traditional Chinese Medicine*	**Targeting delivery of miR-146a via IMTP modified milk exosomes exerted cardioprotective effects by inhibiting NF-κB signaling pathway after myocardial ischemia-reperfusion injury**

ABSTRACTS INDEX

Code	Presenter	Title
B-01	**Shan Yu** *Shanghai University of Traditional Chinese Medicine*	**Mechanism of LLDT-8 Regulating the Biological Function of RA-FLS through WNT5A Signaling Pathway**
B-02	**Song Ting** *Shanghai University of Traditional Chinese Medicine*	**Mahuang Lianqiao Chixiaodou decoction can improve the inflammatory response of IgA nephropathy rats by regulating C3a/C3aR signaling pathway**
B-03	**Zhao Yu** *Shanghai University of Traditional Chinese Medicine*	**The neuroprotective effects of SHPL-49 were mediated by microglia-dependent amelioration of endothelial dysfunction after cerebral ischemia**
B-04	**Jiang Weihao** *the Second Affiliated Hospital of Guangzhou Medical University*	**Caffeic acid, derived from the natural herbal medicine chuanxiong, improves heart function and alleviates myocardial fibrosis after myocardial infarction**
B-05	**Wang Yanru** *Shanghai University of Traditional Chinese Medicine*	**XHF reduces renal tubular epithelial cell senescence and improves renal interstitial fibrosis by inhibiting PKC-delta and its related signalling pathway**
B-06	**Xie Mengting** *Guangzhou Medical University*	**TaoHe ChengQi Decoction mitigates acute lung injury by inhibiting formation of neutrophil extracellular traps and MAPK pathway**
B-07	**Zeng Yixuan** *Southern Medical University*	**Yi-Yi-Fu-Zi-Bai-Jiang-San ameliorates ulcerative colitis by modulating ferroptosis via bioinformatics analyses and experimental verification**
B-08	**Li Niren** *Southern Medical University*	**Mechanisms of total flavonoids of Sophora flavescens for the Treatment of NAFLD based on the Combination of Bioinformatics and Experimental Validation**
B-09	**Deng Bingying** *Southern Medical University*	**Gualou Xiebai Banxia Decoction improves Post-infarction Ventricular Remodeling by Activating ALDH2**
B-10	**Shao Baoyi** *University of Hong Kong*	**Adiponectin alleviates acute kidney injury-related pyroptosis and inflammation by accelerating NLRP3 degradation**
B-11	**Wu Jiaying** *Hong Kong Baptist University*	**Luteolin and scoparone produce synergistic anti-rheumatoid arthritis effects in experimental models**
B-12	**CHEN Baisen** *Hong Kong Baptist University*	**Development of Plant Natural Product Ardisiphenol D into a Therapeutic Agent for the Treatment of advanced Colorectal Cancer**

ABSTRACTS INDEX

ABSTRACTS INDEX

Code	Presenter	Title
B-25	**Xia Chenxi** *Hong Kong University of Science and Technology*	**Seabuckthorn Flavonoids Mimic Neurotrophic Functions in Inducing Neuronal Cell Differentiation and Restore Depressive Disorder in CUMS-Induced Mice**
B-26	**Ye Yutong** *Hong Kong University of Science and Technology*	**Yu Ping Feng San Prevents the Cisplatin-induced Multi-Drug Resistance of Escherichia coli**
B-27	**Zhao Yu** *Shanghai University of Traditional Chinese Medicine*	**ZhengQiPian preparation against COVID-19 infection by anti-inflammatory and antiviral effects**
B-28	**Yang Kunru** *Shanghai University of Traditional Chinese Medicine*	**Andrographolide promotes lymphangiogenesis and lymphatic vessel remodeling to alleviate secondary lymphedema**
B-29	**FU Mengwei** *Shanghai University of Traditional Chinese Medicine*	**Stachydrine Hydrochloride Inhibits Cardiac Hypertrophy through NOX2-ROS Pathway**
B-30	**WU Yulin** *Chinese University of Hong Kong*	**20(S)-Ginsenoside Rh2 Overcomes Gemcitabine Resistance in Pancreatic Cancer by Inhibiting LAMC2 Expression**
B-31	**Lin Jie** *Shanghai University of Traditional Chinese Medicine*	**Studying the correlation between the analgesic effect of acupunctures with different parameters and mechanosensitive ATP release at the treated acupuncture points**
B-32	**Ding Lingyu** *Shanghai University of Traditional Chinese Medicine*	**Bushen Huoxue Recipe attenuates polycystic ovary syndrome in a rat model by mitigating lipid peroxidation and inhibiting ferroptosis**
B-33	**Li Yujia** *Shanghai University of Traditional Chinese Medicine*	**"CD39-ATP-P2Y2Rs" in the treated acupoints contributed to the analgesic mechanism of acupuncture**
B-34	**MA Qianqian** *China Pharmaceutical University*	**In vitro and in vivo investigation of Bai Jiang Cao on colon cancer.**
B-35	**Cui Xiaoming** *Hong Kong Baptist University*	**Identification of Potential Mitophagy Enhancers from Traditional Chinese Medicine for Alzheimer's Disease Treatment**
B-36	**Xu Kangdi** *Shanghai University of Traditional Chinese Medicine*	**Effects and Mechanisms of Electroacupuncture on Sepsis-induced Immunosuppression**

ABSTRACTS INDEX

Code	Presenter	Title
B-37	**Yao Ruixue** *Shanghai University of Traditional Chinese Medicine*	**Guizhi-Gancao Decoction Alleviates Phenylephrine-induced Cardiac Hypertrophy and Suppresses Store-operated Ca2+ Entry**
B-38	**Shi Xiaona** *China Pharmaceutical University*	**Investigation of the inhibitory effects of active fractions from Rubia yunnanensis on colon cancer cells**
B-39	**Hossain Mohammad Farhad** *University of Hong Ko*	**Small Molecule Mitigates Alzheimer's Disease Pathogenesis in Mouse Models:Involvement of ROR α-CLOCK-C/EBP- α Axis**
B-40	**Wei Xinyu** *Shanghai University of Traditional Chinese Medicine*	**Electroacupuncture at Neiguan(PC6) improves depressive-like behaviors in OBx mice by restoring hippocampal CA1 neurophysiological activity**
B-41	**Gao Siyuan** *Shanghai University of Traditional Chinese Medicine*	**Protective effect of Chinese herb Prunella vulgaris L. on esophageal injury in Esophago-gastro-duodenal anastomosis (EGDA) rat model**
B-42	**Fan Xiaoyun** *Hong Kong Baptist University*	**Inhibition of JAK2-STAT3 signaling contributes to the effects of egg yolk oil in ameliorating atopic dermatitis in pharmacological models**
B-43	**Gu Yiming** *Shanghai University of Traditional Chinese Medicine*	**Electroacupuncture alleviates cancer-induced bone pain via NRG1/mTOR pathway in the dorsal horn of spinal cord**
B-44	**Chen Hongyu** *Shanghai University of Traditional Chinese Medicine*	**Comprehensive Applications of the Artificial Intelligence Technology in Traditional Chinese medicine**
B-45	**Deng Yanping** *Shanghai University of Traditional Chinese Medicine*	**Xin Jia Xuan Bai Cheng Qi decoction alleviates Idiopathic Pulmonary Fibrosis by reducing neutrophil infiltration and the release of pro-inflammatory cytokines**
B-46	**Li Sze Man Amy** *Hong Kong Baptist University*	**Inhibition of MGMT is involved in the anti-glioma effects of Si-Jun-Zi-Tang in combination with temozolomide**
B-47	**Yin Zhiyang** *Shanghai University of Traditional Chinese Medicine*	**The Effect of Massaging Bladder Meridian Points on Central Endogenous Cannabinoids System and Anxiety**
B-48	**Leung Ming Ki Maggie** *Hong Kong Baptist University*	**Investigate the therapeutic potential of targeting TRPM7 by carvacrol to mitigate Alzheimer's disease-associated neuroinflammation**

ABSTRACTS INDEX

Code	Presenter	Title
B-49	**Luo Hongshan** *Hunan University of Chinese Medicine*	**Effect and mechanism of Prunella vulgaris L. extract on alleviating lipopolysaccharide-induced acute mastitis in protecting the blood-milk barrier and reducing inflammation**
B-50	**Lu Yu** *Shanghai University of Traditional Chinese Medicine*	**Treatment of Electroacupuncture at Zusanli(ST36) and Sanyinjiao(SP6) acupoints intervenes in morphine addiction behavior by regulating the dCA1 → NAc shell circuit**
B-51	**Wang Peng** *Hunan University of Chinese Medicine*	**Chemical Composition and Anti-Breast Cancer Activity of the Petroleum Ether Fraction of Alocasia cucullata (Lour.) Schott**
B-52	**Yang Jiafan** *Shanghai University of Traditional Chinese Medicine*	**Effect of Jianyao Qiangji formula on lumbar spine instability-induced intervertebral disc degeneration model mice**
B-53	**Chu ye** *Guilin Medical University*	**Study on the effect and mechanism of the petroleum ether extract of Kirin on the improvement of pruritus symptoms induced by 1-chloro-2,4-dinitrobenzene in mice with atopic dermatitis**
B-54	**Liu Linhao** *Guilin Medical University*	**Advanced network pharmacology-based approach to investigate the mechanism of Huanglian Jiedu Decoction in treating Alzheimer's disease by affecting HSP90AA1-NLRP3-IFITM3-γ-secretase pathway**
B-55	**Chun Au-yeung** *Hong Kong Polytechnic University*	**Traditional Chinese medicine (TCM) formula Er Zhi Wan (EZW) promotes myogenesis in primary myoblasts of aging animal model**
B-56	**SUN Xueyang** *Shanghai University of Traditional Chinese Medicine*	**Polysaccharopeptide of Coriolus versicolor inhibits the re-proliferation of quiescent prostate cancer cells by promoting the degradation of CDK4/6-CyclinD3**
B-57	**Trinh Thach Thi Nguyen** *Shanghai University of Traditional Chinese Medicine*	**Yokukansan Exerts Antidepressant-like Effects in Rats by Modulating Neuroinflammation and Neurotrophin Levels**
B-58	**QI Wensheng** *Hong Kong Polytechnic University*	**Tao-Hong-Si-Wu decoction ameliorates hepatic lipid accumulation in female mice with heart failure and preserved ejection fraction**
B-59	**Cai Jiayuan** *Shanghai University of Traditional Chinese Medicine*	**Research Advances on Centella Asiatica in Treatment of Diabetes Mellitus and Its Complications Pharmacological Effects**

ABSTRACTS INDEX

Code	Presenter	Title
B-60	**Li Mengjia** *Guilin Medical University*	**Therapeutic Effect of Huanglian Jiedu Decoction on Mice with Atopic Dermatitis and Its Effect on Intestinal Flora**
B-61	**Li Hui** *Shanghai University of Traditional Chinese Medicine*	**Activation of PI3K/AKT/mTOR signaling pathway by acupuncture preconditioning attenuates cardiac injury in acute exhaustion exercise rats**
B-62	**Xu Yuan** *Liaoning University of Traditional Chinese Medicine*	**Mechanisms of Traditional Chinese Medicine Formulations in Treating Rheumatic Bone Diseases: Safety, Efficacy, and Molecular Mechanisms**
B-63	**Jiang Linhong** *Shanghai University of Traditional Chinese Medicine*	**Anti-inflammatory effects of acupuncture application in treatment of chronic obstructive pulmonary diseases**
B-64	**Wu Junyu** *University of Hong Kong*	**Genipin-activating PPARγ impedes CCR2-mediated macrophage infiltration into postoperative liver to suppress recurrence of hepatocellular carcinoma**
B-65	**Chen Yacun** *University of Hong Kong*	**Ginseng-Epimedii formula ameliorated experimental Sjögren's syndrome via reducing IL-6 production**
B-66	**Cao Fang** *Shanghai University of Traditional Chinese Medicine*	**Effects and mechanism of Ruanjian Qingmai Granules on improving clopidogrel resistance in arteriosclerosis obliterans patients**
B-67	**Ma Kai** *Shanghai University of Traditional Chinese Medicine*	**Hongyu Yin alleviates dextran sulfate sodium-induced colitis in mice through inhibition of inflammation and regulation of the intestinal microbiota**
B-68	**Zhang Weihao** *Hong Kong Baptist University*	**Impact of sulfur fumigation on anticancer activity of ginger**
B-69	**Kwok Tsun Ka** *Hong Kong Polytechnic University*	**Medulla Tetrapanacis water extract ameliorates Staphylococcus aureus-induced mastitis in human mammary epithelial cell and LPS-induced mastitis in lactating SD rats via MAPKs signalling pathway**
B-70	**Yao Yong** *Shanghai University of Traditional Chinese Medicine*	**Study on the dynamic temperature field changes and anti-inflammatory mechanism of the whole process of moxibustion treatment for RA based on hydrogel MEMS temperature sensitive array**
B-71	**Du Wenlan** *Shanghai University of Traditional Chinese Medicine*	**Aconine attenuates cartilage endplate degeneration via inhibiting osteoclast ferroptosis in ovariectomized mice**

ABSTRACTS INDEX

ABSTRACTS INDEX

Code	Presenter	Title
C-01	**Yang Yunyi** *Shanghai University of Traditional Chinese Medicine*	**Observation on the clinical effect of Astragalus on vascular endothelial function in type 2 diabetes mellitus patients with qi deficiency syndrome**
C-02	**ZHANG Fengyu** *Shanghai University of Traditional Chinese Medicine*	**Clinical efficacy observation of Modified Huangqi Guizhi Wuwu Decoction in treating diabetic peripheral neuropathy**
C-03	**Qu Xiaoxiao** *Shanghai University of Traditional Chinese Medicine*	**A multicenter clinical study on the treatment of refractory type 2 diabetes mellitus with deficiency of qi and yin by Xiaoke formula**
C-04	**Qu Xiaoxiao** *Shanghai University of Traditional Chinese Medicine*	**A study on the objectivized characteristics of tongue image in patients with hypopituitarism**
C-05	**Chen Junyi** *Shanghai University of Traditional Chinese Medicine*	**Baduanjin based on AR technology improves metabolic associated fatty liver disease in breast cancer patients undergoing endocrine treatment: a 12-week randomized controlled trial**
C-06	**Cao Hengjie** *Shanghai University of Traditional Chinese Medicine*	**A comprehensive insight on acupuncture for premature ovarian insufficiency: A Systematic Review and Meta-Analysis of Randomized Controlled Trials**
C-07	**Guan Haolin** *Shanghai University of Traditional Chinese Medicine*	**The application of traditional Chinese medicine combined with surgical treatment in bronchopleural fistula and a case report of BPF complicated by occluder-induced esophageal perforation after left pneumonectomy**
C-08	**Zhang Yalin** *Shanghai University of Traditional Chinese Medicine*	**Research progress of traditional Chinese medicine on the spleen deficiency syndrome of colorectal adenoma**
C-09	**Wei Dongjue** *Hong Kong Baptist University*	**Bridging the Gap: A Comprehensive Study on Traditional Chinese Medicine Strategies for Managing Adult Irritable Bowel Syndrome**
C-10	**Deng Jianya** *Chengdu University of Traditional Chinese Medicine*	**The Effects of Tai Chi Combined with Acupressure in Treating Anxiety-induced Insomnia Among College Students: A Randomized Controlled Trial**
C-11	**Zhou Jielong** *Shanghai University of Traditional Chinese Medicine*	**Efficacy of USEA in Preventing Recurrence of Uric Acid Stones After Minimally Invasive Surgery**
C-12	**Zhang Jiyu** *Shanghai University of Traditional Chinese Medicine*	**Risk Assessment of Coronary Artery Obstruction in Coronary Heart Disease Based on Fusion of Chinese and Laboratory Test Data**

ABSTRACTS INDEX

Code	Presenter	Title
C-13	**Li Wei** *Shanghai University of Traditional Chinese Medicine*	**Research on syndrome identification model for patients with different degrees of coronary artery lesions based on multimodal data of traditional Chinese medicine diagnosis**
H-01	**Guo Jianbo** *Shanghai University of Traditional Chinese Medicine*	**Health and Economic Evaluation of Herbal Medicines for Heart Failure: A Population-Based Cohort Study**
Q-01	**Li Jieyun** *Shanghai University of Traditional Chinese Medicine*	**Spin practices and low reporting quality in studies on prediction model of diagnosis based on TCM information: A systematic review and evidence mapping**
P-01	**Man Ka Yi** *Hong Kong Polytechnic University*	**Phytochemical analysis of Prunus seed for medical value evaluation**
P-02	**YANG Songru** *Shanghai University of Traditional Chinese Medicine*	**Stachydrine hydrochloride ameliorates chronic heart failure in mice by inhibiting GRK3-mediated β 1 -AR desensitization 1**
P-03	**Chen Wei** *Hong Kong Baptist University*	**Untargeted metabolomics-based identification of insomnia-ameliorating compounds from five mushrooms**
P-04	**Huang Zhiya** *Shanghai University of Traditional Chinese Medicine*	**Artemisia annua L. essential oil alleviates 2,4-dintrochlorobenzene-induced atopic dermatitis in mice by inhibiting inflammatory response and repairing the skin barrier**
P-05	**LAM Ka Hei Terence** *Hong Kong Baptist University*	**Design and Synthesis of Justicia Plant-Derived Arylnaphthalene Lignans as Novel Anti-Avian Influenza Virus Agent**
X-01	**Li Danyang** *Shanghai University of Traditional Chinese Medicine*	**Prospects of Janus nanofiber membrane loaded with Huangbai liniment for diabetic wound healing**
X-02	**Sun Manqin** *Shanghai University of Traditional Chinese Medicine*	**Global Trends and Hotspots in Moxibustion Therapy: A Bibliometric Analysis**
X-03	**Sun Manqin** *Shanghai University of Traditional Chinese Medicine*	**Photobiomodulation and mucosal lesions: a visual and bibliometric analysis of 2004-202**
X-04	**TU Siyuan** *Shanghai University of Traditional Chinese Medicine*	**Diagnosis from the "Whole Tongue" Objectification of tongue diagnosis and construction of intelligent diagnosis model based on multimodal data of non-puerperal mastitis**

ABSTRACTS INDEX

Code	Presenter	Title
X-05	**ZHANG Yahan** *Shanghai University of Traditional Chinese Medicine*	**A RISK WARNING MODEL FOR ANEMIA RISK BASED ON FACIAL VISIBLE LIGHT REFLECTANCE SPECTROSCOPY**
X-06	**ZHANG Fengyu** *Shanghai University of Traditional Chinese Medicine*	**Research progress of warming Yang and promoting blood circulation in the treatment of middle and advanced diabetic peripheral neuropathy**
X-07	**Li Jingbo** *Shanghai University of Traditional Chinese Medicine*	**Effects of Transcutaneous Auricular Vagus Nerve Stimulation for Management of Insomnia: A Protocol for Systematic Review and Meta-analysis**
X-08	**Wang Junbo** *Shanghai University of Traditional Chinese Medicine*	**Director Sun Jianming based on "cultivating earth and flourishing wood" treatment of foreskin balanitis highlights**
X-09	**Geer A** *Shanghai University of Traditional Chinese Medicine*	**Meta-analysis of Traditional Chinese Medicine External Application for the Treatment of Malignant Pleural Effusion**
X-10	**WU Changle** *Shanghai University of Traditional Chinese Medicine*	**Clinical study on the characteristics and patterns of acupoint sensitization in cervical and shoulder myofascial pain syndrome**
X-11	**Xia Xue** *Shanghai University of Traditional Chinese Medicine*	**Implication for the Traditional Chinese Physician's Career Path from The Doctor's Oral History —— The Life History of a Traditional Chinese Physician ANG Liang Kuan**
X-12	**Woon Qi Hui Venus** *Nanyang Technological University*	**Acupuncture for Chronic Post-Surgical Pain: A Systematic Review**
X-13	**Liao Weiyao** *University of Hong Kong*	**Anti-depressant effects of 20(S)-protopanaxadiol-loaded nanomicelles in corticosterone-induced mouse model of depression**
X-14	**Ding Hanyi** *Shanghai University of Traditional Chinese Medicine*	**Standardization of English Translation for Traditional Chinese Medicine Disease Terminology: A Case Study of "Ben Tun"**
X-15	**Ding Hanyi** *Shanghai University of Traditional Chinese Medicine*	**A historical investigation of the" Unified case of diseases in traditional Chinese medicine" in the Republic of China**
X-16	**GEORGIA LIM MIN HAN** *Nanyang Technological University*	**Assessing the efficacy of Chinese herbal medicine in managing chronic post-surgical pain in adults**

ABSTRACTS INDEX

Code	Presenter	Title
X-17	**Huang Tian-ai** *Shanghai University of Traditional Chinese Medicine*	**Uncovering the Potential Dose-Effect Relationship in Acupuncture Analgesia through Motion Tracking and Machine Learning Techniques**
X-18	**Ni Fengjun** *Shanghai University of Traditional Chinese Medicine*	**Effect of low intensity pulse ultrasound on pain of knee osteoarthritis: A meta-analysis of randomized controlled trials**
X-19	**HEW JING XUAN** *Nanyang Technological University*	**Chinese Herbal Medicine for Chronic Headache: A Systematic Review**
X-20	**CHYE JIA WEN** *Nanyang Technological University*	**Acupuncture for Chronic Headache: A Systematic Review**
X-21	**Lam Wai Ching** *Nanyang Technological University*	**Acupuncture for neurological and neuropsychiatric symptoms of Long COVID: a systematic review and meta-analysis**
X-22	**Cao Fang** *Shanghai University of Traditional Chinese Medicine*	**Cutaneous nodular polyarteritis presenting as refractory ulcers on both lower extremities: a case report**
X-23	**LIU Yi** *Shanghai University of Traditional Chinese Medicine*	**THE STUDY ON TONGUE COATING MICROBIOME POTENTIAL BIOMARKERS OF CHRONIC ATROPHIC GASTRITIS WITH SPLEEN-STOMACH DAMPNESS-HEAT SYNDROME**
X-24	**Xie Yuan** *Shanghai University of Traditional Chinese Medicine*	**Study on the causal relationship between pregnancy complications and diabetes and cardiovascular disease**
X-25	**Luo Jielian** *Shanghai University of Traditional Chinese Medicine*	**Effective Treatment of a Brain Abscess Through the Integration of Traditional Chinese Medicine and Western Medicine: A Case Report**
X-26	**Zhang Guohao** *Shanghai University of Traditional Chinese Medicine*	**Digital Characteristics of Tongue and Pulse Images in Patients with Upper Urinary Tract Stones**
X-27	**Zhou Jielong** *Shanghai University of Traditional Chinese Medicine*	**Development and Validation of a Postoperative Recurrence Risk Assessment Model for Upper Urinary Tract Stones Incorporating Traditional Chinese Medicine Constitutions**
X-28	**Yang Qiaorui** *Shanghai University of Traditional Chinese Medicine*	**PATHOGENESIS AND CHARACTERISTICS OF METABOLIC SYSTEM IN OFFSPRING FROM MATERNAL POLYCYSTIC OVARY SYNDROME BASED ON THE THEORY OF FETAL TOXICITY-LATENT PATHOGENICITY**

ABSTRACTS INDEX

Code	Presenter	Title
X-29	**Wang Yiming** *Chengdu University of Traditional Chinese Medicine*	**Professor Zhang Zhiwen's experience in the treatment of interstitial lung fibrosis using the Sanjiao sub-regulation method**
X-30	**Wang Yichen** *Shanghai University of Traditional Chinese Medicine*	**Recognition of Traditional Chinese Medicine Pulse Signals Based on Convolutional Recurrent Neural Networks**
X-31	**Xu Ruiqi** *Shanghai University of Traditional Chinese Medicine*	**CONSTRUCTION OF KNOWLEDGE GRAPH FOR TCM SYNDROME DIFFERENTIATION OF DIABETES MELLITUS**
X-32	**CHEN HOU YU** *Nanyang Technological University*	**Comparative analysis of solvent efficiency in extracting active components of Atractylodis macrocephalae rhizome (AMR) (白朮) using herbal extraction at 60℃, solid phase extraction (SPE), and targeted liquid chromatography-mass spectrometry (LC-MS) multiple reaction monitoring (MRM).**
X-33	**CHIZ YI LIN** *Nanyang Technological University*	**Comparative analysis of components of Atractylodes Macrocephala (白朮) at 0°C extraction based on Liquid Chromatography-Mass Spectrometry (LC-MS) Multiple Reaction Monitoring (MRM)**
V-01	**He Jinjin** *Hong Kong Baptist University*	**Deoxyelephantopin Exerts Anti-Renal Cell Carcinoma Effects and Inhibits the PI3K/AKT/mTOR/HIF1α Signaling Pathway**
V-02	**Zhang Shijia** *Hong Kong Baptist University*	**Inhibition of PI3K/Akt signaling pathway is involved in the inhibitory effects of luteolin-plus-scoparone on the hyperproliferation of fibroblast-like synoviocytes**
V-03	**Ma Huimin** *Shanghai University of Traditional Chinese Medicine*	**Exploration of Xu Xiaoli's Touching Complaints: Pulse Diagnosis in Early Chinese Medicine**
V-04	**Chen Si** *Hong Kong Baptist University*	**Anti-mesangial proliferative glomerulonephritis effects of the Chinese medicine formula Da-Yu-Gong Decoction**
V-05	**Yu Xiaofei** *Hong Kong Baptist University*	**Ginsenoside Rg3 in combination with artesunate overcomes sorafenib resistance in hepatocellular carcinoma models**

ABSTRACTS INDEX

ORAL PRESENTATION ABSTRACTS

O-01

Rhapontin alleviates C-reactive protein induced diabetic kidney disease through SMAD3-ACSM3 mediated ferroptosis
土大黃苷經由 SMAD3/ACSM3 介導的鐵死亡通路減輕 C 反應蛋白誘發的糖尿病腎病

WANG Yifan[1], YOU Yongke[2], Guo Jianbo[1], SHAO Baoyi[1], LAN Huiyao[3,4], CHEN Haiyong[1,5]

[1] *Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong, China.*

[2] *Department of Nephrology, Shenzhen University General Hospital, Shenzhen University, Shenzhen, Guangdong, China.*

[3] *Department of Nephrology and Pathology, Guangdong Provincial People's Hospital, Southern Medical University, Guangzhou, China.*

[4] *Department of Medicine & Therapeutics, Chinese University of Hong Kong, Hong Kong, China. 5Department of Chinese Medicine, The University of Hong Kong-Shenzhen Hospital, Shenzhen, China.*

Abstract:

Background: Accumulated evidence indicated that C-reactive protein (CRP) enhances diabetic kidney disease (DKD) via Smad3 signaling pathway[1]. Acyl-CoA synthetase medium-chain family member 3 (ACSM3) locates on the membrane of mitochondria to catalyze fatty acids[2]. Ferroptosis is one type of cell deaths, featured with iron-dependent phospholipid peroxidation[3]. This study determined whether CRP promotes DKD via Smad3-ACSM3 mediated ferroptosis and explore potential therapeutics by Chinese medicine.

Methods: CRP transgenic (Tg) × db/db, CRPtg × db/dm, Smad3 knockout (KO) × db/db and Smad3 KO × db/m mice were used in the study. Differentially expressed genes in CRPtg × db/db mice were analyzed by the RNA sequencing. To evaluate protective role of ACSM3, AAVs with ACSM3 overexpression were administered into db/db mice. In vitro, HK-2 cells were treated with CRP with/without blocking of CRP receptor by CD32b antibody or treated with Smad3 inhibitor SIS3 were employed. Ferroptosis indexes were measured by IF, WB and qPCR. High through output molecular docking and cellular thermal shift assay (CETSA) were conducted to identify candidate compounds targeting ACSM3.

Results: Overexpression of CRP in diabetic mice significantly enhanced ferroptosis in kidneys. The RNAseq result indicated that ACSM3 level was significantly downregulated in CRPtg × db/db mice, compared with CRPtg × db/dm mice. Interestingly, deletion of Smad3 alleviated the ferroptosis and reversed ACSM3 deficiency in diabetic kidneys. Overexpression of ACSM3 in diabetic mice led to ferroptosis alleviation in kidneys. Consistently, the ferroptosis induced by CRP in vitro were reversed by SIS3, or the blockade of CRP receptor, or the overexpression of ACSM3. Furthermore, through the high through output molecular docking prediction and CETSA, we found that Rhapontin was one of potential compounds to suppress ferroptosis by targeting ACSM3.

Conclusion: Targeting Rhapontin on ACSM3 and SMAD3 have therapeutic potential for CRP induced ferroptosis in DKD.

Acknowledgement:

The study was supported by the Hong Kong Research Grants Council (GRF No. 17125323, No. 17109019) and the Shenzhen Science and Innovation Fund (JCYJ20210324114604013)

References:

1. You, Y.-K. et al. (2016) C-Reactive Protein Promotes Diabetic Kidney Disease in db/db Mice via the CD32b-Smad3-mTOR signaling Pathway. *Scientific reports*. [Online] 6 (1), 26740–26740.
2. Xiao, Xiao et al. "Liver ACSM3 Deficiency Mediates Metabolic Syndrome via a Lauric Acid-HNF4α-P38 MAPK Axis." *The EMBO journal* 43.4 (2024): 507–532. Web.
3. Jiang, Xuejun, Brent R Stockwell, and Marcus Conrad. "Ferroptosis: Mechanisms, Biology and Role in Disease." *Nature reviews. Molecular cell biology* 22.4 (2021): 266–282. Web.

O-02

Feasibility and effects of Traditional Chinese Medicine lifestyle medicine program for depression: A pilot randomized controlled trial

中醫生活方式醫學專案治療抑鬱症的可行性及效果：一項先導隨機對照試驗

Jia Yin Ruan[1], Yuen Shan Ho[1] and Wing Fai Yeung[1]

[1] *School of Nursing, The Hong Kong Polytechnic University.*

Abstract:

Introduction: Integrative lifestyle medicine may be effective in relieving depression, and the Traditional Chinese Medicine (TCM) lifestyle medicine (TCMLM) program may be a potential option1. However, there is limited evidence regarding its feasibility and effects. This study aimed to assess the feasibility and effects of the TCMLM program on depression and other health-related outcomes in depressed adults.

Materials and Methods: From April to October 2023, a two-arm, pilot randomized controlled trial was conducted in Hong Kong. Forty-two subjects with moderate level of depression were recruited from the community and randomly assigned in a 1:1 ratio to either the TCMLM program (Intervention group) or the Waitlist control group (WLCG). The intervention group participated in six 2-hour training sessions held weekly and guided them in implementing lifestyle changes and coping strategies based on TCM health preservation theory. Outcome measures incorporated Patient Health Questionnaire-9 (depression)2,3, Generalized Anxiety Disorder-7 (anxiety), Fatigue Assessment Scale (fatigue), Perceived Stress Scale (stress), Insomnia Severity Index (insomnia), Short Form 6-Dimension (quality of life), General Self-Efficacy (self-efficacy), and Health-Promoting Lifestyle Profile II (health-promoting behaviors). The study was registered in ClinicalTrials.gov (NCT05799586).

Results: Generalized Estimating Equation results indicated that, at immediate post-treatment, compared to the WLCG, the Intervention group demonstrated significantly larger effectiveness in depression reduction at immediate post-treatment (d = 1.07, P = 0.004). Additionally, at immediate post-treatment, the intervention group showed moderate effect sizes in alleviating anxiety (d = 0.76), fatigue (d = 0.74), sleep quality (d = 0.78), self-efficacy (d = 0.56), and health-promoting behaviors (d = 0.63), all with P values less than 0.05. For other outcomes, no significant differences were noticed at the immediate post-treatment.

Conclusions: Findings suggested that the TCMLM program is effective in improving depression and other related health outcomes in Chinese adults in Hong Kong. Further full-scale trials with active control, long-term follow-up, and economic evaluation are needed.

Acknowledgement:

The authors want to thank the Chinese Medicine Development Fund (21B2/004A_R1) and the Department General Research Fund of the Hong Kong Polytechnic University (Grant Number: P0036822), both organizations who provided funds to this project. And herein we also want to

thank the forty-two participants who participated in this study and the three Chinese Medicine practitioners who delivered the program.

References:

1. Ruan J, et al. Traditional Chinese medicine-based integrated health interventions for depression: a systematic review and meta-analysis, 2023. 32(17-18), 5632-5651.
2. Kroenke K, et al. The PHQ-9: validity of a brief depression severity measure, 2001. 16(9), 606-613.
3. Yu X, et al. The Patient Health Questionnaire-9 for measuring depressive symptoms among the general population in Hong Kong, 2012. 53(1), 95-102

O-03

Sophoricoside, from Fructus Sophorae, promotes hair growth via activation of M4 muscarinic AChR in dermal papilla cells

利用槐角提取的槐角苷通過激活 M4 乙醯膽鹼受器促進毛髮生長

K. W. Yuen[1, 2], J. Gao[1, 3], T. T. X. Dong[1, 2], K. W. K. Tsim[1,2]

[1] *Division of Life Science and Center for Chinese Medicine, The Hong Kong University of Science and Technology, Hong Kong, China;*

[2] *Shenzhen Key Laboratory of Edible and Medicinal Bioresources, Shenzhen Research Institute, Shenzhen, China;*

[3] *Department of Neurobiology and Cellular Biology, Xuzhou Medical University, Xuzhou, Jiangsu, China*

Abstract:

Various types of hair loss, including androgenetic alopecia, senescent alopecia, and telogen effluvium, are prevalent among individuals aged 50 and above. However, the current approved medications, like Minoxidil and Finasteride, have limited effectiveness and unwanted side effects. As a result, there is a need to explore alternative treatments for hair loss. The hair follicle experiences cycles of growth, regression, and resting phases throughout life. The transition between these phases is precisely regulated by DPC, which is acting as the signaling centre for hair growth. Additionally, Wnt signaling is recognized for its major role in activating hair growth. In distinction of Wnt activators, sophoricoside, can induce hair growth via the activation of M4 mAChR in DPCs. Similar to the Wnt-activation of hair growth, sophoricoside induces the downstream of Wnt signaling, e.g., AKT and GSK3 β phosphorylation. This notion is strongly supported by its effects in cultures: (i) inhibition of cAMP production; (ii) activating transcriptions of Wnt signaling-mediated genes and blocked by M4 mAChR antagonist; and (iii) inducing outgrowth of hair.

Acknowledgement:

This work is supported by Hong Kong Research Grants Council Hong Kong (GRF 16100921); Hong Kong Innovation Technology Fund (MHP/004/21; GHP/016/21SZ; ITCPD/17-9; ITC-CNERC14SC01); Shenzhen Science and Technology Innovation Committee (ZDSYS201707281432317).

O-04

Intelligent TCM Medicinal Materials Recommendation System for Non-alcoholic Fatty Liver Disease Based on Knowledge Graph and RKGE Model
基於知識圖譜與 RKGE 模型的非酒精性脂肪肝中醫藥材智能推薦系統

TY Gu[1], and HY Yang[1]

[1] *School of Acupuncture-Moxibustion and Tuina, Shanghai University of Traditional Chinese Medicine.*

Abstract:

Background: Non-alcoholic fatty liver disease (NAFLD) is a common metabolic syndrome with a global prevalence rate of about 25%1. Western medicine for treating NAFLD is troubled by poor patient compliance and significant side effects2. TCM treatment of NAFLD is characterized by multi-component, multi-stage, multi-pathway, and multi-target approaches, but research progress is hindered by the lack of a unified theoretical framework and scientific assessment system3.

Methods: This study constructed a TCM diagnostic and therapeutic knowledge graph for NAFLD based on the "TCM Diagnostic and Treatment Guidelines for Non-alcoholic Fatty Liver Disease" issued by the China Association of Chinese Medicine. It also utilized the NAFLD dataset from the "TCM Medical Records Database" of the China Engineering Science and Technology Knowledge Center (1370 records) to train an intelligent recommendation system for TCM medicinal materials based on the improved Recurrent-Knowledge-Graph-Embedding (RKGE) neural network4. The knowledge graph forms a knowledge network through entities and relationships, achieving the visualization of TCM knowledge. The RKGE model is a method that uses a deep learning network to automatically learn the semantic representation of entities and paths in the knowledge graph, thereby improving the effectiveness of the recommendation system and providing interpretability. The model architecture includes a recurrent network to capture the semantics of paths connecting the same entity pairs and integrates these paths into the recommendation process through a pooling operation that discerns the importance of different paths.

Results: The study successfully constructed the knowledge graph, achieving the visualization of TCM diagnostic and therapeutic knowledge for NAFLD. The RKGE model, through transfer learning, obtained interpretable recommendations for medicinal materials, including Danshen, Poria cocos (Poria, Fuling) and Aucklandiae radix (AR, Muxiang). Specifically, Danshen contains 26 active components, among which Luteoloside and Tanshinone IIA have been extensively studied. They function through various physiological effects such as regulating insulin resistance, antioxidant, anti-inflammatory, and immune modulation, and can reduce liver lipid deposition5. Poria's polysaccharides and triterpenes can protect and alleviate liver damage by reducing the levels of serum alanine aminotransferase and the activity of AST and ALT6, 7. AR extract can reduce the levels of alanine aminotransferase and aspartate aminotransferase induced by D-galactose and lipopolysaccharide in mice, playing a hepatoprotective role, and its main chemical component, Atractylenolide, has been proven to significantly improve liver cell damage and steatosis in vitro8.

Conclusion: This study has developed an intelligent TCM recommendation system by integrating knowledge graph and deep learning technology. The system simulates and reproduces the thinking logic of TCM medication use and development, and deeply explores the active ingredients of TCM medicinal materials. In the future, this system can be used to build a prescription simulation platform for famous TCM practitioners, reduce errors through standardized operations, ensure the uniformity and reliability of treatment, contribute new solutions to the standardization and modernization of TCM, and promote new ideas in TCM research and development.

Acknowledgements:

This study was supported by the National Natural Science Foundation of China (Grant No. 81473759), and Shanghai Municipality TCM Inheritance and Innovation Development Three-Year Action Plan Fund Project (ZY (2021-2023)-0502).

References:

1. Younossi ZM. Non-alcoholic fatty liver disease - A global public health perspective. J Hepatol. 2019;70(3):531-544.
2. Genua I, Cusi K. Pharmacological Approaches to Nonalcoholic Fatty Liver Disease: Current and Future Therapies. Diabetes Spectr. 2024;37(1):48-58.
3. 周麗娜 , 李俊雄 , 薛冬英 . 非酒精性脂肪性肝病的中醫研究進展 [J]. 上海中醫藥雜誌 ,2021,55(03):93-97.
4. Sun Z, Yang J, Zhang J, et al. Recurrent knowledge graph embedding for effective recommendation. In Proceedings of the 12th ACM Conference on Recommender Systems (RecSys '18). Association for Computing Machinery, New York, NY, USA, 2018:297-305.
5. 5MEIm XD, Cao YF, Che YY, et al. Danshen: a phytochemical and pharmacological overview. Chin J Nat Med. 2019;17(1):59-80.
6. Jiang YH, Wang L, Chen WD, et al. Poria cocos polysaccharide prevents alcohol-induced hepatic injury and inflammation by repressing oxidative stress and gut leakiness. Front Nutr. 2022;9:963598.
7. Nie A, Chao Y, Zhang X, Jia W, Zhou Z, Zhu C. Phytochemistry and Pharmacological Activities of Wolfiporia cocos (F.A. Wolf) Ryvarden & Gilb. Front Pharmacol. 2020;11:505249.
8. 鄭加梅 , 尚明越 , 王嘉樂等 . 木香的化學成分、藥理作用、臨床應用研究進展及質量標誌物預測 [J]. 中草藥 ,2022,53(13):4198-4213.

O-05

Preclinical study on the anti-proliferative, anti-metastatic effects of Broussoflavonol F and its underlying mechanisms in colon cancer

構樹黃酮醇 F 對結腸癌抗增殖、抗轉移作用及機制的臨床前研究

YY Zhu[1,2], GGL Yue[3], CK Wong[1,2], WL Xiao[5], CBS Lau[1,3,4,*]

[1] *Institute of Chinese Medicine, The Chinese University of Hong Kong;*

[2] *State Key Laboratory of Research on Bioactivities and Clinical Applications of Medicinal Plants, The Chinese University of Hong Kong;*

[3] *Department of Pharmacology and Pharmacy, Li Ka Shing Faculty of Medicine, The University of Hong Kong;*

[4] *School of Chinese Medicine, Li Ka Shing Faculty of Medicine, The University of Hong Kong;*

[5] *Key Laboratory of Medicinal Chemistry for Natural Resource, Ministry of Education, Yunnan University.*

Abstract:

Colorectal cancer (CRC) ranks as the third most prevalent cancer worldwide and is commonly treated with Western conventional therapies1. Despite the efficacy of the chemotherapeutics, patients receiving these treatments often suffer from unwanted side effects. Furthermore, metastasis of CRC is the leading cause of CRC-related mortality and continues to be a serious problem2. Therefore, discovering new therapeutic agents targeted on CRC metastasis is urgently required.

Broussoflavonol F (BFF), a natural prenylated flavonol isolated from Macaranga indica Wight, has been reported to possess cytotoxicities against various cancer cells, including breast cancer MCF7, lung cancer A549, liver cancer HepG2 and cervical cancer Hela cells3. However, the anti-proliferative and anti-metastatic activities of BFF in colon cancer have not yet been reported. Thus this study aimed to investigate the in vitro and in vivo anti-proliferative and anti-metastatic effects of BFF and its underlying mechanisms in colon cancer.

The cytotoxicities of BFF were detected in five colon cancer cell lines (HCT116, LoVo, HT-29, SW480, colon26) and human peripheral blood mononuclear cells (PBMCs). The anti-proliferative effects of BFF on human colon cancer HCT116 and LoVo cells were evaluated using MTT, BrdU, colony formation assays, cell cycle and cell apoptosis analysis. The effects of BFF on cell motility and migration on LoVo and colon26 cells were assessed using scratch wound healing assay and transwell migration assay, respectively. Besides, network pharmacology analysis was used to predict the effects of BFF on the expression of key proteins in intracellular signaling pathways, with validation using western blot analysis. The in vivo anti-tumor and anti-metastatic effects of BFF were further examined using colon tumor-bearing mouse model and zebrafish embryo xenograft model, respectively. BFF exhibited cytotoxicities on all five colon cancer cell lines, but not PBMCs, suggesting its selective cytotoxicity. BFF could significantly exhibit anti-proliferative activities in both HCT116 and LoVo cells via inducing apoptosis and cell cycle arrest at the G0/G1 phase. Further investigations revealed that BFF inhibited cell proliferation by downregulating the expression of HER2, RAS, p-Erk, etc. Besides, BFF significantly inhibited the cell motility and migration in both

LoVo cells and colon26 cells.via modulating protein expressions of FAK, Src, RhoA, E-cadherin, MMP9, etc. In addition, BFF could significantly suppress LoVo cell migration in zebrafish embryos. Intraperitoneal administration of BFF could also suppress tumor growth and the expression of Ki-67 and CD31 in colon tumor tissues of tumor-bearing mice.

This is the first report on the in vitro and in vivo anti-proliferative and anti-metastatic effects of BFF in colon cancer. Our findings support further development of BFF as an anti-cancer agent for colon cancer.

References:

1. Bray F, *et al. CA Cancer J Clin*, 2024, DOI: 10.3322/caac.21834. Epub ahead of print.
2. Hui Z, *et al. Signal Transduct Target Ther*, 2022, 7(1): 70.
3. Sahlah M, *et al. J King Saud Univ Sci*, 2021,33(1): 101234.

O-06

Oral - gut microbes and TCM tongue in pre-diabetes and type 2 diabetes and dynamic change characteristics of progress
口腔 - 腸道微生物與中醫舌象特徵在糖尿病前期及 2 型糖尿病中的動態變化

JL Deng[1], SX Dai[1], XJ Guo[1], XP Qiu[2], T Jiang[1*] and JT Xu[1*]

[1] *College of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine; 2 School of Computer Science, Fudan University.*

Abstract:

Background: The objective of this study was to delineate the characteristics of oral (tongue coating) and gut microbiota in individuals with prediabetes mellitus (Pre-DM) and type 2 diabetes mellitus (T2DM), considering the latter as a chronic metabolic disease whose global incidence is escalating annually [1]. Furthermore, we sought to establish a correlation between alterations in Traditional Chinese Medicine (TCM) tongue manifestations and the oral-gut microbiota axis in the evolutionary trajectory of diabetes.

Methods: We conducted a cross-sectional observational study; 30 Pre-DM patients, 37 T2DM patients, and 28 pairs of healthy photographs were enrolled, respectively. The Tongue shadow was collected by the Tongue and Face Diagnosis Analys-1 instrument and tongue image characteristics were analyzed. Furthermore, we employed high-throughput sequencing technology to investigate the V3-V4 region of 16S rRNA in oral and fecal samples. The source tracker methodology was implemented to determine the proportion of ectopic gut microbiota originating from the oral cavity.

Results: In the transition from Pre-DM to T2DM, a gradual progression is observed in tongue coating, transitioning from a normal state to a white, greasy, and thicker appearance. Concomitantly, the tongue color gradually shifts from a healthy red hue to a paler white, and the texture becomes old; With respect to the intestinal microbiota, species abundance in both Pre-DM and T2DM groups exhibited a significant reduction compared to the control group, whereas species abundance in the oral microbiota gradually increased;At the phylum level, a significant augmentation in Firmicutes and Fusobacteriota was observed in the oral microbiota compared to the Control group. In the intestinal tract, Bacteroidota, Firmicutes C, and Proteobacteria displayed marked elevations, whereas Actinobacteriota and Firmicutes A underwent significant reductions. At the genus level, Bacteroidota, Firmicutes C, and Proteobacteria in the intestinal tract demonstrated significant increases. Specifically, Veillonella in the oral cavity and Bacteroides and Escherichia in the gut exhibited significant enrichment. Notably, Alloprevotella in the oral cavity was identified as a potential biomarker for Pre-DM. Furthermore, Veillonella in the oral cavity and Bacteroides and Escherichia in the intestinal tract are considered potential microbial biomarkers for T2DM. Additional validation revealed the presence of Neisseria in the oral cavity and Agathobacter in the intestinal tract. A positive correlation was identified between Haemophilus and Blautia; Additionally, through correlation analysis between tongue image characteristics and

oral-intestinal microbiota, it was discovered that oral Streptococcus and intestinal Shigella were increased in the group with white greasy tongue coating, demonstrating a positive correlation.

Conclusion: Our findings not only revealed the dysregulation of the oral-gut microbiota axis in Pre-DM and T2DM patients, but also revealed the changes in tongue image and oral-gut axis in different progression of diabetes and emphasized the key mediating role of the increased abundance of Firmicutes in the oral-gut axis in the formation of white and fatty coating. The incorporation of TCM's characteristic tongue diagnosis methodology with the oral-gut microbiome axis offers a profound method for exploring the dynamics of diabetes mellitus. This fusion of traditional Chinese and Western medical concepts provides a unique insight into the diagnosis of T2DM.

References:

1. Pan Y, *et al*. Gut microbiota and type 2 diabetes mellitus: a focus on the gut-brain axis[J]. Endocrine, 2024, 84(1): 1–15.

O-07

Bioactivity Potency Evaluation, Target Identification, and Mechanism Elucidation of Arylnaphthalene Lignan Compounds as Anticancer and Antiviral Agents

芳基萘木脂素類化合物抗癌及抗病毒活性評價、靶點識別及作用機制探討

Abdullah Al Mamun[1], Zheng-Ming Liang[1], Wanfei Li[1], Chu Shing Lam[1], Nga Yi Tsang[1], Yi-Xuan Xia[1], Hong-Jie Zhang[1*]

[1] *School of Chinese Medicine, Hong Kong Baptist University, Hong Kong SAR, China*

Abstract:

Cancer and viral infections represent significant global health challenges, necessitating the exploration of new therapeutic approaches. Aryl naphthalene lignan (ANL) compounds have emerged as promising candidates for drug development due to their demonstrated anticancer and antiviral properties. This study aims to identify potential targets of ANL compounds against cancer and viral infections and validate their therapeutic potential as both anticancer and antiviral agents, offering hope for the future of cancer and viral infection treatment through the use of small molecule compounds.

We examined our synthetic ANL compounds library for their cancer cell-killing and antiviral activities using our "One-Stone-Two-Birds" protocol.1,2 Several ANLs exhibited potent cancer cell-killing effects, while others demonstrated high selectivity indices as antiviral agents. Moreover, target identification is a crucial phase in drug discovery, as it enables researchers to understand the mechanisms of action of novel drugs. We used proteomics techniques to identify and validate protein targets, including affinity-based pull-down and label-free methods.

Our results indicated that biotin-linked ANL compounds may target multiple proteins, including Plectin, Myosin-9, and Myosin-10, which are linked to viral infections and cancer development. We initially validated these targets using label-free binding assays, such as drug affinity responsive target stability (DARTS) and cellular thermal shift assays (CETSA). Additionally, our microscale thermophoresis (MST) assay revealed a robust and specific interaction between ANL compounds and His-tagged myosin-9 protein, with a binding affinity ranging from 0.59 to 3.29 μM. The signal-to-noise ratio for these interactions was from 6.5 to 13.0, indicating high-quality measurements. These findings underscore the potential of ANLs as significant modulators of myosin-9 protein function.

Furthermore, in the context of melanoma, a highly aggressive form of skin cancer, the proto-oncogene Rous sarcoma oncogene (Src) plays a crucial role in cell proliferation, adhesion, migration, and metastasis. Plectin, a cytoskeletal protein targeted by ANLs, has been detected as an Src-binding protein that controls the activity of Src in osteoclasts. Elevated expression of plectin and its association with antitumor agents makes it a candidate biomarker for certain tumors. Recent research has revealed that plectin contributes to tumor formation by enhancing melanoma cell proliferation and adherence through Src signaling.3 Our immunoblot results demonstrated

that C27P2, an ANL compound, dose-dependently reduced the expression of plectin and its associated proteins, p-Src, p-PI3K, and p-Akt, in A375 and IGR1 melanoma cells.

Overall, gaining insights into specific target proteins and their molecular mechanisms will facilitate the development of novel ANL compound-based therapies against cancer and viral infection diseases.

Acknowledgement:

This work is supported by the Research Grants Council of the Hong Kong Special Administrative Region, China (Project No. HKBU12103021), the Innovation and Technology Commission of Hong Kong Special Administrative Region, China (MHP/105/19), the Health and Medical Research Fund (COVID190214) of the Food and Health, and Hong Kong PhD Fellowship Scheme (HKPFS awarded to Abdullah Al Mamun).

References:

1. Zhang HJ, Rumschlag-Booms , Guan YF, Wang DY, Liu KL, Li WF, Nguyen VH, Cuong NM, Soejarto DD, Fong HHS, Rong LJ. Potent inhibitor to drug-resistant HIV-1 strains identified from the medicinal plant Justicia gendarussa. Journal of Natural Products, 2017, 80 (6), 1798-1807.
2. Xu XY, Wong DY, Li YP, Deyrup ST, Zhang HJ. Plant-derived lignans as potential antiviral agents: a systematic review. Phytochemistry Reviews, 2022; 21 (1), 239-289.
3. Mizuta, K., Matsubara, T., Goto, A., Addison, W. N., Nakatomi, M., Matsuo, K., Tada Shigeyama, Y., Yaginuma, T., Honda, H., Yoshioka, I., & Kokabu, S. (2022). Plectin promotes tumor formation by B16 mouse melanoma cells via regulation of Rous sarcoma oncogene activity. BMC Cancer, 22(1). https://doi.org/10.1186/S12885-022-10033-4

O-08

Chemical profiling and comparative pharmacokinetics of an herbal prescription (CDD-2103) in normal and colitis mice
中藥複方 (CDD-2103) 化學成分及其在正常和結腸炎小鼠的藥代動力學比較研究

Ka Wing Cheng[1, 2], Hor Yue Tan[1, 2], Lin Zhu[1, 2], Zhao-xiang Bian[1, 2, *]

[1] *School of Chinese Medicine, Li Ka Shing Faculty of Medicine, The University of Hong Kong.*

Abstract:

Background: CDD-2103 is an herbal prescription used to treat ulcerative colitis (UC). This study aimed to characterize the chemical profile of CDD-2103 and compare its kinetic behaviors in normal and colitis mice.

Methods: A DSS-induced acute colitis mice model was established, and biological samples were collected at different time points after oral administration of CDD-2103. UPLC/Q-Orbitrap-MS/MS was employed to identify the chemical composition of CDD-2103 in the extract and biological samples. Furthermore, UPLC/QQQ-MS/MS was used to develop quantitative methods for compounds with high exposure in mice plasma and colonic content, enabling a comparison of pharmacokinetic parameters between normal and colitis mice.

Results: In the CDD-2103 extract, 246 compounds were identified, including flavonoids, alkaloids, and 23 potentially new compounds. In the biological samples, 204 compounds were detected. Iridoid glycosides showed high plasma exposure, while curcuminoids exhibited relatively high colonic content exposure. Alkaloids displayed high exposure in both mice plasma and colonic content. Pharmacokinetic analysis revealed that most alkaloids in CDD-2103 had a significantly smaller area under the concentration-time curve (AUC) and longer mean residence time (MRT) in colitis mice plasma compared to the control mice. Conversely, curcuminoids showed higher AUC in colitis mice colonic content. These changes indicate that the disease condition may impact drug-metabolizing enzymes in the liver and gastrointestinal tract, leading to varying levels of xenobiotic clearance.

Conclusion: This study provides a comprehensive understanding of the chemical composition of CDD-2103 and its kinetic features under physiological and pathological conditions, laying a foundation for the clinical use of CDD-2103.

Acknowledgement:

This work was funded by the Health@InnoHK Initiative Fund of the Hong Kong Special Administrative Region Government (ITC RC/IHK/4/7); Key-Area Research and Development Program of Guangdong Province (2020B1111110003); and the Science and Technology Development Fund (SKL-QRCM(UM)-2020-2022) and the State Key Laboratory of Quality Research in Chinese Medicine, University of Macau (No. SKL-QRCM-OP21008).

O-09

Study on active components and mechanism of total alkaloids of Leonurus in anti-allergic asthma
益母草總生物鹼抗過敏性哮喘的活性成分及作用機制研究

YN Zheng[1,2], M Yuan[1,2], and HX Xu[1,2]

[1] *School of Pharmacy, Shanghai University of Traditional Chinese Medicine;*

[2] *Engineering Research Center of Shanghai Colleges for TCM New Drug Discovery*

Abstract:

Allergic inflammation is a global health issue affecting hundreds of millions of patients worldwide[1]. Current treatment methods primarily rely on corticosteroids and monoclonal antibody drugs, which are associated with side effects and economic burdens[2]. Therefore, developing new treatment strategies is of significant importance. This study aims to explore the main active components and molecular mechanisms of total alkaloids from Leonurus japonicus Houtt. (TAL) that exhibit potential therapeutic effects against allergic inflammation.

In preliminary research, we discovered that TAL demonstrated significant anti-inflammatory and immunomodulatory effects both in vitro and in vivo. However, to further understand the specific active components and their mechanisms of action, we focused on the individual compounds within the TAL. Through screening, we identified trigonelline hydrochloride (TH) as a key component with notable anti-inflammatory activity.

In in vivo experiments, we established an ovalbumin (OVA)-induced mouse model of allergic asthma to observe the therapeutic effects of TH on asthma symptoms and its protective role on lung tissue. The results indicated that TH can significantly improve asthma symptoms in mice, reduce the levels of IgE in serum, and decrease pathological damage to lung tissue. In vitro experiments further confirmed the inhibitory effect of TH on mast cell activation.

Through in-depth molecular mechanism research, we found that TH reduces mast cell degranulation by inhibiting the expression of proteins such as PI3K, Lyn, and Fyn. Moreover, TH inhibits the production of leukotrienes and arachidonic acid, reduces the secretion of inflammatory cytokines TNF-α and IL-6, and affects the NF-κB and MAPKs signaling pathways, thereby exerting anti-inflammatory effects. RNA sequencing analysis revealed differences in gene expression related to immune function, with HIF-1α being considered a potential target of TH's anti-inflammatory action.

In vivo pharmacological experiments further confirmed the therapeutic effects of TH on allergic asthma, including the reduction of serum IgE levels, regulation of the Th1/Th2 cytokine balance, and improvement of pathological damage to lung tissue.

These findings provide a scientific basis for the development of new anti-inflammatory drugs based on TH and pave the way for further pharmacological research and clinical applications. Future research will concentrate on verifying the action targets of TH and exploring its potential applications in other allergic diseases.

Acknowledgement:

This work was supported by the National Natural Science Foundation (grant number 82204723).

References:

1. Galli SJ, Tsai M, Piliponsky AM. The development of allergic inflammation. *Nature*.2008;454(7203):445-454.
2. Finotto S. Resolution of allergic asthma. *Semin Immunopathol*. 2019;41(6):665-674.

O-10

Targeting delivery of miR-146a via IMTP modified milk exosomes exerted cardioprotective effects by inhibiting NF-κB signaling pathway after myocardial ischemia-reperfusion injury
通過 IMTP 修飾的乳外泌體靶向遞送 miR-146a 通過抑制心肌缺血再灌注損傷後 NF-κB 信號通路發揮心臟保護作用

Wan-ting Meng[1], Jing Zhu[1], Ya-chao Wang[1], Change-le Shao[1], Xiu-ya Li[1], Ping-ping Lu[1], Meng-ying Huang[1], Fang-fang Mou[1,*], Hai-dong Guo[1,*], Guang Ji[2,*]

[1] *Academy of Integrative Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China.*

[2] *Institute of Digestive Diseases, Longhua Hospital, China-Canada Center of Research for Digestive Diseases (ccCRDD), Shanghai University of Traditional Chinese Medicine, Shanghai 200032, China.*

Abstract:

Reperfusion therapy is critical for saving heart muscle after myocardial infarction, but the process of restoring blood flow can itself exacerbate injury to the myocardium. This phenomenon is known as myocardial ischemia-reperfusion injury (MIRI), which includes oxidative stress, inflammation, and further cell death. microRNA-146a (miR-146a) is known to play a significant role in regulating the immune response and inflammation and has been studied for its potential impact on the improvement of heart function after myocardial injury. However, the delivery of miR-146a to the heart in a specific and efficient manner remains a challenge as extracellular RNAs are unstable and rapidly degraded. Milk exosomes (MEs) have been proposed as ideal delivery platform for miRNA-based therapy as they can protect miRNAs from RNase degradation. In this study, the effects of miR-146a containing MEs (MEs-miR-146a) on improvement of cardiac function were examined in a rat model of MIRI. To enhance the targeting delivery of MEs-miR-146a to the site of myocardial injury, the ischemic myocardium-targeted peptide IMTP was modified onto the surfaces, and whether the modified MEs-miR-146a could exert a better therapeutic role was examined by echocardiography, myocardial injury indicators and the levels of inflammatory factors. Furthermore, the expressions of miR-146a mediated NF-κB signaling pathway-related proteins were detected by western blotting and qRT-PCR to further elucidate its mechanisms. MiR-146 mimics were successfully loaded into the MEs by electroporation at a square wave 1000V voltage and 0.1 ms pulse duration. MEs-miR-146a can be up-taken by cardiomyocytes and protected the cells from oxygen glucose deprivation/reperfusion induced damage in vitro. Oral administration of MEs-miR-146a decreased myocardial tissue apoptosis and the expression of inflammatory factors and improved cardiac function after MIRI. The miR-146a level in myocardium tissues was significantly increased after the administration IMTP modified MEs-miR-146a, which was higher than that of the MEs-miR-146a group. In addition, intravenous injection of IMTP modified MEs-miR-146a enhanced the targeting to heart, improved cardiac function, reduced myocardial tissue apoptosis and suppressed inflammation after MIRI, which was more effective than the MEs-miR-146a treatment. Moreover, IMTP modified MEs-miR-146a reduced the protein levels of IRAK1, TRAF6 and p-p65 and enhanced p65 nuclear translocation. Therefore, IMTP modified MEs-miR-146a

exerted their anti-inflammatory effect by inhibiting the IRAK1/TRAF6/NF- κ B signaling pathway. Taken together, our findings suggested miR-146a containing MEs may be a promising strategy for the treatment of MIRI with better outcome after modification with ischemic myocardium-targeted peptide, which was expected to be applied in clinical practice in future.

Key words: myocardial ischemia-reperfusion injury; milk exosome; microRNA-146a; targeting delivery; inflammatory factors; NF- κ B signaling pathway

Acknowledgement:

This work was supported by grants from the National Natural Science Foundation of China (82174120), Natural Science Foundation of Shanghai (No. 21ZR1463100) and Program of Shanghai Academic Research Leader (22XD1423400).

References:

1. McCartney PJ, Eteiba H, Maznyczka AM, McEntegart M, Greenwood JP, Muir DF, Chowdhary S, Gershlick AH, Appleby C, Cotton JM, Wragg A, Curzen N, Oldroyd KG, Lindsay M, Rocchiccioli JP, Shaukat A, Good R, Watkins S, Robertson K, Malkin C, Martin L, Gillespie L, Ford TJ, Petrie MC, Macfarlane PW, Tait RC, Welsh P, Sattar N, Weir RA, Fox KA, Ford I, McConnachie A, Berry C; T-TIME Group. Effect of Low-Dose Intracoronary Alteplase During Primary Percutaneous Coronary Intervention on Microvascular Obstruction in Patients with Acute Myocardial Infarction: A Randomized Clinical Trial. JAMA. 2019 Jan 1;321(1):56-68.
2. Alqahtani F, Ziada KM, Badhwar V, Sandhu G, Rihal CS, Alkhouli M. Incidence, Predictors, and Outcomes of In-Hospital Percutaneous Coronary Intervention Following Coronary Artery Bypass Grafting. J Am Coll Cardiol. 2019 Feb 5;73(4):415-423.
3. Heusch G, Gersh BJ. The pathophysiology of acute myocardial infarction and strategies of protection beyond reperfusion: a continual challenge. Eur Heart J. 2017 Mar 14;38(11):774-784.
4. Valikeserlis I, Athanasiou AA, Stakos D. Cellular mechanisms and pathways in myocardial reperfusion injury. Coron Artery Dis. 2021 Sep 1;32(6):567-577.
5. Dubois-Deruy E, Peugnet V, Turkieh A, Pinet F. Oxidative Stress in Cardiovascular Diseases. Antioxidants (Basel). 2020 Sep 14;9(9):864.

POSTER PRESENTATION ABSTRACTS

B-01

Mechanism of LLDT-8 Regulating the Biological Function of RA-FLS through WNT5A Signaling Pathway
LLDT-8 通過 WNT5A 信號通路調控 RA-FLS 生物學功能的作用機制

Yu Shan[1,2], Ping Jiang[1,2] and Dongyi He[1,2]

[1] *Department of Rheumatology, Shanghai Guanghua Hospital of Integrative Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai, China.*

[2] *Guanghua Clinical Medical College, Shanghai University of Traditional Chinese Medicine, Shanghai, China.*

Abstract:

Objective: To explore the potential molecular mechanisms underlying the treatment of rheumatoid arthritis (RA) and its toxicity by using cyberpharmacology and cybertoxicology with tretinoin (TwHF). We explored the mechanism by which LLDT-8 (T8) affects the biological effects of RA fibroblast like synovitie (FLS) through the WNT5A-mediated Wnt/PCP signalling pathway by transcriptomic and proteomic assays and in vitro experiments to provide theoretical support for the progress of mechanistic studies on RA and the exploration of new therapeutic targets for T8.

Methods: Network Pharmacology and Toxicology: Identified main active compounds and targets of TwHF in RA treatment and toxicity. RNA-seq and bioinformatics analyses determined differentially expressed genes (DEGs) in RA-FLS treated with TwHF and T8. Histopathology and Expression Analysis: Examined synovial tissue pathology in OA and RA patients via HE staining. Analyzed WNT5A gene/protein expression in primary synovial tissues, FLS, knee synovial fluid, and peripheral blood plasma using single-cell sequencing, qPCR, WB, and ELISA. Functional Studies: Investigated WNT5A's biological functions in MH7A cells by knockdown/overexpression, assessing proliferation, migration, invasion, and adhesion through molecular biology techniques including RNA-seq, CCK-8, immunofluorescence, scratch assay, Transwell assay, qPCR, WB, and ELISA.

WNT5A Pathway Verification: Treated cells with exogenous rhWNT5A protein to confirm the WNT5A-mediated Wnt/PCP pathway, followed by T8 intervention to observe regulatory effects on RA-FLS functions.

Results: Pharmacodynamics and Toxicity: TwHF had similar mechanisms of action in terms of pharmacodynamic effects and toxic responses; RNA-seq revealed some similarities but also differences between TP and T8 in regulating the targets of action and signalling pathways on RA-FLS. Expression Patterns: Compared to OA, RA patients showed significantly higher WNT5A mRNA/protein levels in synovial tissues, synovial fluid, and FLS, but lower levels in peripheral blood plasma. Functional Impact of WNT5A: ShWNT5A and LvWNT5A regulated the Wnt/PCP pathway. ShWNT5A group cells had unchanged proliferation, reduced migration/invasion, increased adhesion, decreased PRICKLE1, DVL2, GJA1, ITGB8 mRNA/protein levels, and inhibited CXCL6, VEGFB, THBS2 secretion. Opposite effects were observed in the LvWNT5A group. Pathway Regulation: WNT5A influenced the G1/S cell cycle transition, autophagic cell death, TNF, Wnt, and PI3K-Akt pathways. Key proteins included ALB, PLG, AFP, F2, and SERPINE1, involved in fibrinolysis

regulation, cell adhesion, and the HIF-1 pathway. RhWNT5A-treated cells had unchanged proliferation, increased migration/invasion, decreased adhesion, upregulated PRICKLE1, DVL2, GJA1, ITGB8 mRNA/protein, and promoted CXCL6, VEGFB, THBS2 secretion. T8 intervention in rhWNT5A-treated cells decreased proliferation, migration, invasion, increased adhesion, and reduced PRICKLE1, DVL2, GJA1, ITGB8 mRNA/protein, and inhibited CXCL6, VEGFB, THBS2 secretion.

Conclusion: Knockdown/overexpression of the endogenous WNT5A gene as well as the use of exogenous rhWNT5A protein were able to affect the migration, invasion and adhesion capacity of RA-FLS and regulate the expression of the Wnt/PCP signalling pathway (FZD2, DVL2, etc.) and the downstream key targets (ITGB8, CXCL6, VEGFB, etc.); T8 may be able to affect RA-FLS migration, invasion and adhesion capacity through the WNT5A-mediated Wnt/ PCP signalling pathway, regulating the migration, invasion and adhesion ability of RA-FLS, and influencing the expression of Wnt/PCP signalling pathway targets and downstream targets.

Keywords: Rheumatoid arthritis; WNT5A; FLS; LLDT-8; Wnt/PCP

B-02

Mahuang Lianqiao Chixiaodou decoction can improve the inflammatory response of IgA nephropathy rats by regulating C3a/C3aR signaling pathway
麻黃連翹赤小豆湯調控 C3a/C3aR 信號通路 改善 IgA 腎病大鼠炎症反應

Ting Song[1,2,3], Xuejun Yang[1,2,3]

[1] *Shuguang Hospital Affiliated to Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China;*

[2] *Institute of TCM Nephrology, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China;*

[3] *Key Laboratory of Hepatorenal Diseases of Ministry of Education, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China;*

Abstract:

The objective is to explore the therapeutic effect of Mahuang Lianqiao Chixiaodou decoction on IgA nephropathy (IgAN) model rats and its mechanism based on C3a/C3aR pathway. Twenty-four male Wistar rats were randomly divided into control group, model group, Mahuang Lianqiao Chixiaodou decoction group (MHLQ group) and losartan potassium group (LP group). The IgAN rat model was prepared by the classical bovine serum albumin-lipopolysaccharide-carbon tetrachloride (BSA-LPS-CCl4) complex method. Saline gavage was used in control and model groups, MHLQ granule solution in MHLQ group, and losartan potassium solution in LP group for 4 weeks of continuous intervention. Serum and kidney tissues were collected from rats in each group after the last administration. Blood creatinine (Scr) and urea nitrogen (BUN) levels were detected; pathological changes of rat kidney were observed by hematoxylin-eosin (HE), MASSON and PAS staining; IgA expression in glomerular mesangial area of rat kidney was detected by immunofluorescence; IL-6, TNF-α and C3a expression in rat kidney tissues were detected by enzyme-linked immunosorbent assay (ELISA); and western blot(WB) method to detect the expression of C3/C3b/C3c, C3aR, CFB, TLR4, NF-κB p65 in renal tissues; immunohistochemistry to detect the expression of C3, C3aR, CFB in renal tissues. Compared with Control group, serum BUN and SCr content levels of rats in the model group were increased ($P<0.01$); glomerular compensatory dilatation, proliferation of mesangial cells in the glomerulus, expansion of the mesangial stroma, and a large number of IgA immune complexes were deposited in the mesangial region; renal tissue IL-6, TNF-α, and C3a expression were significantly increased ($P<0.01$); renal tissue C3/C3b/C3c , C3aR, CFB, TLR4, NF-κB p65 protein expression was elevated ($P<0.05$); C3, C3aR, CFB positive expression in renal tissues was significantly higher ($P<0.01$). Compared with the Model group, the serum BUN content level of rats in the MHLQ group was reduced ($P<0.05$); pathological damage was reduced; IgA immune complex deposition was significantly reduced; renal tissue IL-6 and TNF-α expression was reduced ($P<0.01$), and there was a tendency for C3a expression to decrease; renal tissue C3/C3b/C3c, C3aR, CFB, TLR4, NF-κB p65 protein expression decreased ($P<0.01$, $P<0.05$); C3, C3aR, CFB positive expression decreased in renal tissue ($P<0.01$).Based on the above research, we found that Mahuang Lianqiao Chixiaodou decoction can inhibit the inflammatory response in IgAN rats, and its protective effect may be related to the inhibition of alternative

pathway complement activation and the regulation of C3a/C3aR and TLR4/NF-κB p65 signalling pathways.

Acknowledgement:

This research is funded by National Natural Science Foundation of China, No. 82274492; Supported by Shanghai Science and Technology Commission, No. 22Y31920200.

B-03

The neuroprotective effects of SHPL-49 were mediated by microglia-dependent amelioration of endothelial dysfunction after cerebral ischemia
SHPL-49 的神經保護作用是通過小膠質細胞依賴的改善腦缺血後內皮功能障礙介導的

Yu Zhao[1], Pei Zhang[1], Jiange Zhang[1]

[1] *The Research Center of Chiral Drugs, Innovation Research Institute of Traditional Chinese Medicine (IRI), Shanghai University of Traditional Chinese Medicine, Shanghai, 201203, China*

Abstract:

SHPL-49, a novel glycoside derivative with good activity by structural modification of the lead compound salidroside, promotes the expression activity of vascular endothelial growth factor-a (Vegf-a) mRNA in macrophages[1]. As they are among the first macrophages to respond to cerebral ischemia, microglia are crucial in the pathological process of cerebral ischemia[2,3]. The concept of the glial vascular unit also emphasizes the tight connection between brain cells, centered on glial cells and cerebral blood vessels, as well as their coordinated response to various nerve injuries[4]. Our previous study found that SHPL-49 exerted neuroprotective effects in a rat model of permanent middle cerebral artery occlusion (pMCAO)[5]. Although the therapeutic effect of SHPL-49 injection on ischemic stroke is currently in phase II clinical trials, the neuroprotective effects of SHPL-49 on ischemic stroke still need to be comprehensively and deeply studied, whether SHPL-49 can affect microglia-mediated endothelial function and its in-depth mechanism also need to be elucidated.

In the present study, we further investigated whether the neuroprotective effect of SHPL-49 could be attributed to its promotion of microglia-mediated improvement in endothelial function. We established a rat pMCAO model to investigate the effect of SHPL-49 on microglia-dependent endothelial cell function through immunofluorescence, Evans blue extravasation staining and western blot assays. Then, microglia were depleted in the pMCAO model to clarify the role of SHPL-49 in regulating endothelial function through microglia by MRI. In additon, the effects of SHPL-49 on microglia under oxygen-glucose deprivation (OGD) conditions were investigated using qRT-PCR and ELISA assays. Tube formation, transepithelial electrical resistance and permeability assays were performed to determine whether the effects of SHPL-49 on microglia affected brain endothelial cells. Subsequently, the molecular mechanism by which SHPL-49 regulates microglia-mediated endothelial function in vitro was investigated.

We found that SHPL-49 had neuroprotective roles by promoting angiogenesis and reducing blood–brain barrier (BBB) leakage after cerebral ischemia in a microglia-dependent manner, thereby improving endothelial dysfunction. And depletion of microglia in the brain tissue of pMCAO rats almost completely reversed the protective effect of SHPL-49 on endothelial cells, as confirmed by MRI. Furthermore, the microglia-mediated pro-angiogenic effect of SHPL-49 was found to be dependent on the VEGF receptor 2 (VEGFR2)/protein kinase B (Akt)/endothelial nitric oxide

synthase (eNOS) pathway. In addition, SHPL-49 treatment significantly ameliorated OGD-induced loss of tight junction proteins and BBB damage by inhibiting the p38 mitogen activated protein kinases (p38 MAPK)/Matrix metalloproteinase 9 (MMP-9) pathway in microglia cells.

In conclusion, the neuroprotective effects of SHPL-49 was shown to improve ischemia-induced endothelial dysfunction in a microglial-dependent manner. These findings provide valuable insights into the mechanism of action of SHPL-49 on ischemic stroke and can also provide more references for the clinical trials of SHPL-49 injections.

Acknowledgement:

This work was supported by grants from Shanghai Frontiers Science Center for Traditional Chinese Medicine Chemical Biology, Shanghai Science and Technology Development Fund from Central Leading Local Government (YDZX20223100001004), Traditional Chinese and Western Medicine Collaborative Guidance Project of Integrated Hospital from Shanghai Municipal Health Commission/Shanghai Municipal Administration of Traditional Chinese Medicine (ZXXT-202303).

References:

1. Guoqiang Lin, Jiange Zhang, Ping Tian, et al; Shanghai Hutchison Pharmaceuticals Limited. United States patent US 20210115082A1. 2021 Apr 22.
2. Patrick T Ronaldson, Thomas P Davis. Regulation of blood–brain barrier integrity by microglia in health and disease: A therapeutic opportunity. Journal of Cerebral Blood Flow & Metabolism 2020;40:S6-S24.
3. Elisabeth C. Kugler, John Greenwood, Ryan B. MacDonald. The "Neuro-Glial-Vascular" Unit: The Role of Glia in Neurovascular Unit Formation and Dysfunction. Frontiers in Cell and Developmental Biology 2021;9.
4. Di Yao, Ruoying Zhang, Minjie Xie, et al. Updated Understanding of the Glial-Vascular Unit in Central Nervous System Disorders. Neuroscience Bulletin 2022;39:503-518.
5. Pei Zhang, Jiazhen Xu, Qianfei Cui, et al. Multi-pathway neuroprotective effects of a novel salidroside derivative SHPL-49 against acute cerebral ischemic injury. European Journal of Pharmacology 2023;949.

B-04

Caffeic acid mitigates myocardial fibrosis and improves heart function in post-myocardial infarction by inhibiting transforming growth factor-β receptor 1 signaling pathways

咖啡酸通過抑制轉化生長因數 -β 受體 1 信號通路，減輕心肌纖維化，改善心肌梗死後心功能

Weihao Jiang[1], Bo Deng[1], Mengting Xie[1], Yunting Feng[1], Yingchun Zhou[2], Weiwei Wu[1], Bin Liu[1].

[1] *Department of Traditional Chinese Medicine, Guangzhou Institute of Cardiovascular Disease, State Key Laboratory of Respiratory Disease, Institute of Integration of Traditional and Western Medicine of Guangzhou Medical University, the Second Affiliated Hospital of Guangzhou Medical University, No.250 Changgangdong Road, Guangzhou 510260, China;*

[2] *School of Traditional Chinese Medicine, Department of Traditional Chinese Medicine, Nanfang Hospital (ZengCheng Branch), Southern Medical University, Guangzhou 510515, China.*

Abstract:

Myocardial fibrosis is a pathological, physiological change that results from alterations, such as inflammation and metabolic dysfunction, after myocardial infarction (MI).[1-3] Excessive fibrosis can cause cardiac dysfunction, ventricular remodeling, and heart failure.[4-6] Caffeic acid (CA), a natural polyphenolic acid in various foods, has cardioprotective effects.[7, 8] This study aimed to explore whether CA exerts a cardioprotective effect to inhibit myocardial fibrosis post-MI and elucidate the underlying mechanisms. Histological observations indicated that CA ameliorated ventricular remodeling induced by left anterior descending coronary artery ligation in MI mice and partially restored cardiac function. CA selectively targeted transforming growth factor-β receptor 1 (TGFBR1) and inhibited TGFBR1-Smad2/3 signaling, reducing collagen deposition in the infarcted area of MI mice hearts. Furthermore, cell counting (CCK-8) assay, 5-ethynyl-2'-deoxyuridine assay, and western blotting revealed that CA dose-dependently decreased the proliferation, collagen synthesis, and activation of the TGFBR1-Smad2/3 pathway in primary cardiac fibroblasts (CFs) stimulated by TGF-β1 in vitro. Notably, TGFBR1 overexpression in CFs partially counteracted the inhibitory effects of CA. These findings suggest that CA effectively mitigates myocardial fibrosis and enhances cardiac function following MI and that this effect may be associated with the direct targeting of TGFBR1 by CA.

Acknowledgement:

We would like to extend our sincere gratitude to Guangzhou Medical University, the Second Affiliated Hospital of Guangzhou Medical University, and the Institute of Integrated Traditional Chinese and Western Medicine of Guangzhou Medical University for providing the valuable platform and support for this research. We are especially grateful to the mentors for their generous funding and professional guidance, which have been instrumental in the successful completion of this study.

This work was funded by the following grants: National Natural Science Foundation of China

(grant Nos. 82274246, 82374183, 82204991), General Project of Natural Science Foundation of Guangdong Province (No. 2023A1515011090), Basic and Applied Basic Research Foundation of Guangdong Province (Nos. 2019B1515120026, 2021A151510809), Project of Administration of Traditional Chinese Medicine of Guangdong Province of China (No. 20223013).

References:

1. Prabhu SD, Frangogiannis NG. The biological basis for cardiac repair after myocardial infarction: from inflammation to fibrosis. Circ Res 2016, 119(1): 91-112.
2. Wang Y, Zhang Y, Li J, Li C, Zhao R, Shen C, Liu W, Rong J, Wang Z, Ge J, Shi B. Hypoxia induces m2 macrophages to express vsig4 and mediate cardiac fibrosis after myocardial infarction. Theranostics 2023, 13(7): 2192-2209.
3. Zeng KF, Wang HJ, Deng B, Chen TF, Chen JB, Ding WJ, Chen S, Xie JD, Lu SM, Chen GH, Zhang Y, Tan ZB, Ou HB, Tan YZ, Zhang SW, Zhou YC, Zhang JZ, Liu B. Ethyl ferulate suppresses post-myocardial infarction myocardial fibrosis by inhibiting transforming growth factor receptor 1. Phytomedicine 2023, 121: 155118.
4. Gonzalez A, Schelbert EB, Diez J, Butler J. Myocardial interstitial fibrosis in heart failure: biological and translational perspectives. J Am Coll Cardiol 2018, 71(15): 1696-1706.
5. Weng L, Ye J, Yang F, Jia S, Leng M, Jia B, Xu C, Zhao Y, Liu R, Xiong Y, Zhou Y, Zhao J, Zheng M. Tgf-beta1/smad3 regulates programmed cell death 5 that suppresses cardiac fibrosis post-myocardial infarction by inhibiting hdac3. Circ Res 2023, 133(3): 237-251.
6. Tan Z, Jiang X, Zhou W, Deng B, Cai M, Deng S, Xu Y, Ding W, Chen G, Chen R, Zhang S, Zhou Y, Liu B, Zhang J. Taohong siwu decoction attenuates myocardial fibrosis by inhibiting fibrosis proliferation and collagen deposition via tgfbr1 signaling pathway. J Ethnopharmacol 2021, 270: 113838.
7. Kumaran KS, Prince PS. Caffeic acid protects rat heart mitochondria against isoproterenol-induced oxidative damage. Cell Stress Chaperones 2010, 15(6): 791-806.
8. Khwaldeh A, Siyam AA, Alzbeede A, Farajallah M, Shraideh Z, Badran D. Ameliorative effects of curcumin and caffeic acid against short term exposure of waterpipe tobacco smoking on lung, heart and kidney in mice. Anat Cell Biol 2021, 54(1): 93-103.

B-05

XHF reduces renal tubular epithelial cell senescence and improves renal interstitial fibrosis by inhibiting PKC-delta and its related signalling pathway

仙黃方通過抑制 PKC-delta 及其相關信號通路減輕腎小管上皮細胞衰老，改善腎臟間質纖維化

Yanru Wang[1,2,3,4], Minghai Shao[1,2,3,4] and Lin Xu[1,2,3,4]

[1] *Shuguang Hospital, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China;*

[2] *Institute of Kidney Disease, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China;*

[3] *Key Laboratory of Liver and Kidney Diseases, Ministry of Education, Shanghai, 201203, China;*

[4] *Shanghai Clinical Key Laboratory of Traditional Chinese Medicine, Shanghai, 201203, China*

Abstract:

The Chinese medicine compound Xian Huang Fang protects renal function and delays the progression of chronic kidney disease. Currently, it is found that Xian Huang Fang can improve renal interstitial fibrosis, but the specific mechanism is still unclear, and its potential molecular mechanism needs to be further elucidated. The aim of this study was to investigate whether XHF could improve cellular senescence and attenuate renal injury by regulating endoplasmic reticulum homeostasis in renal tubular epithelial cells. In this study, a rat CKD model was prepared by 5/6 nephrectomy (A/I)). XHF gavage reduced proteinuria, significantly attenuated renal injury, attenuated renal interstitial inflammatory infiltration, and effectively ameliorated renal interstitial fibrosis in 5/6 (A/I) model rats. Further network pharmacological predictions identified PKCδ as a potential therapeutic target for XHF to alleviate endoplasmic reticulum stress, and WB assay was applied to confirm that XHF down-regulated PKCδ and its phosphorylation level, and down-regulated the core genes of the AGE-RAGE signalling pathway, p-p38, p-ERK, and p-JNK, protein expression levels, and the levels of cellular senescence-related SASP molecules. In an in vitro model of TGF-β-induced replicative fibrosis in renal tubular epithelial cells, XHF down-regulated the levels of p-PKCδ, p-p38, p-ERK, and p-JNK proteins, and reduced the deposition of β-galactosidase (SA-β-gal). In conclusion, XHF maintains endoplasmic reticulum homeostasis and reduces cellular senescence-associated SASP levels by inhibiting the expression of PKCδ in renal tubular epithelial cells and the expression of its core genes of the AGE-RAGE signalling pathway, which may be a potent strategy for the treatment of CKD.

Acknowledgement:

This research is funded by National Natural Science Foundation of China, No. 82274492; Supported by Shanghai Science and Technology Commission, No. 22Y31920200.

B-06

TaoHe ChengQi Decoction mitigates acute lung injury by inhibiting formation of neutrophil extracellular traps and MAPK pathway
桃核承氣湯透過抑制嗜中性球胞外陷阱形成及 MAPK 路徑減輕急性肺損傷

Mengting Xie[1], Xiaoli Jiang[1], Weihao Jiang[1], Bin Liu[1*], Bo Deng[1*], Jingzhi Zhang[1*]

[1] *Department of Traditional Chinese Medicine, Guangzhou Institute of Cardiovascular Disease, State Key Laboratory of Respiratory Disease, Institute of Integration of Traditional and Western Medicine of Guangzhou Medical University, the Second Affiliated Hospital of Guangzhou Medical University, No.250 Changgangdong Road, Guangzhou 510260, China.*

Abstract:

Background: Acute lung injury (ALI) represents a significant complication of sepsis, constituting a prevalent acute and critical clinical condition marked by elevated morbidity, mortality, and an unfavorable prognosis[1]. TaoHe ChengQi Decoction (THCQD), a renowned formula documented in the Treatise on Typhoid Fever[2], is widely employed in clinical settings to address conditions such as acute pelvic inflammatory disease[3], adnexitis, intestinal obstruction, and acute cerebral hemorrhage, but the mechanism of THCQD in ALI remains unclear[4].

Methods: Male C57/BL6 mice were utilized to induce an ALI model through cecum ligation and puncture (CLP). THCQD was administered via gavage for one week at doses of 2 g/kg and 4 g/kg, respectively. Hematoxylin-eosin (H&E) staining was used to grade the extent of lung injury. Additionally, ELISA was employed to measure inflammatory factors (interleukin-6 (IL-6), tumor necrosis factor-α (TNF-α), and (IL-1β)), as well as MPO-DNA and citHis3 in the supernatant from differentiated neutrophils HL-60 cells and mice serum. Flow cytometry was employed to quantify the ratio of neutrophils and macrophages in lung single-cell suspensions. Revealing the action principle of THCQD using molecular docking approach. Immunofluorescence assays were carried out to detect the presence of peptidylarginine deiminase 4 (PADI4) and myeloperoxidase (MPO) in lung tissues and Neutrophil-like cells. Neutrophil-like cells differentiated from HL-60 cells were induced to form NETs by LPS, and then verified by PMA, a more recognized NETs model drug. Primary mouse bone marrow neutrophils were extracted and induced to generate NETs by PMA for comparison[5]. Western blotting was used to detect the expression of NETs-related proteins and mitogen-activated protein kinase (MAPK) signaling pathway in lung tissues and neutrophil-like cells.

Results: THCQD improves the survival rate and alleviates the lung injury in CLP-induced ALI mice model. Additionally, THCQD decreases macrophage infiltration and mediated inflammation, reduces the production of pro-inflammatory cytokines (e.g., IL-1β, IL-6, and TNF-α). More importantly, THCQD suppressed the formation of neutrophil extracellular traps (NETs) in vivo and in vitro through further experiments confirmation[6]. Subsequently, THCQD effectively reduced PAD4 protein expression, some active compounds from THCQD could interact with PAD4. Lastly, THCQD significantly reduced ERK1/2 phosphorylation.

Conclusions: Overall, these results above strongly suggest that THCQD mitigates CLP-induced ALI by suppressing the formation of neutrophil extracellular traps, inhibiting the MAPK pathway[7].

Acknowledgement:

We sincerely thank Guangzhou Medical University, the Second Affiliated Hospital of Guangzhou Medical University, and the Institute of Integrated Chinese and Western Medicine of Guangzhou Medical University for providing a valuable platform and support for this study. Special thanks to teachers' professional guidance and generous support, it played an important role to the successful completion of this research.

This work was funded by the following grants: National Natural Science Foundation of China (grant Nos. 82374183, 82274246, 82374341, 82204991, 82004104), Planned Science Technology Project of Guangzhou (No. 2023A03J0419, 2023A03J0420), General Project of Natural Science Foundation of Guangdong Province (No. 2023A1515011090), Basic and Applied Basic Research Foundation of Guangdong Province (No. 2021A151510809), Project of Administration of Traditional Chinese Medicine of Guangdong Province of China (No. 20223013).

References:

1. Papayannopoulos V, et al. Neutrophil extracellular traps in immunity and disease. Nat Rev Immunol, 2018; 18:134-147
2. Wang K, et al. Locally organised and activated Fth1(hi) neutrophils aggravate inflammation of acute lung injury in an IL-10-dependent manner. Nat Commun 2022; 13:7703
3. Zhou M, et al. Xuanfei Baidu Decoction regulates NETs formation via CXCL2/CXCR2 signaling pathway that is involved in acute lung injury. Biomed Pharmacother 2023; 161:114530
4. An Y, et al. Biomarkers, signaling pathways, and programmed cell death in acute lung injury and its treatment with Traditional Chinese Medicine: a narrative review. Eur Rev Med Pharmacol Sci 2023; 27:10157-10170
5. Dong JY, et al. Research Progress on Autophagy Regulation by Active Ingredients of Traditional Chinese Medicine in the Treatment of Acute Lung Injury. J Inflamm Res 2023; 16:1671-1691
6. Park I, et al. Neutrophils disturb pulmonary microcirculation in sepsis-induced acute lung injury. Eur Respir J 2019; 53.
7. Zhang Z, et al. Roflumilast, a type of phosphodiesterase 4 inhibitor, can reduce intestinal injury caused by sepsis. Exp Ther Med 2021; 22:1398.

B-07

Yi-Yi-Fu-Zi-Bai-Jiang-San ameliorates ulcerative colitis by modulating ferroptosis via bioinformatics analyses and experimental verification

基於生物資訊學及實驗驗證薏苡附子敗醬散調節鐵死亡治療潰瘍性結腸炎

YX Zeng[1,2,3], NR Li[1,2,3], BY Deng[1,2,3], Y Hua[1,2,3] and Y Liu[1,2,3]

[a] *School of Traditional Chinese Medicine, Southern Medical University;*

[2] *Guangdong Provincial Key Laboratory of Chinese Medicine Pharmaceutics, Southern Medical University;*

[3] *Guangdong Basic Research Center of Excellence for Integrated Traditional and Western Medicine for Qingzhi Diseases.*

Abstract:

Background: Ferroptosis is a unique form of non-apoptotic cell death, which has been reported to play an important role in ulcerative colitis (UC). As a classic Chinese formula, Yi-Yi-Fu-Zi-Bai-Jiang-San (YYFZBJS) has been used for the treatment of UC and inflammation-associated colorectal cancer (CRC) of many years, but the mechanism of YYFZBJS in allevating UC by modulating ferroptosis has not been reported yet.

Methods: In this study, we investigated the protective effects of YYFZBJS on UC combined with bioinformatics analysis, network pharmacology and in vivo experiments. The components and action targets of YYFZBJS were obtained by the method of network pharmacology, and then intersected with UC disease genes and ferroptosis related genes. The differential gene expression of "YYFZBJS-UC-ferroptosis" was extracted by GSE206285 dataset, and the correlation analysis, KEGG and GO analysis were carried out. Lasso and SVM machine learning methods were used to further screen the key differential genes and analyze them by GSEA and GSVA. Molecular docking were used to analyze the relativity between the main components of YYFZBJS with the relative protein of ferroptosis. Additionally, the amelioration of YYFZBJS on dextran sodium sulfate (DSS)-induced UC mice was evaluated by body weight, colon length, the disease activity index (DAI) scores, histopathology of colon tissues and HI scores. The number of goblet cells in the colon tissue was detected by alcian blue staining (AB). Real-time polymerase chain reaction (qRT-PCR) and western blot (WB) were used to measure pro-inflammatory cytokines and intestinal tight junction (TJ) proteins. Moreover, the DEGs was quantified by qRT-PCR and WB to examine the protective effects of YYFZBJS.

Results: YYFZBJS could alleviate the phenomenon of weight loss and colonic contraction caused by DSS, and its effect was similar to that of mesalazine. Compared with model group, the DAI score, HI score, and pathological histology were improved after the administration of YYFZBJS. Additionally, 27 genes were identified at the intersection of YYFZBJS, UC and ferroptosis, and the key genes were found to be closely related, and the validation set still significantly different among them. Molecular docking also revealed a stabilizing binding effect between YYFZBJS and the key genes. Furthermore, the relationship between UC and ferroptosis was analyzed using

bioinformatics, and it was gratifying to find that the correlation between the two was obvious, and then the components in YYFZBJS were measured using molecular docking with ferroptosis-related genes, and the results showed that the two had a high bining ability. Finally, the results of the above analysis were verified using experiments, and it was found that YYFZBJS inhibits ferroptosis in intestinal cells through the SLC7A11/GPX4 pathway, which in turn improves UC.

Conclusions: This work demonstrates for the first time that YYFZBJS improves intestinal barrier damage and ameliorates DSS-induced ulcerative colitis by regulating ferroptosis through SLC7A11/GPX4 pathway, which indicates that YYFZBJS may be a candidate for the treatment of UC.

Acknowledgement:

This research was supported by the National Natural Science Foundation of China (Grant No.81872980 and 82073982), Natural Science Foundation of Guangdong Province (Grant No.2023A1515011060).

B-08

Mechanisms of total flavonoids of Sophora flavescens for the Treatment of NAFLD based on the Combination of Bioinformatics and Experimental Validation
基於生物資訊學和實驗驗證探討苦參總黃酮治療非酒精性脂肪肝的作用機制

Ni-ren Li[1], Yu-feng Gu[1], Yi-xuan Zeng[1], Bing-ying Deng[1], Si-fan Lu[1], Yue Hua[1], Yi Liu[1]

[1] *School of Traditional Chinese Medicine, Southern Medical University, Guangzhou, 510515*

Abstract:

Non-alcoholic fatty liver disease (NAFLD) is a clinicopathological syndrome characterized by excessive fat deposition in hepatocytes due to factors other than alcohol and other well-defined hepatic causes. Sophora flavescens is a medicine for heat-clearing and dampness removal, but its application in non-alcoholic fatty liver disease (NAFLD) is relatively rare. In this study, we constructed NAFLD models in zebrafish and mice, combining network pharmacology and bioinformatics analysis, and conducted experiments to verify the efficacy of the total flavonoids of Sophora flavescens on NAFLD. We investigated its mechanism of action in inflammatory response, insulin resistance, lipid metabolism, and intestinal bacterial flora based on the "multi-hit theory".

1.Using databases such as TCMSP, to obtain the targets of total flavonoids in Sophora flavescens, and searching disease databases such as GeneCards, to screen out the target genes related to NAFLD. Using R software, we performed differential analysis of GSE33814 expression profile genes, GSEA and ROC curve analysis, and screened out the core genes by combining with the key pharmacological targets of the network, and then used the validation set GSE89632 to verify the core genes. 2. Zebrafish and mice NAFLD models were established to study Sophora flavescens effects. Observations included liver pathology, lipid deposition, and key gene expression analysis. Methods included qRT-PCR, Western blot, HE and immunohistochemistry (IHC). In mice, insulin resistance, liver weight changes, and gut microbiota analysis were also conducted to investigate NAFLD.The causal relationship between intestinal flora and NAFLD was analyzed by two-sample Mendelian randomization to further explore important intestinal flora.

The total flavonoids of Sophora flavescens have significant therapeutic effects on NAFLD, and their mechanism of action is related to the following three aspects of the "multiple-strike theory": first, inhibiting the JAK2/ERK1/2/STAT3 signaling pathway to alleviate the inflammatory response; second, inhibiting the accumulation of lipids through the AMPK/ACC/SREBP1 signaling pathway; third, regulating the intestinal flora and improving the intestinal barrier; and third, regulating the intestinal flora and improving the intestinal barrier. regulating intestinal flora and improving intestinal barrier. In conclusion, the total flavonoids of Sophora flavescens synergistically exerted anti-NAFLD effects by regulating lipid metabolism, inhibiting inflammation, and influencing the metabolism of gut microbiota.

Acknowledgement:

This research was supported by the National Natural Science Foundation of China (Grant No.81872980 and 82073982), Natural Science Foundation of Guangdong Province (Grant No.2023A1515011060). I extend my heartfelt gratitude to all the authors for their valuable contributions.

B-09

Gualou Xiebai Banxia Decoction improves Post-infarction Ventricular Remodeling by Activating ALDH2
瓜蔞薤白半夏湯通過啟動 ALDH2 改善心梗後心室重構

Bingying Deng[1], Guoyong Zhang[1] , Yixuan Zeng[1] and Niren Li[1]

[1] *School of Traditional Chinese Medicine, Southern Medical University, Guangzhou.*

Abstract:

Myocardial infarction is one of the major disabling and fatal diseases worldwide. Post-infarction ventricular remodeling is a common clinical pathologic process that manifests clinically as changes in ventricular structure, and further progression will lead to heart failure and cardiogenic death. Apoptosis is the main form of cardiomyocyte death in the early stages of acute myocardial infarction, and sustained apoptosis leads to the development of ventricular remodeling and ultimately to heart failure. Therefore, the development of effective drug therapies to inhibit cardiomyocyte apoptosis is an important research direction.

Gualou Xiebai Banxia Decoction (GXBD) is a key drug for treating chest paralysis caused by cold-phlegm obstruction and lack of chest yang, with cardioprotective properties. However, whether GXBD regulates cardiomyocyte apoptosis after myocardial infarction, as well as the underlying mechanisms, remains unclear. In our study, we confirmed that GXBD protects cardiac function and improves post-infarction ventricular remodeling induced by ligation of the left anterior descending coronary artery (LAD) in mice, using echocardiography, Masson staining, and HE staining. Then, GXBD was confirmed to inhibit cardiomyocyte apoptosis through TUNEL staining, immunohistochemistry (IHC), and Western blot (WB). Additionally, bioinformatic analysis suggested that the cardioprotective function of GXBD might be associated with the regulation of acetaldehyde dehydrogenase 2 (ALDH2) expression, a key enzyme in aldehyde metabolism in cellular mitochondria, which is crucial in the prevention and treatment of cardiovascular diseases. Based on this, we proposed the hypothesis that GXBD improves post-infarction ventricular remodeling by regulating mitochondrial apoptosis and activating ALDH2. It is proposed to explore the mechanism of mitochondrial apoptosis regulation by ALDH2 gene silencing in vivo and in vitro, as well as the regulatory effect of GXBD, to provide a theoretical basis for the application of GXBD in post-infarction ventricular remodeling.

Chinese medicine compound prescriptions are composed of more drugs and complex ingredients, which makes it difficult to select the active ingredients and precisely interpret the pharmacological mechanism of their effects, and which is not conducive to the standardization and optimization of Chinese medicine compound prescriptions. Based on the key signal and potential medicinal target of ALDH2, the study will continue to understand the intrinsic mechanism of disease and drug action mechanism from the holistic perspective of the "drug target network". By combining high-throughput methods to collect and establish the molecular signaling network of the disease, using bioinformatics, molecular docking, and computer network pharmacology methods, we will utilize data mining to screen small molecules targeting in GXBD, and utilize molecular docking combined with machine learning methods to predict the effective drug-target relationship and

active ingredients. Finally, in vivo and ex vivo experiments will be conducted to verify the activity of the candidate ingredients.

Acknowledgement:

This study was supported by the National Natural Science Foundation of China (Grant No. K121293246) and the Natural Science Foundation of Guangdong Province (Grant No. K322293108). All authors would like to thank all study participants who provided high-quality analyzed data for GWAS resources.

B-10

Adiponectin alleviates acute kidney injury-related pyroptosis and inflammation by accelerating NLRP3 degradation
脂聯素透過加速 NLRP3 降解減輕急性腎損傷相關的細胞焦亡和炎症

Baoyi Shao[1], Jianan Wang[2], Haidi Li[2], Jianbo Guo[1], Yifan Wang[1], Hai-Yong Chen[1, 3]

[1] *The University of Hong Kong Li Ka Shing Faculty of Medicine, Hong Kong, Hong Kong.*

[2] *Anhui Medical University, Hefei, Anhui, China.*

[3] *The University of Hong Kong-Shenzhen Hospital, Shen Zhen, China*

Abstract:

Background: Adiponectin, an adipose tissue-derived hormone, exhibits multifaceted effects on various tissues. Its renoprotective function has been extensively documented in chronic kidney diseases, such as diabetic kidney disease. Nevertheless, adiponectin's role in acute kidney injury (AKI) remains largely unclear. This study investigated whether adiponectin mitigates AKI by inhibiting pyroptosis and inflammation through the NLRP3/GSDMD-mediated pathway.

Methods: The expression levels of adiponectin and its receptors AdipoR1/AdipoR2 were tested in AKI-induced mouse models. Adiponectin knockout (KO) and wild-type (WT) mice were induced into AKI by the injection of cisplatin, lipopolysaccharide (LPS), or folic acid (FA). The effects of AdipoRon, an adiponectin receptor agonist, on AKI were observed in three AKI models in vivo and in cisplatin-induced AKI in mouse tubular epithelial cells (mTECs). The role of phosphorylated AMPK (pAMPK) in the renoprotective effects of adiponectin was investigated and the relationship between pAMPK and NLRP3 was researched.

Results: Our data revealed that adiponectin and its receptor AdipoR1/AdipoR2 decreased in different AKI mouse models. Adiponectin deletion significantly exacerbated AKI-induced nephrotoxicity and inflammation, as indicated by the increased kidney injury scores, Kidney Injury Molecule-1, Monocyte Chemoattractant Protein-1, Interleukin 1beta, and Tumor Necrosis Factor Alpha. Notably, adiponectin deletion promoted the activation of the pyroptosis-related NLRP3/GSDMD pathway in KO mice across three AKI models rather than apoptosis, necroptosis, or ferroptosis as expressed by relevant executioners. AdipoRon administration protected against AKI-induced nephrotoxicity and inflammation by directly activating pAMPK and ameliorating pyroptosis-related pathways both in vivo and in vitro. The renoprotective role of AdipoRon/adiponectin in cisplatin-induced AKI in vitro was reversed by Compound C, an AMPK inhibitor. Furthermore, AICAR, an activator of pAMPK, reduced the protein levels of NLRP3 without significantly affecting its mRNA levels, indicating NLRP3 undergoes post-translational modifications upon pAMPK activation. The reduction in NLRP3 levels induced by AICAR was prevented by MG-132 but not by chloroquine. The finding suggested that NLRP3 might be degraded through the ubiquitin-proteasome system. Indeed, we found that AICAR enhanced NLRP3 ubiquitination, as demonstrated by western blots analysis in ubiquitin-transfected mTECs. Co-Immunoprecipitation

followed by liquid chromatography–mass spectrometry identified several potential E3 ubiquitin ligases that could interact with NLRP3 and function as downstream transcription factors of AMPK.

Conclusions: Adiponectin mitigates AKI by inhibiting pyroptosis and inflammation via the AMPK/NLRP3 pathways. Targeting adiponectin/AMPK/NLRP3 represents a novel therapeutic strategy for addressing AKI-induced nephrotoxicity and inflammation.

Key words: Adiponectin; Acute kindny injury; Pyroptosis; Inflammation; AdipoRon

B-11

Luteolin and scoparone produce synergistic anti-rheumatoid arthritis effects in experimental models
木犀草素和濱蒿內酯在實驗模型上具有協同抗類風濕性關節炎作用

Jia-Ying Wu[1,2], Ying-Jie Chen[1,2], Jun-Yu Deng[1], Shi-Jia Zhang[1], Zhi-Ling Yu[1,2*]

[1] *School of Chinese Medicine, Hong Kong Baptist University, China*

[2] *HKBU Shenzhen Institute of Research and Continuing Education, China.*

Abstract:

Rheumatoid arthritis (RA) is a chronic inflammatory autoimmune disease characterized by chronic synovitis and progressive erosion of cartilage and bone1. Current RA therapies have limitations2. We have previously shown that an herbal formula comprising Rosae Multiflorae Fructus (RMF) and Lonicerae Japonicae Flos (LJF) possesses anti-RA effects in rats3-5. We have further found that luteolin (Lu, occurs in LJF) and scoparone (Sco, occurs in RMF) are the main anti-RA compounds of this herbal formula. This study aimed to investigate whether the combination of Lu and Sco (Lu-plus-Sco) has anti-RA effects, and to investigate the acute and sub-chronic toxicities of this combination.

The collagen-induced arthritis (CIA) DBA-1J mouse model was used to examine the in vivo anti-RA effects of Lu-plus-Sco. LPS-stumulated RAW264.7 cells and IL-6/soluble IL-6 receptor (IL-6/sIL-6R)-stimulated RA-FLS were used to evaluate the in vitro effects of Lu-plus-Sco. Synergism of the drug combination was evaluated using the coefficient of drug interaction (CDI) value. Acute and sub-chronic oral dosing toxicity assessments were employed to establish the toxicity profiles of Lu-plus-Sco.

In cell assays, Lu and Sco exerted synergistic effects in inhibiting NO production in LPS-stimulated RAW264.7 cells and suppressing the hyperproliferation of IL-6/sIL-6R-stimulated RA-FLS. In animal assays, we found that intragastric administration of Lu-plus-Sco attenuated paw swelling and bone erosion, suppressed synovial hyperplasia, down-regulated serum levels of pro-inflammatory cytokines (TNF-α, IL-1β, IL-6 and IL-17), and improved body weight gain of CIA mice. Acute oral dosing toxicity assessments showed that LD50 of Lu-plus-Sco on female and male mice were 1,022.6 mg/kg and 1,298.5 mg/kg (Lu:Sco=1:6), respectively. Sub-chronic toxicity study showed that intragastric gavage with Lu-plus-Sco for 14 days caused liver injury in female mice, while caused kidney injury and reproductive injury in male mice.

In summary, we for the first time demonstrated that Lu in combination with Sco exhibits synergetic anti-RA effects in cell models, and Lu-plus-Sco ameliorates CIA in mice. We also demonstrated that a 14-day intragastric administration of Lu-plus-Sco causes toxicities in mice. This study provides pharmacological and toxicological data for developing Lu-plus-Sco into a novel anti-RA agent.

Acknowledgement:

This work was supported by the Health and Medical Research Fund (grant No.: 20211441).

References:

1. Sparks JA. Rheumatoid Arthritis. *Ann Intern Med.* 2019;170:1–15.
2. Radu AF, Bungau SG. Management of Rheumatoid Arthritis: An Overview. *Cells*. 2021;10(11):2857.
3. Chen YJ, *et al*. A two-herb formula inhibits hyperproliferation of rheumatoid arthritis fibroblast-like synoviocytes. *Sci Rep*. 2021 Feb 16;11(1):3850.
4. Chen YJ, *et al*. A two-herb formula inhibits osteoclastogenesis and suppresses NF-kB and MAPK pathways. *J Ethnopharmacol*. 2020;252:112625.
5. Chen YJ, *et al*. An herbal formula inhibits STAT3 signaling and attenuates bone erosion in collagen-induced arthritis rats. *Phytomedicine*. 2020;76:153254.

B-12

Development of Plant Natural Product Ardisiphenol D into a Therapeutic Agent for the Treatment of advanced Colorectal Cancer
天然植物產物 Ardisiphenol D 作為治療進展期大腸直腸癌治療藥物的開發

Bai-Sen Chen[1], Wai-I Chik[1] , Yi-Xuan Xia,
Ching-Yau Cheung, and Hong-Jie Zhang[1*]

[1] *School of Chinese Medicine, Hong Kong Baptist University, Hong Kong SAR, China.*

Abstract:

Colorectal cancer (CRC) is one of the most important health problems in the world. It ranks the fourth common cancer in terms of incidence and the second cause of cancer-related death[1]. In Hong Kong, CRC is recognized as the second-leading cause of cancer related fatalities, with 2270 fatalities recorded in 2022, representing 15.4% of all cancer deaths[2]. The stages of CRC are directly associated with mortality, with the 5-year survival rate for stage IV CRC of 15.1%[3]. Currently, there is no effective frontline treatment for advanced CRC. There is an urgent need for a novel, cost-effective therapeutic solution for advanced CRC.

Chinese herbs are rich sources of bioactive compounds with medicinal values. Indeed, many conventional drugs are plant-based. *Ardisia lindleynana*, a species of Myrsinaceae family, is a folk medicine used to treat sore throats, irregular menstruation, and rheumatoid arthritis[4]. Our previous *in vitro* and *in vivo* studies found that ardisiphenol D, an active compound identified from the roots of *A. lindleynana*, showed potent antitumor effects. In the present study, we aim to explore ardisiphenol D as a potential therapeutic agent for the treatment of advanced CRC.

The primary objective of this study is to enhance the translational prospects of ardisiphenol D for future preclinical studies by assessing its safety, stability, and identifying of its molecular targets. A technical route was designed for total synthesis of ardisiphenol D, using commercially available raw materials, which enabled the successful synthesis of ardisiphenol D in 7 steps with an overall yield of 34%[5]. To further explore the mechanism of its anti-CRC effect, we conducted a small-molecule pull-down assay coupled with mass spectrometry analysis to elucidate its mechanism of action. Our findings revealed that ardisiphenol D exhibited a potential binding affinity in ACC1 protein, with Western blotting experiments indicating a significant reduction in ACC1 protein levels within CRC cells upon treatment. Building upon these initial discoveries, our further investigations will focus on the specific mechanisms through which the interaction between ardisiphenol D and ACC1 [6,7] inhibits the growth of advanced CRC, providing a theoretical basis for its clinical application. Additionally, we will develop biodegradable proteomimetic nanoparticle technology for targeted delivery of ardisiphenol D in advanced CRC, aiming to enhance the in vivo efficacy of ardisiphenol D while mitigating systematic side effects associated with off-target drug interactions.

This research not only advances ardisiphenol D towards potential clinical application for advanced CRC treatment but also enriches traditional Chinese medicine by confirming its therapeutic advantages through interdisciplinary investigations.

Acknowledgement:

The work was financially supported by Hong Kong Baptist University, Research Committee, Initiation Grant – Faculty Niche Research Areas (IG-FNRA) 2021/22, Hong Kong (RC-IG-FNRA/21-22/SCM/01).

References:

1. Xi Y, Xu P. Global colorectal cancer burden in 2020 and projections to 2040[J]. Translational oncology, 2021, 14(10): 101174.
2. Hong Kong Cancer Registry, Hospital Authority, 2023.
3. National Cancer Institute—SEER Program. Colorectal Cancer—Cancer Stat Facts. Available online: https://seer.cancer.gov/statfacts/html/colorect.html (accessed on 7 January 2023).
4. 《廣西實用中草藥新選》, 1969.
5. Chik W I. Total Synthesis and Structural Modification of Plant Natural Products Ardisiphenol D and Napabucasin as Anticancer Lead Compounds[D]. Hong Kong Baptist University, 2021.
6. Krauß D, Fari O, Sibilia M. Lipid Metabolism Interplay in CRC—An Update[J]. Metabolites, 2022, 12(3): 213.
7. Röhrig, F.; Schulze, A. The multifaceted roles of fatty acid synthesis in cancer. Nat. Rev. Cancer 2016, 16, 732–749.
8. Kwan H Y, Xu Q, Gong R, et al. Targeted Chinese medicine delivery by A new family of biodegradable pseudo-protein nanoparticles for treating triple-negative breast cancer: in vitro and in vivo study[J]. Frontiers in Oncology, 2021, 10: 600298.

B-13

Crude polysaccharide from lithospermum erythrorhizon reduces high-fat diet-induced obesity in mice by modulating gut microbiota and bile acids
紫草多糖通過調節腸道菌和膽汁酸改善高脂飲食誘導的小鼠肥胖

Wenyuan Lin[1], Shuyang Xu[2], Zixuan Wang[2], Lili Ding[2,*] and Feng Tao[1,*]

[1] *Shanghai Municipal Hospital of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine;*

[2] *Shanghai Key Laboratory of Complex Prescription, and Ministry of Education (MOE) Key Laboratory for Standardization of Chinese Medicines, Institute of Chinese*

Abstract:

Background: Lithospermum erythrorhizon,a commonly used Chinese medicine in clinical, has been reported to have anti-obesity,improved lipid metabolism,and anti-inflammatory effects.However, the anti-obesity of crude polysaccharide from lithospermum erythrorhizon (LEP) and its possible underlying mechanisms have not been reported.

Purpose: In this study, we investigated LEP in anti-obesity and its possible mechanism of action.

Methods: A high-fat diet-induced obese mouse model was established.16S rRNA microbial sequencing technique to analyse the intestinal flora of cecum contents in groups of mice.The bile acid profile was examined using UPLC-Q-TOF-MS; lipid metabolism, intestinal barrier integrity, and inflammation-related gene expression were detected using qRT-PCR; the expression of proteins involved in bile acid synthesis was examined in WB experiments; and histological changes in the liver, adipose tissue, and colon were observed using HE staining.

Results: We found that the crude polysaccharide was able to ameliorate body weight, lipid accumulation, and liver damage in high-fat diet-induced obese mice to some extent.At the same time, LEP improved intestinal inflammation and intestinal barrier integrity.It also remodeled the structure and abundance of gut bacteria in obese mice, and reduced the abundance of gut bacteria carrying BSH related genes at the genus level, which led to the elevation of conjugated bile acid levels.Further, it activated the TGR5 pathway, which promoted adipose tissue thermogenesis and increased energy expenditure, leading to weight loss.

Conclusion: Our results demonstrated the anti-obesity effect of LEP through modulation of gut bacteria and bile acid profile, which may be attributed to the activation of the TGR5 pathway by increased taurine-bound bile acids, which increased energy expenditure in adipose tissue. Thus, LEP may be a promising new prebiotic for the prevention and treatment of obesity.

Acknowledgement:

This work is financially supported by the program of Shanghai Municipal Hospital of Traditional Chinese Medicine(Grant No. WLJH2021ZY-GZS005) and Shanghai Clinical Key Speciality Project (Y231276N) . It is also sponsored by Science and Technology Commission of Shanghai Municipality(23Y11921500).

B-14

The immunomodulatory effect of *Radix Astragali* polysaccharides on experimental autoimmune encephalomyelitis via the inhibition of Th17 cells response and dendritic cell maturation
黃芪多糖通過抑制 Th17 細胞應答及樹突狀細胞成熟對實驗性自身免疫性腦脊髓炎的免疫調節作用

DENG Kaihang[1*], CHEN Ying[1*], CHONG Wai Po[1,2†]

[1] *School of Chinese Medicine, Hong Kong Baptist University, Hong Kong SAR, China.*

[2] *HKBU Institute for Research and Continuing Education, Shenzhen, China.*

[*] *These authors contributed equally to this work.*

[†] *Corresponding Author. Email: chongwp@hkbu.edu.hk*

Abstract:

Multiple sclerosis (MS) is a chronic inflammatory disease that affects the central nervous system (CNS). It is mediated by abnormal inflammation in the brain and spinal cord due to the overactivation of the immune system, which could lead to permanent damage to the delicate CNS and locomotive system. In experimental autoimmune encephalomyelitis (EAE), a canonical animal model of MS, autoreactive T cells, especially T helper 17 (Th17), could secrete proinflammatory cytokines and infiltrate into the spinal cord and brain to cause irreversible CNS damage.

Currently, MS is the most common neurological disease in young adults between the ages of 20 and 40, afflicting more than 2.8 million people globally. Though the early symptoms may be subtle, MS can cause severe physical damage in the advanced progress. The later symptoms of MS include emotional expression or control inability, cognitive dysfunction, severe muscle stiffness or spasms affecting walking or standing, and even partial or complete paralysis. Currently, there are no cures for MS and limited treatments to reduce the severity and progression of MS. Thus, MS imposes substantial societal impacts and has drawn considerable interest in clinical settings.

For centuries, *Radix Astragali*, a traditional Chinese medicine, has been utilized to enhance the robustness of the "Qi" and provide nourishment to the "Blood" of patients. Previous studies have shown that *Radix Astragali* polysaccharides (RAP) can protect pancreatic β cells from apoptosis in type 1 diabetic rats and attenuate the proinflammatory response in type II collagen-induced rheumatoid arthritis rats, providing hints of RAP therapy in autoimmune diseases.

In this study, we investigate the therapeutic potential of RAP in EAE treatment. In vitro studies showed that RAP inhibits both the proliferation and polarization of Th17 cells and the maturation of dendritic cells (DC). In vivo studies showed that RAP treatment can significantly ameliorate EAE development as well as attenuate the infiltration of Th1, Th17, and DC in the CNS. We found that the induction of Th17 cells is impaired in mice treated with RAP after EAE immunization, and naïve T cells from mice treated with RAP are less effective in their polarization into Th17 cells in EAE compared to wild-type cells. We also found that the capacity of DC on the induction of naïve T cells into Th17 cells is impaired in mice when treated with RAP after EAE immunization. In conclusion,

our data suggest that RAP is involved in the regulation of Th17 induction and DC maturation and that this has a role in controlling the CNS autoimmune response.

Acknowledgement:

This work is supported by the National Natural Science Foundation of China (32370959), Natural Science Foundation of Guangdong Province, and Institute for Research and Continuing Education, Hong Kong Baptist University (2021A1515010569, 2022A1515012450).

References:

1. Baecher-Allan, C., Kaskow, B. J., & Weiner, H. L. (2018). Multiple sclerosis: mechanisms and immunotherapy. *Neuron*, 97(4), 742-768.
2. Woo, M. S., Engler, J. B., & Friese, M. A. (2024). The neuropathobiology of multiple sclerosis. *Nature Reviews Neuroscience*, 1-21.
3. Attfield, K. E., Jensen, L. T., Kaufmann, M., Friese, M. A., & Fugger, L. (2022). The immunology of multiple sclerosis. *Nature Reviews Immunology*, 22(12), 734-750.
4. Zong, Y., Deng, K., & Chong, W. P. (2024). Regulation of Treg cells by cytokine signaling and co-stimulatory molecules. *Frontiers in Immunology*, 15, 1387975.
5. Li, C. X., Liu, Y., Zhang, Y. Z., Li, J. C., & Lai, J. (2022). Astragalus polysaccharide: a review of its immunomodulatory effect. *Archives of Pharmacal Research*, 45(6), 367-389.

B-15

Impacts of sulfur fumigation on the chemistry and immunomodulatory activity of polysaccharides in ginseng
中文題目：硫熏對人參多糖化學性質及免疫調節活性的影響

Han-Yan Luo[a, #], Jing Fang[a, #], Yi-Xuan Li[b, #], Wei-Hao Zhang[a], Kam-Chun Chan[a], Yui-Man Chan[a], Hu-Biao Chen[a], Zhong-Zhen Zhao[d], Song-Lin Li[c*], Cai-Xia Dong[b*], Jun Xu[a, c*]

[a] *School of Chinese Medicine, Hong Kong Baptist University, Hong Kong*

[b] *Tianjin Key Laboratory on Technologies Enabling Development of Clinical Therapeutics and Diagnosis, School of Pharmacy, Tianjin Medical University, Tianjin 300070, China*

[c] *Department of Metabolomics, Jiangsu Province Academy of Traditional Chinese Medicine and Jiangsu Branch of China Academy of Chinese Medical Sciences, Nanjing 210028, China*

[d] *Institute of Ben Cao Gang Mu, Beijing University of Chinese Medicine, Beijing 100029, China*

[1] *These authors contributed equally.*

[*] *Corresponding author.*

Abstract:

Ginseng is widely regarded as a panacea in Oriental medicine mainly due to its immunomodulatory activity. In recent decades, sulfur fumigation has been commonly used for the post-harvest processing of ginseng to prevent pest infestation, mold, and bacterial contamination, and to provide an attractive whiter appearance[1]. Our previous studies revealed that sulfur fumigation significantly weakens the in vivo immunomodulatory activity of ginseng[2,3]. However, if and how sulfur fumigation affects the polysaccharides in ginseng, the crucial components contributing to the immunomodulatory function, remain unknown. Here we report that polysaccharides extracted from sulfur-fumigated ginseng (SGP) presented different chemical properties with polysaccharides extracted from non-fumigated ginseng (NGP), particularly increased water extraction yield and decreased branching degree[4]. SGP had weaker immunomodulatory activity than NGP in immunocompromised mice, as evidenced by less improved immunophenotypes involving body weight, immune organ indexes, white blood cells, lymphocyte cell populations and inflammation [4]. The different immunomodulatory activities were accompanied by changes in the interaction between the polysaccharides and gut microbiota, in which SGP stimulated the growth of different bacteria but produced less SCFAs as compared to NGP. Fecal microbiota transplantation experiment suggested that gut microbiota played a central role in causing the weakened immunomodulatory activity in vivo. This study provides definite evidence that sulfur fumigation affects the chemistry and bioactivity of ginseng polysaccharides, thereby contributing to understanding how sulfur fumigation weakens the immunomodulatory activity of ginseng.

Acknowledgement:

This work was supported by Hong Kong General Research Fund (12100219 and 12103919), Hong Kong Innovation and Technology Fund (PRP/003/20FX), and the National Natural Science Foundation of China (81872975).

References:

1. Hui Yan, Peng-Hui Li, Gui-Sheng Zhou, Ying-Jun Wang, Bei-Hua Bao, Qi-Nan Wu, and Shen-Liang Huang. Rapid and practical qualitative and quantitative evaluation of non-fumigated ginger and sulfur-fumigated ginger via Fourier-transform infrared spectroscopy and chemometric methods. *Food Chem* 341(2021): 128241.
2. Shan-Shan Zhou, Jia-Wei Hu, Ming Kong, Jin-Di Xu, Hong Shen, Hu-Biao Chen, Ming-Qin Shen, Jun Xu, and Song-Lin Li. Less SO2 residue may not indicate higher quality, better efficacy and weaker toxicity of sulfur-fumigated herbs: Ginseng, a pilot study. *J Hazard Mater* 364(2019): 376-387.
3. Bin Ma, Winnie Lai Ting Kan, He Zhu, Song-Lin Li, and Ge Lin. Sulfur fumigation reducing systemic exposure of ginsenosides and weakening immunomodulatory activity of ginseng. *J Ethnopharmacol* 195(2017): 222-230.
4. Jing Fang, Yi-Xuan Li, Han-Yan Luo, Wei-Hao Zhang, Kam-Chun Chan, Yui-Man Chan, Hu-Biao Chen, Zhong-Zhen Zhao, Song-Lin Li, Cai-Xia Dong, and Jun Xu. Impacts of sulfur fumigation on the chemistry and immunomodulatory activity of polysaccharides in ginseng. *Int J Biol Macromol* 247(2023): 125843.

B-16

Chrysin inhibits ferroptosis of cerebral ischemia/reperfusion injury via regulating HIF-1α/CP loop
中文題目：白楊素通過抑制 HIF-1α/CP 環減少腦缺血再灌注損傷中铁死亡研究

Jinfeng Shang[1]

[1] *School of Chinese Materia Medica, Beijing University of Chinese Medicine, 102488, Beijing, China.*

Abstract:

Chrysin is a natural flavonoid with powerful neuroprotective capacity. Cerebral ischemia/reperfusion injury (CIRI) is associated with oxidative stress and ferroptosis. Hypoxia-inducible factor 1α (HIF-1α) and ceruloplasmin (CP) are the critical targets for oxidation reactions and iron transport. But the regulatory mechanism between them is still unclear. Transient middle cerebral artery occlusion (tMCAO) model in rats and oxygen and glucose deprivation/re-oxygenation (OGD/R) model in PC12 cells were applied. Pathological tissue staining and biochemical kit were used to evaluate the effect of chrysin. The relationship between HIF-1α and CP was verified by transcriptomics, qRT-PCR and Western blot. In CIRI, HIF-1α/CP loop was discovered to be the regulatory pathway of ferroptosis. CIRI led to activation and nuclear translocation of HIF-1α, which promoted CP transcription and translation, and downstream ferroptosis. Inhibition of HIF-1α had opposite effect on CP and ferroptosis regulation. Overexpression of CP increased the expression of HIF-1α, nevertheless, inhibited the nuclear translocation of HIF-1α and alleviated CIRI. Silencing CP promoted HIF-1α elevation in nucleus and aggravated CIRI. Mechanistically, chrysin restrained HIF-1α nuclear translocation, thereby inhibiting CP transcription and translation, which in turn reduced downstream HIF-1α expression and mitigated ferroptosis in CIRI. Our results highlight chrysin restrains ferroptosis in CIRI through HIF-1α/CP loop.

Acknowledgement:

This work was supported by the Basic Scientific Research Business Expense Project of Beijing University of Chinese Medicine (Grant No. 2022-JYB-JBZR-005), the National Natural Science Foundation of China (Grant No. 82003960), the National Natural Science Foundation of China (Grant No. 81573726) and the Basic Scientific Research Business Expense Project of Beijing University of Chinese Medicine (Grant No. 2020-JYB-ZDGG-039).

References:

1. Shang J, *et al*. Chrysin inhibits ferroptosis of cerebral ischemia/reperfusion injury via regulating HIF-1α/CP loop. *Biomed Pharmacother*, 2024, 174: 116500.
2. Shang J, *et al*. Chrysin protects against cerebral ischemia-reperfusion injury in hippocampus via restraining oxidative stress and transition elements. *Biomed Pharmacother*, 2023, 161: 114534.

B-17

A tri-phytochemical formula improves skin barrier function and regulatesimmune response in atopic dermatitis-like mice
一種含有三个植物化合物的配方改善了特應性皮炎样小鼠的皮膚屏障和免疫異常

Ying Wu, Xiu-Qiong Fu, Zhi-Ling Yu

[1] *JaneClare Transdermal TCM Therapy Laboratory, School of Chinese Medicine, Hong Kong Baptist University, Hong Kong, China.*

Abstract:

Background: Atopic dermatitis (AD) is associated with IgE- and non-IgE-mediated immune responses, and with skin barrier dysfunction. Ginsenoside Rg1 has been shown to mitigate IgE-mediated allergic rhinitis responses; tetrandrine suppresses abnormal T-cell activation; and icariin improves intestinal barrier functions. Whether the formula comprising ginsenoside Rg1, tetrandrine, and icariin (referred to as GTI) is effective in treating AD remains unexplored.

Purpose: This study aimed to investigate the anti-AD effects and mechanisms of GTI in a mouse model.

Methods: A calcipotriol (MC903)-induced AD-like dermatitis mouse model was used to evaluate the anti-AD effects of GTI. Dermatitis scores and mouse ear thickness were recorded to assess disease severity. Ear tissues, ear-draining lymph nodes, spleens and sera were collected for use in the investigation of the effects and mechanisms of action of GTI.

Results: Topical application of GTI significantly alleviated AD-like dermatitis in mice, as shown by decreased dermatitis scores, ear thickening, epidermal thickness, dermis thickness, and levels of the inflammatory cytokines IL-1 β and IL-4 in ear tissues. Unlike the positive dexamethasone, GTI had no significant toxicity in the model mice. Topical GTI lowered serum IgE levels and diminished the accumulation of eosinophils and mast cells in ear tissues of model mice, suggesting that GTI reduces IgE-mediated allergic reactions. GTI significantly decreased the numbers of CD4 + T cells in ear tissues, ear-draining lymph nodes and the spleen, demonstrating a suppressive effect on hyperactive immune responses. The protein levels of ZO-1 and claudin-1, two tight junction proteins, were elevated in mouse ear tissues by GTI, indicating a beneficial effect of this formula on skin barrier function. Also, GTI inhibited the activation of mitogen-activated protein kinases (MAPKs), as demonstrated by the downregulation of protein levels of phospho-p38 (Thr180/182), phospho-ERK (Thr202/Tyr204), and phospho-JNK (Thr183/185) in mouse ear tissues.

Conclusion: This study, for the first time, demonstrated that topical application of GTI alleviates atopic dermatitis symptoms without overt toxicity in a calcipotriol-induced AD mouse model. The anti-AD effects of GTI are associated with suppression of allergic reactions and hyperactive immune responses, improvement of skin barrier function, and inhibition of MAPK activation. These findings suggest that GTI has potential to be developed into a safe and effective drug for treating AD.

Acknowledgement:

This work was supported by Laboratory JaneClare Limited and the grant 2021A1515010658 from Guangdong Natural Science Foundation, China.

B-18

Biomarkers of chronic gastritis patients with TCM damp phlegm pattern based on tongue coating metabolomics
基于舌苔代謝学的中医濕痰證慢性胃炎患者的生物標志物

ZY You[1], JH Lu[1], YF Xu[1], RL Zhang[2], ZJ Zhu[2], YQ Wang[1] and YM Hao[1]

[1] *Shanghai Key Laboratory of Health Identification and Assessment, Shanghai University of Traditional Chinese Medicine;*

[2] *Shanghai China, Longhua Hospital Affiliated to Shanghai University of Traditional Chinese Medicine.*

Abstract:

Chronic gastritis, a prevalent condition affecting a substantial segment of the global population, is categorized into various subtypes in Traditional Chinese Medicine (TCM), including the "Damp Phlegm (DP)" pattern [1]. The diagnosis of the DP subtype has been challenging due to the lack of definitive biochemical markers, and its pathogenesis is not yet fully understood [2].

Objective: This study aimed to uncover metabolic markers for the DP pattern in chronic gastritis, develop a diagnostic model based on oral coating metabolite variations, and investigate the metabolic pathways potentially implicated in the DP pattern's development [3].

Methods: A cross-sectional study enrolled 300 chronic gastritis patients, 200 with the DP pattern and 100 without. Metabolomics analysis using GC-TOF-MS and UHPLC-QE-MS was conducted on tongue coating samples. A diagnostic model for the DP pattern was formulated from the ROC curves of differential biomarkers and externally validated with an additional 50 clinical samples [4].

Results: Our analysis revealed 116 differential metabolites between DP and non-DP groups, predominantly lipids and lipid-like compounds, with 27 distinct types identified [5]. Four lipid metabolites associated with sphingomyelin metabolism were implicated in the DP pattern's pathogenesis [6]. The diagnostic model, incorporating phenol, 2,6-diaminopimelic acid, and N-hexadecanoylpyrrolidine, demonstrated high accuracy with specificity, accuracy, and sensitivity rates of 83.3%, 90.6%, and 93.9%, respectively. The model's robustness and generalizability were confirmed by successful external validation [7].

Conclusion: Our diagnostic model has been successfully externally validated, underscoring its reliability in detecting the DP pattern among patients with chronic gastritis. The biomarkers identified—phenol, 2,6-diaminopimelic acid, and N-hexadecanoylpyrrolidine—demonstrate a significant correlation with the DP pattern, underscoring their pivotal role in the disease's pathogenesis [8]. This validation on an independent sample set not only substantiates the model's predictive accuracy but also underscores its clinical potential for noninvasive diagnostics. This advancement presents a novel approach to the early identification and ongoing surveillance of chronic gastritis characterized by the DP pattern [9].

Keywords: Chronic Gastritis, Damp Phlegm Pattern, Tongue Coating, Metabolomics, Biomarkers, External Validation

Acknowledgement:

The authors would like to express their gratitude to all participants for their contributions. We also acknowledge the support from the Shanghai University of Traditional Chinese Medicine and the assistance of our research team and clinical staff. This work was supported by the National Natural Science Foundation of China (Grant No. 82174279, No. 81703982), Shanghai Science and Technology Planning Program (Grant No. 21DZ2271000).

References:

1. Sipponen P, Maaroos HI. Chronic gastritis. Scand J Gastroenterol, 2015, 50(6): 657-667.
2. Bai Y, Li ZS, Zou DW, et al. Alarm features and age for predicting upper gastrointestinal malignancy in Chinese patients with dyspepsia with high background prevalence of Helicobacter pylori infection and upper gastrointestinal malignancy: an endoscopic database review of 102,665 patients from 1996 to 2006. Gut. 2010 Jun;59(6):722-8.
3. World Health Organization, ICD-11 for Mortality and Morbidity Statistics, World Health Organization, Geneva, Switzerland, version: 04/2019.
4. Xu Y, Zhang R, Morris R, et al. Metabolite Characteristics in Tongue Coating from DP Pattern in Patients with Gastric Precancerous Lesion. Evid Based Complement Alternat Med. 2021 Jun 2; 2021:5515325.
5. Yu L, Lai Q, Feng Q, et al. Serum Metabolic Profiling Analysis of Chronic Gastritis and Gastric Cancer by Untargeted Metabolomics. Front Oncol. 2021 Mar 11; 11:636917.
6. Liu Y, Xu W, Qin X. Deciphering the Mechanical Network of Chronic Atrophic Gastritis: A Urinary Time-Dependent Metabonomics-Based Network Pharmacology Study. Front Physiol. 2019 Aug 6; 10:1004.
7. Kim DH, Son BK, Min KW, et al. Chronic Gastritis Is Associated with a Decreased High-Density Lipid Level: Histological Features of Gastritis Based on the Updated Sydney System. J Clin Med. 2020 Jun 14;9(6):1856.
8. Laurila A, Cole SP, Merat S, et al. High-fat, high-cholesterol diet increases the incidence of gastritis in LDL receptor-negative mice. Arterioscler Thromb Vasc Biol. 2001 Jun;21(6):991-6.
9. Zhang L, Zhang Q, You Y, et al. [Investigation of Evolution Rules of Phlegm and Blood Stasis Syndrome in Hyperlipidemia and Atherosclerosis by NMR-based Metabolic Profiling and Metabonomic Approaches]. Zhongguo Zhong Xi Yi Jie He Za Zhi. 2015 Jul;35(7):823-33. Chinese.

B-19

Studies on the molecular mechanism of Gastrodia elata Blume to improve insomniac and depressive symptom based on intestinal flora and brain-gut axis
基於腸道菌群及腦 - 腸軸通路研究天麻改善睡眠障礙的分子機制

HB Zhou[1], D Gao[1] and JL Zhang[1, 2]

[1] *College of Food Science and Technology, Huazhong Agricultural University;*

[2] *Key Laboratory of Environment Correlative Dietology, Ministry of Education.*

Abstract:

Insomnia and depressive disorder are two common symptoms with a reciprocal causal relationship in clinical practice, which are usually manifested in comorbid form. Several medications (diazepam, estazolam, etc.) have been widely used in the treatment of insomnia, but most of these drugs show non-negligible side effects. Glutamic acid (Glu) and tryptophan (Trp) are the essential amino acids in human body both of which can be catalyzed by glutamate decarboxylase (GAD) and tryptophan hydroxylase (TPH) to produce GABA and 5-HT, respectively. And GABA and 5-HT are crucial neurotransmitters associated with insomnia and depression and are also the main therapeutic targets in clinical practice. Currently, many treatments are indicated for insomnia and depressive symptom, including Chinese herbal medicine such as *Gastrodia elata Blume* (*G.elata*), which has excellent sedative-hypnotic and antidepressant effects in clinical and animal studies. Based on these evidences, this study was conducted to explore the mechanisms of insomnia and the structure-activity mechanism for *G.elata* to alleviate these symptoms, particularly by brain-gut axis and intestinal flora, aiming to discover new approaches for treating insomnia.

G.elata chemical composition was firstly analyzed by UPLC-QTOF-MS/MS. Sleep deprivation model was also established. *G.elata* and its related active component (gastrodin and p-hydroxybenzyl alcohol) were given to insomniac mice for 14 days. We further examined the mechanisms of *G.elata* treating insomnia by shotgun metagenome sequencing, immunohistochemistry staining, western blotting and non-targeted metabolomics technology. Finally, the feces from insomniac mice were given to pseudo germ-free mice to establish insomnia model again to verify above conclusion.

Insomnia and depression-like behavior was significantly attenuated by *G.elata* treatment. *G.elata* improved hypothalamic neurotransmitters, decreased proinflammatory cytokines, and depressed the proteins expression of tumor necrosis factor (TNF)-α/nuclear factor (NF)-κB signaling pathway. The results of shotgun metagenome sequencing revealed that there were significant changes on both structure and functional pathway of gut microbiotas between insomniac mice and healthy mice. *Streptococcus thermophilus* may be a crucial strain for alleviating sleep disorders and depressive symptoms. *G.elata* improved the species diversity and bacterial abundance in the intestines of mice with sleep disorders. Metabolomics analysis indicated that 12 *G.elata*-related metabolites in serum and 32 *G.elata*-related metabolites in feces were identified, respectively. Metabolite analysis in serum, *G.elata* treatment affected Glu, Trp, taurine, cysteine, methionine,

glycine, serine, and threonine metabolism, among others. Metabolite analysis in feces showed significant effects of *G.elata* treatment on the metabolism of tyrosine, and glycerophospholipid. Additionally, the correlation analysis of heatmaps showed a tight relationship between inflammatory factors, metabolic parameters, and gut microbial phylotypes.

Taken together, *Streptococcus thermophilus* may be a critical strain for alleviating sleep disorders and depressive symptoms. GAD and TPH may bridge the gap between brain and gut flora. *G.elata* may exert sedative-hypnotic and antidepressant effects by regulating the metabolism of amnio acid (Glu and Trp), and the activity of neurotransmitter synthase (TPH and GAD).

Acknowledgement:

This work was supported by the funding from "Science and Technology Major Project Foundation of Hubei Province" (No. 2021ACA004), China.

References:

1. Gong M, *et al*. Traditional uses, phytochemistry, pharmacology, applications, and quality control of *Gastrodia elata* Blume: A comprehensive review. Journal of Ethnopharmacology, 2024. 319, 117128.
2. Zhou HB, *et al*. Mechanisms for the biological activity of *Gastrodia elata* Blume and its constituents: a comprehensive review on sedative-hypnotic, and antidepressant properties. Phytomedicine, 2024.123,155251

B-20

Salvia miltiorrhiza extract alleviates cardiac injury induced by myocardial ischemia-reperfusion by activating SIRT1 signaling pathway and inhibiting ferroptosis

丹参提取物通過激活 SIRT1 信号通路，抑制铁死亡，減輕心肌缺血 - 再灌注引起的心臟損傷

Jundi Xie,[1] Bo Deng,[1] Xiaoli Jiang,[1] Mengting Xie,[1]
Lining Yang,[1] Bin Liu,[1] Jingzhi Zhang.[1]

[1] *Department of Traditional Chinese Medicine, Guangzhou Institute of Cardiovascular Disease, State Key Laboratory of Respiratory Disease, Institute of Integration of Traditional and Western Medicine of Guangzhou Medical University, the Second Affiliated Hospital of Guangzhou Medical University, No.250 Changgangdong Road, Guangzhou 510260, China;*

Abstract:

Ferroptosis is associated to the pathophysiology of myocardial ischemia and reperfusion injury (MI / RI). Salvia miltiorrhiza (SM) has been used commonly to treat cardiovascular diseases (CVDs) for hundreds of years in the Chinese community. We aimed to explore the effects of SM on myocardial ischemia-reperfusion injury and to identify the underlying mechanism. An in vivo model of acute MI/RI was established in C57 mice. The effects of SM on myocardial tissue injury were evaluated by histology. The content of myocardial damage markers contents in serum was determined by biochemical assays. Mitochondrial damage was assessed using transmission electron microscopy. Neonatal Rat Cardiomyocytes (NRCMs) were induced in vitro by oxygen–glucose deprivation / reoxygenation, and ferroptosis inducer Erastin was administered to detect ferroptosis-related indicators, oxidative-stress-related indicators, and expressions of ferroptosis-related proteins and SIRT 1. In MI/RI model mice, SM reduced myocardial histopathological damage, ameliorated mitochondrial damage in myocardial cells. SM increased the protein levels of SIRT1, PGC1α and GPX4 and mitigated erastin- or SIRT1 siRNA-induced damage in NRCMs. In summary, SM alleviated MI/RI by activating the SIRT1 signaling pathway, thereby inhibiting ferroptosis.

Acknowledgement:

We would like to extend our sincere gratitude to Guangzhou Medical University, the Second Affiliated Hospital of Guangzhou Medical University, and the Institute of Integrated Traditional Chinese and Western Medicine of Guangzhou Medical University for providing the valuable platform and support for this research. We are especially grateful to the mentors for their generous funding and professional guidance, which have been instrumental in the successful completion of this study.

This work was funded by the following grants: National Natural Science Foundation of China (grant Nos. 81874418, 82204991, 82374183), Basic and Applied Basic Research Foundation of Guangdong Province (Nos. 2019B1515120026).

B-21

Luteolin overcomes vemurafenib resistance in melanoma by upregulating RNF125 expression via inhibiting miR-15b-5p
木犀草素通過抑製 miR-15b-5p 上調 RNF125 的表達克服黑色素瘤對維莫非尼的耐藥性

Li WANG, Xiao Qi WANG, Jing Xuan BAI, Ying Wu, Jia Ying Wu, Rui Xuan HAN, Sze Man Amy LI, Xiu Qiong FU*, Zhi Ling YU*

School of Chinese Medicine, The University of Hong Kong.

Abstract:

Nearly half of melanoma patients harbor a mutation of valine 600 to glutamine (V600E) in the BRAF gene. BRAF(V600E) inhibitors (BRAFi) including vemurafenib, have good clinical efficacy in treating unresectable or metastatic melanomas with the BRAF(V600E) mutation. However, most patients develop resistance to vemurafenib within 8 months, which severely limits its clinical application. No therapy has been approved for overcoming vemurafenib resistance in melanoma. Novel agents for managing vemurafenib-resistant melanomas are needed.

Luteolin (3',4',5,7-tetrahydroxyflavone) is a flavonoid occurring in diverse edible and medicinal herbs. Previous studies have shown that luteolin inhibits the activation of AKT, STAT3, or ERK to exert anti-melanoma effects. These luteolin-targeted molecules have been shown to promote vemurafenib resistance in melanoma. However, whether luteolin can overcome vemurafenib resistance in melanoma is not known. This study aimed to evaluate the effects of luteolin in overcoming vemurafenib resistance in melanoma and to investigate the mechanisms of action of the compound.

The results of in vitro experiments showed that luteolin reduced the cell viability and colony formation ability, and inhibited tumor sphere growth of, as well as induced apoptosis in, acquired vemurafenib-resistant A375 (A375-VR) melanoma cells. Animal assay data showed that luteolin dose-dependently restrains tumor growth in A375-VR melanoma-bearing BALB/c-nu/nu mice. RNA-seq analyses revealed that the mRNA level of RNF125 (E3 Ubiquitin-Protein Ligase RNF125) was lower in A375-VR cells than in parental A375 melanoma cells, and luteolin abolished the resistance-associated downregulation. RT-qPCR analyses verified the RNA-seq results. Immunoblotting showed that luteolin upregulated the protein level of RNF125 in A375-VR cultures and mouse tumors. Luteolin also downregulated protein levels of the RNF125 substrate JAK1 and JAK1's downstream molecules PDGFR-β, EGFR, AXL, neuropilin-1, MITF, cyclin D1, RUNX2, caveolin-1, c-JUN, IL7R, and VEGFC, and upregulated the protein level of p21 in A375-VR cells. RNF125 knockdown attenuated the effect of luteolin in decreasing cell viability in A375-VR cells.

MicroRNAs (miRNAs) are involved in post-transcriptional regulation of gene expression. We next explored whether luteolin upregulates RNF125 expression by regulating certain miRNAs in vemurafenib-resistant melanoma cells. Bioinformatics analysis predicted that miR-15b-5p is a potential miRNA that targets RNF125. Our dual luciferase reporter assays verified that miR-15b-5p directly targets RNF125's 3' untranslated region in A375-VR cells. The mRNA and protein levels of RNF125 were significantly downregulated and upregulated upon transfection with the miR-15b-5p

mimics and the miR-15b-5p inhibitor, respectively, in A375-VR cells. Also, miR-15b-5p expression was lowered by luteolin treatment in A375-VR cells.

In summary, our novel findings indicate that luteolin overcomes vemurafenib resistance in melanoma cell and mouse models, which is associated with miR-15b-5p inhibition-mediated upregulation of RNF125. This study provides a pharmacological basis for developing luteolin into a new drug for treating vemurafenib-resistant melanomas. Moreover, this work suggests that targeting miR-15b-5p/RNF125 axis is a novel approach for overcoming BRAF inhibitor resistance in melanoma.

Acknowledgement:

This work was supported by the grant GRF12100221.

B-22

The Synergy of Nature Products and Glucagon-Like Peptide-1 in Stimulating Insulin Secretion
天然產物與胰高血糖素樣肽 -1 協同作用促進胰島歲分泌

A. Dilidaer[1, 2], Y. J. Xia[1, 2], T. T. X. Dong[1, 2], K. W. K. Tsim[1, 2]

[1] *Division of Life Science and Center for Chinese Medicine, The Hong Kong University of Science and Technology, Hong Kong, China;*

[2] *Shenzhen Key Laboratory of Edible and Medicinal Bioresources, Shenzhen Research Institute, Shenzhen, China*

Abstract:

Type 2 diabetes (T2D) is a chronic metabolic disorder characterized by insulin resistance and inadequate insulin secretion, leading to dysregulated blood glucose levels. T2D is often associated with modifiable risk factors, such as excess body fat and a sedentary lifestyle. In treating T2D, glucagon-like peptide-1 (GLP-1) receptor agonists are frequently employed to enhance glycemic control. GLP-1 is an incretin hormone that exerts multiple physiological effects on glucose homeostasis, which facilitates glucose-dependent insulin secretion, suppresses gastric emptying, and reduces appetite. The agonists of the GLP-1 receptor (GLP-1R) emulate the actions of endogenous GLP-1 has been employed to optimize glycemic control in individuals with T2D patients. By activating GLP-1R, these medications help regulate blood glucose levels more naturally. Thus, GLP-1R agonists have become an essential component of the treatment options for managing T2D.

The rat insulinoma cell line (INS-1) was employed to study insulin secretion regulation and pancreatic islet beta-cell function. Several TCM herbal extracts and phytochemicals were shown to bind with GLP-1, or GLP-1R, by molecular docking. To find the GLP-1 synergetic effect of these phytochemicals, cells were treated with phytochemicals in different concentrations with/without applied GLP-1, and insulin expression was measured. Results demonstrated that several phytochemicals significantly increased insulin secretion in dose-dependent manners. The glucose-stimulated insulin secretion was elucidated, and its downstream pathways of GLP-1R activation, e.g., expression of ERK/p-ERK, were proved. The binding between TCM and GLP-1 might provide a therapeutic target for T2D disease.

Acknowledgement:

This work is supported by Hong Kong Research Grants Council Hong Kong (GRF 16100921); Hong Kong Innovation Technology Fund (MHP/004/21; GHP/016/21SZ; ITCPD/17-9; ITC-CNERC14SC01); Shenzhen Science and Technology Innovation Committee (ZDSYS201707281432317).

B-23

Synergy of Botanical Drug Extracts from Dracaena cochinchinensis Stemwood and Ardisia elliptica Fruit in Multifunctional Effects on Neuroprotection and Anti-Inflammation
龍血樹莖木和紫金牛果實提取物在神經保護和抗炎中的協同作用研究

D. Ospondpant[1, 2], T. T. X. Dong[1, 2], K. W. K. Tsim[1, 2]

[1] *Division of Life Science and Center for Chinese Medicine, The Hong Kong University of Science and Technology, Hong Kong, China;*

[*] *Shenzhen Key Laboratory of Edible and Medicinal Bioresources, Shenzhen Research Institute, Shenzhen, China.*

Abstract:

Combination therapy is one of the promising approaches in developing therapeutics to cure complex diseases, such as Alzheimer' s disease (AD). In Thai traditional medicines, the clinical application often comprises multiple botanical drugs as a formulation. The synergistic interactions between botanical drugs in combination therapies are proposed to have several advantages, including increased therapeutic efficacy, and decreased toxicity and/or adverse effects. This study aimed to explore the therapeutic functions of a botanical drug pair within a multi-herbal formulation. The synergistic actions of the specific combination of Dracaena cochinchinensis stemwood (DCS) and Ardisia elliptica fruit (AEF) extracts were illustrated in neuroprotection and anti-inflammation. In cultured PC12 cells, the extract of DCS in combination with AEF at the specific ratio of 1:9 w/w showed synergistic functions in inducing neuronal differentiation, characterized by neurofilament expression and neurite outgrowth. In addition, the aggregation of Aβ, a hallmark of AD pathology, was synergistically inhibited by the botanical drug combination. The activated BV2 microglial cells, induced by LPS, were synergistically suppressed by the combination of DCS and AEF extracts, as evaluated by the expression of pro-inflammatory markers, including TNF-α, IL-1β, and iNOS, as well as the morphological change of microglial cells. The functional synergy was determined using the Chou-Talalay method. The findings suggested that DCS and AEF produced synergism in a specific ratio of 1:9 w/w to enhance neuroprotective and anti-inflammatory functions.

Acknowledgement:

This work is supported by Hong Kong Research Grants Council Hong Kong (GRF 16100921); Hong Kong Innovation Technology Fund (MHP/004/21; GHP/016/21SZ; ITCPD/17-9; ITC-CNERC14SC01); Shenzhen Science and Technology Innovation Committee (ZDSYS201707281432317).

B-24

Acori Tatarinowii Rhizoma Prevents the Fluoxetine-Induced Multiple-Drug Resistance of *Escherichia coli*
石菖蒲有效預防氟西汀誘導的大腸桿菌耐多藥突变

J. H. Wu[1, 3], H. L. Zhang[1], S. S. Guo[1, 3], X. Li[2],
T. T. X. Dong[1, 3], Y. Zhu[2], K. W. K. Tsim[1, 3]

[1] *Division of Life Science and Center for Chinese Medicine, The Hong Kong University of Science and Technology, Hong Kong, China;*

[*] *Jiangsu Key Laboratory for High Technology Research of TCM Formulae, Jiangsu Collaborative Innovation Center of Chinese Medicinal Resources Industrialization, Nanjing University of Chinese Medicine, Nan Jing, China;*

[*] *Shenzhen Key Laboratory of Edible and Medicinal Bioresources, Shenzhen Research Institute, Shenzhen, China*

Abstract:

In treating depression, the residual anti-depressant in gut interacts with the microbiome, leading to the appearance of multiple drug resistant (MDR) mutants, which poses a challenge for the treatment of infectious complications. Strategy is needed to combat this issue. Acori Tatarinowii Rhizoma (ATR, rhizome of Acorus tatarinowii Schott, Araceae), a traditional Chinese medicine, has been widely used for treatment of neurological disorders and gastrointestinal digestive disease in China. Here, ATR was demonstrated excellent MDR-preventing effect in fluoxetine-induced Escherichia coli (E. coli).

The water extract of ATR was co-applied with sub-minimum inhibitory concentration (100 mg/L) of fluoxetine in E. coli to evaluate its anti-MDR potential. As the result, the water extract of ATR significantly decreased the number of MDR mutants induced by fluoxetine and had half effective concentrations (EC50) of 55.5 μg/mL and 16.8 μg/mL for chloramphenicol and tetracycline, respectively. ATR robustly reversed the fluoxetine-induced superoxide response and membrane damage in E. coli. After further fractionation, the polysaccharide of ATR was demonstrated as the fraction with the most significant anti-MDR activity. ATR is one of the composing herbs of Kai-Xin-San (KXS), which has a long history in treating depression in China. Notably, we also found considerable MDR-preventing effect of KXS in our study. The results of this study proposed ATR as well as KXS as an excellent herbal product to prevent MDR issues, as induced by fluoxetine during the drug therapy of depression. of fluoxetine in E. coli. After further fractionation, the polysaccharide of ATR was demonstrated as the fraction with the most significant anti-MDR activity.

Acknowledgement:

This work is supported by Hong Kong Research Grants Council Hong Kong (GRF 16100921); Hong Kong Innovation Technology Fund (MHP/004/21; GHP/016/21SZ; ITCPD/17-9; ITC-CNERC14SC01); Shenzhen Science and Technology Innovation Committee (ZDSYS201707281432317).

B-25

Seabuckthorn Flavonoids Mimic Neurotrophic Functions in Inducing Neuronal Cell Differentiation and Restore Depressive Disorder in CUMS-Induced Mice

沙棘黃酮促進神經元的生長，緩解 CUMS 誘導的小鼠抑鬱症狀

C. X. Xia[1, 2], X. Gao[1, 2], T. T. X. Dong[1, 2], J. Gao[1, 3], K. W. K. Tsim[1, 2]

[1] *Division of Life Science and Center for Chinese Medicine, The Hong Kong University of Science and Technology, Hong Kong, China;*

[2] *Shenzhen Key Laboratory of Edible and Medicinal Bioresources, Shenzhen Research Institute; Shenzhen, China;*

[3] *Department of Neurobiology and Cellular Biology, Xuzhou Medical University, Xuzhou, Jiangsu, China*

Abstract:

Seabuckthorn (Hippophae rhamnoides L.), native to Asia and Europe, is a representative medicinal plant of "medicine food homology". Seabuckthorn is rich in nutrients, while its major chemical ingredients are flavonoids, including quercetin, isorhamnetin and kaempferol. Flavonoids have been shown to function in treating cognitive disorders, the research of which is, however, limited regarding to Seabuckthorn flavonoids.

In this study, PC12 cells, SH-SY5Y cells and primary neurons were employed as the model to evaluate flavonoid-enriched fraction of Seabuckthorn (named as SBF) in inducing neurite outgrowth by comparing to the effects of NGF and BDNF. Moreover, SBF was applied in chronic unpredictable mild stress (CUMS)-induced depressive mice to evaluate its potential functions in treating major depressive disorders. SBF mimicked neurotrophic functions in inducing neuronal cell differentiation via activating PI3K/Akt and ERK pathways, as well as showing synergy with neurotrophic factors in stimulating the neurite outgrowth. Additionally, SBF restored the depressive behaviors, as well as relieved CUMS-disturbed levels of neurotrophins, neurotransmitters, stress-related hormones and inflammation-related cytokines. Moreover, SBF showed the ability in regulating gut microbiota of depressive mice. In addition, carbon dots (CDs) were synthesized by hydrothermal process of Seabuckthorn leaf, a part of which is reported to have rich flavonoids while usually considered as agricultural waste. The CDs was almost non-cytotoxic, reached a nano size of 5nm, and achieved a recovery rate of 21% as to the flavonoids in leaf. Therefore, SBF, as well as CDs, can be considered as a candidate of health supplements or drugs in treating various brain disorders.

Acknowledgement:

This work is supported by Hong Kong Research Grants Council Hong Kong (GRF 16100921); Hong Kong Innovation Technology Fund (MHP/004/21; GHP/016/21SZ; ITCPD/17-9; ITC-CNERC14SC01); Shenzhen Science and Technology Innovation Committee (ZDSYS201707281432317).

B-26

Yu Ping Feng San Prevents the Cisplatin-induced Multi-Drug Resistance of *Escherichia coli*
玉屏風散預防順鉑誘導的大腸桿菌耐多藥突變

Y. T. Ye[1, 2], J. H. Wu[1, 2], J. Gao[1, 3], T. T. X. Dong[1, 2] and K. W. K. Tsim[1, 2]

[1] *Division of Life Science and Center for Chinese Medicine, The Hong Kong University of Science and Technology, Hong Kong, China;*

[2] *Shenzhen Key Laboratory of Edible and Medicinal Bioresources, Shenzhen Research Institute, Shenzhen, China;*

[3] *Department of Neurobiology and Cellular Biology, Xuzhou Medical University, Xuzhou, Jiangsu, China.*

Abstract:

Cisplatin is one of the first-line chemotherapies for solid tumors. However, cisplatin is known to have antibiotic effects on both Gram-ve and Gram+ve bacterial strains, which leads increasing multiple drug resistant (MDR) mutant of gut microbiome. At the same time, cisplatin may also affect the environment of intestinal mucosa by damaging the proliferation of epithelial cells. The cisplatin-induced side effects, such as nephrotoxicity, ototoxicity, mucositis and local inflammation, are associated with the disturbance of gut microbiota. Thus, the intake of cisplatin could be more likely experience other complications caused by the appearance and development of pathogenic microflora during the treatments. This side effect becomes a big concern of cisplatin treatment.

Yu Ping Feng San (YPFS), a traditional Chinese herbal decoction written by *Zhu Danxi* (A.D. 1279–1368), consists Astragali Radix (AR), Atractylodis Macrocephalae Rhizoma (AMR) and Saposhnikoviae Radix (SR). YPFS has been used to treat immune disorders and inflammation in clinic for years. Recently, YPFS was found to improve the imbalance of intestinal flora, caused by asthma and recurrent respiratory tract infection. Here, YPFS was shown to reverse cisplatin-induced MDR in lung cancer cells by inhibiting the substrate-stimulated activities of efflux transporter ATPase. The water extract of YPFS and AMR showed significant reduced numbers of MDR mutant of gut microbiome.

Acknowledgement:

This work is supported by Hong Kong Research Grants Council Hong Kong (GRF 16100921); Hong Kong Innovation Technology Fund (MHP/004/21; GHP/016/21SZ; ITCPD/17-9; ITC-CNERC14SC01); Shenzhen Science and Technology Innovation Committee (ZDSYS201707281432317). 'Laboratory for Synthetic Chemistry and Chemical Biology' under the Health@InnoHK Program and State Key Laboratory of Synthetic Chemistry by Innovation ang Technology Commission, Hong Kong SAR, China.

B-27

ZhengQiPian preparation against COVID-19 infection by anti-inflammatory and antiviral effects
中藥復方正氣片通過抗炎和抗病毒的作用對抗新冠肺炎感染

Yu Zhao[1], Pei Zhang[1], Jiange Zhang[1]

[1] *The Research Center of Chiral Drugs, Innovation Research Institute of Traditional Chinese Medicine (IRI), Shanghai University of Traditional Chinese Medicine, Shanghai, 201203, China*

Abstract:

The coronavirus disease 2019 (COVID-19) virus continues to mutate and the epidemic occurs repeatedly[1]. Although patients appear asymptomatic or have mild symptoms, some mutations make it easier for the virus to transmit or develop resistance to vaccines[2]. Traditional Chinese medicine (TCM) has unique advantages in the battle against COVID-19 infection, and its efficacy has been recognized[3]. ZhengQiPian (ZQP) is a preparation of Huoxiang Zhengqi prescription recommended by the treatment of COVID-19 infection in Shanghai[4]. ZQP is composed of pogostemon cablin oil (Guanghuoxiang, GHX), radix aucklandiae, atractylodes lancea, magnolia officinalis rehd (Houpo, HP), pinellia ternate, orange peel, poria cocos (Fuling, FL), perilla leaf oil (Zisu, ZS), zingiber officinale roscoe and glycyrrhiza uralensis fisch (Gancao, GC). It has the effects of dispersing wind and cold, removing dampness and dampness, which is suitable for asymptomatic COVID-19 patients. However, the chemical composition of ZQP is complex, and its efficacy material base still need to be explored.

Here, a combination of computer virtual screening and biological verification method was used to discover the active components in ZQP. The chemical structures of more than 700 active components, RBD-ACE2 complex, main protease (3CL/MPro), and RNA-depentant RNA polymerase (RdRp) were chosen to conduct virtual screening. Based on the above results, potential components were obtained for subsequent study. And, anti-inflammatory effect of ZQP and potential components was evaluated in LPS-induced inflammation model. Then, the activity of ZQP and potential components against 3CL/MPro and RdRp was tested. Finally, the active moleculars of antiviral effect were discovered through non-target metabolomics.

We found that the cavity of RBD-ACE2 complex was too narrow to bind the ligand. Lignans in HP and triterpenes in FL could dock into the active site of 3CL/MPro. And, polysaccharides and flavonoids in GC have potential activities on RdRp. In addition, smaller active molecules in GHX and ZS have potential activities on 3CL/MPro and RdRp. Biological activity further showed that ZQP has dual effects of anti-inflammatory and antiviral. HP, FL, GHX in ZQP may account for its anti-inflammatory effect, and GHX, HP and ZS in ZQP jointly inhibit the 3CL/Mpro activity, even through all components inhibit the RdRp activity. Moreover, non-target metabolomics and activity study reconfirmed that patchouli alcohol, magnolol, perillene and perillyl alcohol may collectively play a vital role in the antiviral effect of ZQP. In conclusion, ZQP exerts anti-inflammatory and antiviral effects against COVID-19 infection through multi-component and multi mechanisms of action.

Acknowledgement:

This work was supported by grants from Shanghai Frontiers Science Center for Traditional

Chinese Medicine Chemical Biology, Shanghai Science and Technology Development Fund from Central Leading Local Government (YDZX20223100001004), Traditional Chinese and Western Medicine Collaborative Guidance Project of Integrated Hospital from Shanghai Municipal Health Commission/Shanghai Municipal Administration of Traditional Chinese Medicine (ZXXT-202303).

References:

1. Ikbel Hadj Hassine. Covid-19 vaccines and variants of concern: A review. Rev Med Virol 2022;32:e2313.
2. Thilini H. Senevirathne, Demi Wekking, Joseph W.R. Swain, et al. COVID-19: From emerging variants to vaccination. Cytokine & Growth Factor Reviews 2024;76:127-141.
3. Kexin Jia, Yijie Li, Tiegang Liu, et al. New insights for infection mechanism and potential targets of COVID-19: Three Chinese patent medicines and three Chinese medicine formulas as promising therapeutic approaches. Chinese Herbal Medicines 2023;15:157-168.
4. Zhenwei Wang, Kehua Shi, Yunfei Lu, et al. Expert Consensus on TCM Diagnosis and Treatment of COVID-19 Infection in Shanghai (2022) Spring Edition. [DB/OL]. Shanghai: Shanghai University of Traditional Chinese Medicine Affiliated Shuguang Hospital, 2022. https://mp.weixin.qq.com/s/B1Axgv3BE1qOYngdo8hDEw.

B-28

Andrographolide promotes lymphangiogenesis and lymphatic vessel remodeling to alleviate secondary lymphedema
穿心蓮內酯能夠促進淋巴管生成和淋巴管重塑 從而減輕繼發性淋巴水腫

Kunru Yang[a,b], Ming Ruan[a,b], Xuanru Li[a,b], Yunxi Han[a,b], Qiang Li[a,b], Jinman Chen[a,b], Qianqian Liang[a,b], Hao Xu[a,b], Ning Li[a,b*]

[1] *Longhua Hospital, Shanghai University of Traditional Chinese Medicine, 725 Wan-Ping South Road, Shanghai 200032, China.*

[2] *Spine Institute, Shanghai University of Traditional Chinese Medicine, 725 Wan-Ping South Road, Shanghai 200032, China.*

Abstract:

Lymphedema, a prevalent, multifaceted, and chronic ailment, is mainly managed through physical manipulation and suffers from a lack of specific pharmacological treatments. Secondary lymphedema is mainly caused by impaired lymphatic drainage. Therapeutic lymphangiogenesis is a promising strategy in the treatment of lymphedema[1]. Andrographolide, a natural product from Andrographis paniculata, is unknown whether andrographolide promotes lymphangiogenesis to improve secondary lymphedema[2]. By using the murine tail lymphedema model, we demonstrated that andrographolide can reduce the thickness of subcutaneous tissue in the mice's tail and enhance lymphatic drainage. Moreover, immunofluorescence staining showed that the number of capillary lymphatic vessels in the ANDRO25 group was significantly more than that in the ANDRO50 and Model groups. Near-infrared lymphography images showed that highlighted sciatic lymph nodes could be seen in the ANDRO25 and ANDRO50 groups. In vitro, andrographolide could promote the proliferation and migration of LEC. In conclusion, andrographolide enhanced the recovery of lymphatic vessels, and promoted lymphatic drainage in the murine tail lymphedema model by promoting the proliferation of lymphatic endothelial cells, thereby reducing the symptoms of lymphedema. This suggested andrographolide may be used as a potential therapeutic drug or medical food ingredient to help patients with secondary lymphedema.

Acknowledgement:

We thank all the members of the Spine Institute of Shanghai University of Traditional Chinese Medicine for secretarial and technical assistance.

References:

1. A.A. Grada, T.J. Phillips, Lymphedema: Pathophysiology and clinical manifestations, J Am Acad Dermatol 77 (2017) 1009–1020. https://doi.org/10.1016/j.jaad.2017.03.022.
2. P. Agrawal, M.S. Nair, An insight into the pharmacological and analytical potential of Andrographolide, Fundam Clin Pharmacol 36 (2022) 586–600. https://doi.org/10.1111/fcp.12757.

B-29

Stachydrine Hydrochloride Inhibits Cardiac Hypertrophy through NOX2-ROS Pathway
益母草水蘇鹼通過 NOX2-ROS 通路抑制心肌肥大

MW Fu [1], SR Yang [1], KJ Yang [1], RS Li [1], XL Shan [1], P Zhao [1], C Zhang [2], ST Guo [1], HH Chen [1*] and R Lu [1*]

[1] *School of Traditional Chinese Medicine, SHUTCM; 2 School of Intergrative Medicine, SHUTCM.*

[2] *School of Intergrative Medicine, SHUTCM.*

Abstract:

Oxidative stress plays an important role in the development of cardiovascular diseases. NOX2-derived ROS affects calcium homeostasis and contractile as a second messenger. Our previous study haved found that stachydrine hydrochloride (Sta) against pressure overload-induced pathological cardiac remodeling, and its cardiac protection correlated with NOX2-ROS pathway. Network pharmacology also identified NOX2 as a shared target of Sta and cardiac hypertrophy. However, how does Sta specifically affect NOX2 and inhibit cardiac hypertrophy remain unknown. In this study, we assessed the role of the NOX2-ROS axis in Sta against cardiac hypertrophy. We firstly used phenylephrine (PE) to induce models of cardiac hypertrophy in primary cardiomyocytes and in mice. The results showed that Sta could reduce the protein level of gp91 phox and p22 phox, the phosphorylation of p40 phox and p47 phox. And thus, Sta inhibited NOX2 activation by suppressing translocation to the cell membrane of p67 phox and p47 phox. In addition, Sta reduced oxidative phosphorylation of Ca2+/calmodulin protein kinase II (CaMKII) by decreasing NOX2-derived ROS production. Calcium homeostasis and contractile function in Sta group restored via CaMKII-phospholamban (PLB) and CaMKII-Ryanodine Receptor 2 (RyR2) pathway. Furthermore, cardiac-specific overexpression of NOX2 increased oxidative stress level in vitro and in vivo. Sta similarly restored cardiac function, calcium homeostasis and contractile through decreasing NOX2-derived ROS production. In summary, our study validated the NOX2-ROS pathway is crucial in cardiac hypertrophy, especially in excessive oxidative stress and calcium homeostatic imbalance. Sta reduced gp91 phox membrane translocation to inhibit NOX2 activation and thereby exerted cardioprotection.

Acknowledgement:

This research was funded by the National Natural Science Foundation of China (82074054). Deepest gratitude to Prof. Rong Lu and Prof. Huihua Chen for their financial supports and detailed experimental guidance. Special thanks to Prof. Chen Yan for her technical supervision of the study.

B-30

20(S)-Ginsenoside Rh2 Overcomes Gemcitabine Resistance in Pancreatic Cancer by Inhibiting LAMC2 Expression
人參皂苷 Rh2 通過抑制 LAMC2 克服胰腺癌吉西他濱耐药

Yulin Wu[a,†], Juan Zhang[a,†], Yuanyang Tian[a], William Chi Shing Cho[b,c], Hong-Xi Xu[d], Zhi-Xiu Lin[a,e,*], Yan-Fang Xian[a,*]

[a] *School of Chinese Medicine, Faculty of Medicine, The Chinese University of Hong Kong; .*

[b] *Department of Clinical Oncology, Queen Elizabeth Hospital, Kowloon;*

[c] *Department of Pathology, Queen Elizabeth Hospital, Kowloon;*

[d] *School of Pharmacy, Shanghai University of Traditional Chinese Medicine;*

[e] *Hong Kong Institute of Integrative Medicine, The Chinese University of Hong Kong.*

Abstract:

Gemcitabine (GEM) is the first-line drug for advanced pancreatic ductal adenocarcinoma (PDAC), but its resistance severely restricts its chemotherapeutic efficacy. Laminin ϒ2 (LAMC2) plays a crucial role in extracellular matrix formation in cancer development. The biological function of LAMC2 in GEM resistance and its molecular mechanisms is still unclear.

Our results found that the protein expression of LAMC2 was specifically increased in the GEM-resistant PDAC patient biopsies compared to the sensitive cases. The protein expression of LAMC2 was significantly higher in acquired GEM-resistant Miapaca-2 (Miapaca-2-GR) and Capan-2 (Capan-2-GR) cells than that in their parental cells. 20(S)-ginsenoside Rh2 (Rh2), derived from *Ginseng*, enhanced the chemosensitivity of GEM in GEM-resistance PDAC cells, and enhanced the anti-tumor effects of GEM in Miapaca-2-GR cell-bearing mice and *Kras*^{tm4Tyj} *Trp53*^{tm1Brn} *Tg* (Pdx1-cre/Esr1*) #Dam/J (KPC) mice. Rh2 effectively reversed GEM resistance in Miapaca-2-GR and Capan-2-GR cells by inhibiting LAMC2 expression in time and dose-dependent manners through regulating the ubiquitin-proteasome pathway. Knockdown of LAMC2 enhanced the effects of Rh2 on overcoming the GEM resistance in PDAC cells and orthotopic nude mouse model. Conversely, LAMC2 overexpression aggravated the chemoresistance of GEM and abolished the effects of Rh2 in overcoming GEM resistance via modulating ATP-binding cassette (ABC) transporters to lead the active GEM efflux.

These findings reveal that LAMC2 plays an important role in GEM resistance in PDAC, and Rh2 is a potential adjuvant for reversing the chemoresistance of GEM in PDAC.

Acknowledgement:

This work was partially supported by National Natural Science Foundation of China (Project no. 81973519).

B-31

Studying the correlation between the analgesic effect of acupunctures with different parameters and mechanosensitive ATP release at the treated acupuncture points
研究不同針刺的鎮痛效果與穴位局部機械敏感 ATP 釋放的關聯性

J Lin[1], K Y Cui, Y J Li[1], W M Zuo, and L N Wang*

[1] *School of Acupuncture-Moxibustion and Tuina, Shanghai University of Traditional Chinese Medicine, 1200 Cailun Road, Shanghai 201203, China*

Abstract:

Objective: Our prior studies has indicated a correlation between the analgesic effect of manual acupuncture (MA) and mechanosensitive ATP release at the treated acupuncture points (acupoints). This study seeks to further investigate whether such ATP mobilization is influenced by different manipulation patterns of MA and different frequencies of electro-acupuncture (EA).

Methods: Acute ankle arthritis rats were subjected to a single session of 20-min MA or EA was administered at the unilateral Zusanli acupoint (ST36). Thermal pain thresholds in the affected hindpaws and autonomic walking distances were determined to reflect the pain levels. Extracellular ATP at ST36 were extracted with microdialysis and determined by luciferase-luciferine assay.

Results: Our results showed that both twisting manipulation and lifting-thrusting manipulation exerted a remarkable analgesic effect, as evidenced by improvement in pain thresholds and walking distances. While deep inserting, served as sham acupuncture, played a null effect. A notable increase in ATP mobilization was observed during twisting or lifting-thrusting manipulations, particularly the former one, compared to sham acupuncture. Interestingly, shallow acupuncture also demonstrated anti-nociceptive effect, although it did not lead to obvious ATP mobilization. Regarding EA, 2Hz, 2-100Hz and 100Hz treatments notably alleviated the pain symptom. While ATP mobilization was only evidenced in 2-100 Hz and 100 Hz frequencies, particularly in 100 Hz.

Conclusion: These findings suggest a general correlation between ATP mobilization at the targeted acupoint and the MA manipulations and EA frequency. Nevertheless, there remain unclear mechanism to be elucidated, particularly to shallow MA and 2 Hz EA.

Acknowledgement:

This research was funded by Natural Science Foundation of Shanghai (No.: 22ZR1461500). We would like to thank our technician, Long-Zao Zhang, for his excellent assistance in this study.

B-32

Bushen Huoxue Recipe attenuates polycystic ovary syndrome in a rat model by mitigating lipid peroxidation and inhibiting ferroptosis acupuncture points

Ling-yu Ding[1], Zhuo-jun Jiang[1], Hong-li Huang[1], Yan-qiu Xia[1], Si-qing Huang[1], Li Dong[1]

[1] *Department of Gynecology, Yueyang Hospital of Integrated Traditional Chinese and Western Medicine, Shanghai University of Traditional Chinese Medicine.*

Abstract:

Background: Bushen Huoxue Recipe (BSHXR), a traditional Chinese medicine, was found to be effective in PCOS treatment and lipid metabolism.

Objective: This study aimed to investigate the mechanism of BSHXR treating PCOS and verify the effect on ovarian ferroptosis and lipid peroxidation.Methods: Network pharmacology was used to screen the potential target and mechanism of BSHXR alleviating PCOS. Female 3-week-old SD rats were used to build a PCOS model for validation. HE staining, Elisa, biochemistry detection, western blot, immunefluorescence and Prussian blue staining were performed to verify the effect of BSHXR on the PCOS rats.

Results: In this present study, 132 effective active chemical components, 239 potential targets, and 1916 PCOS target genes were screened out. A total of 137 common targets between the BSHXR and PCOS were identified. GO and KEGG analysis revealed that BSHXR might play a role by effecting on oxidative stress and lipid peroxidation. Through in vivo experiments, we found that treatment with BSHXR could improve the histological change of ovaries and modulated the estrous cycle of PCOS rats. BSHXR was shown to regulate the sex hormones and lipid profile. BSHXR also ameliorated PCOS by reduce ovarian lipid peroxidation and modulating ferroptosis in the ovaries.

Conclusion: BSHXR could alleviated lipid peroxidation and inhibit ferroptosis in ovarian tissue, might be the mechanism of the PCOS treatment. Our findings potentially suggest a therapeutic approach to address this condition.

Acknowledgement:

The authors would like to thank Prof. Lü Rong, Shanghai University of Traditional Chinese Medicine, for the guide of experiments.

B-33

“CD39-ATP-P2Y2Rs” in the treated acupoints contributed to the analgesic mechanism of acupuncture
研究不同針刺的鎮痛效果與穴區「CD39-ATP-P2Y2Rs」軸參與針刺鎮痛機制

YJ Li[1], J Lin[1], SQ Tang[1], LN Wang[1], XY Shen[1]

[1] *School of Acupuncture-Moxibustion and Tuina, Shanghai University of Traditional Chinese Medicine*

Abstract:

Background: Acupuncture (AP) signals originate from the treated acupuncture point (acupoint), where adenosine signaling is involved in the analgesic mechanism of AP. Our previous work had uncovered the accumulation of interstitial ATP (inters. ATP) in the interstitial space of the treated site. Thus, we aimed to unmask whether the conversion from ATP to adenosine was controlled by the ecto-nucleotidase CD39 and to explore whether P2Y2Rs, as the ATP receptor, were also involved.

Methods: The arthritis model was established by injecting complete Freund’s adjuvant into the unilateral ankle. 20-min AP treatment was applied at the injured-side Zusanli acupoint (ST36). Pain thresholds of the affected hindpaws were determined. To interfere with the targeting signals, pharmacological tools, or adeno-associated viruses (AAV) were used. Human cultured keratinocytes, HaCaT cells, were irritated by hypotonic shock to simulate needling stimulation. The expression of CD39 or P2Y2Rs was determined with qRT-PCR and Western Blotting. The location of them was assessed with immunofluorescent labeling.

Results: A prompt analgesic effect induced by needling-ST36 was accompanied by a temporary accumulation of ATP. Activating CD39 with Apyrase achieved an analogous anti-nociceptive effect and abolished ATP accumulation, which was reversed by suppressing CD39 with ARL67156. AAV interferences with CD39 hindered AP analgesia. Non-selective inhibition of P2YRs (Suramin) or specific antagonism of P2Y2Rs (AR-C118925xx) abolished the AP analgesic effect, which was reversed by activating P2Y2Rs with INS365. Immunofluorescent labeling showed both expressed on the keratinocyte layer. When irritated by hypotonic shock, the keratinocytes in vitro showed higher mobilization of extracellular ATP and adenosine. The conversion between them was impaired by suppressing CD39 with ARL67156. Activation of P2Y2Rs with INS365 strengthened ATP mobilization.

Conclusion: “CD39-ATP-P2Y2Rs” mediated inters. ATP hydrolysis and cascade release at acupoints contribute to the initiation mechanism of AP analgesia via triggering adenosine signaling. A comprehensive understanding of this matter will guide clinicians to optimize acupuncture manipulations to improve AP effectiveness.

Acknowledgement:

This research was financially supported by Shanghai Natural Science Foundation (Grant No. 22ZR1461500 to LN Wang), and Budget Research Project of Shanghai Education Commission (Grant No. 2021LK098 to LN Wang).

B-34

In vitro and *in vivo* investigation of Bai Jiang Cao on colon cancer
研究不同針刺的鎮痛效果與敗醬草在結腸癌治療中的體內外研究

Qianqian Ma[1], Grace Gar-Lee Yue[3], Clara Bik-San Lau[2,3,4,*], Zhe Wang[1,*]

[1] *School of Traditional Chinese Pharmacy, China Pharmaceutical University, 639 Longmian Avenue, Jiangning District, Nanjing, 211198, China; 2 Institute of Chinese Medicine, The Chinese University of Hong Kong, Shatin, New Territories, Hong Kong SAR, China; 3Department of Pharmacology and Pharmacy, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR, China; 4School of Chinese Medicine, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR, China.*

Abstract:

Colon cancer, a malignancy of the digestive tract that occurs in the colon, ranks third in global incidence and second in mortality[1]. Traditional Chinese medicine has an unique advantage in the treatment of colon cancer, with decoction (crude water extract) being commonly consumed. In clinical practice, Chinese medicine practitioners often prescribe "Bai Jiang Cao" for treating diseases of intestines, including colorectal cancer. "Bai Jiang Cao" comprise of various *Patrina* species, such as *Patrinia scabiosaefolia* and *Patrina villosa*[2]. However, our previous study found that majority of the herbal stores in Hong Kong would provide *Thlaspi arvense* (TA) as "Bai Jiang Cao", which is regarded as an adulterant. Thus this study aimed to compare the anti-tumor effects of the water extracts of *Patrinia scabiosaefolia* (PSW) and *Thlaspi arvense* (TAW) in colon cancer using *in vitro* and *in vivo* models.

Cell-based functional assays including MTT, scratch wound healing, colony formation and cell apoptosis were conducted to evaluate the anti-tumor effects of PSW and TAW on human colon cancer HCT116 and murine colon cancer colon-26 cells, assessing cytotoxicity, cell motility, proliferation, and apoptosis, respectively. *In vivo* studies were also conducted using colon-26 tumor-bearing mice to evaluate the anti-tumor effects.

Our results showed that PSW exhibited significant inhibition on cell migration and promotion of cell apoptosis in both HCT116 and colon-26 cells. However, TAW did not show obvious inhibitory effect in colon cancer cells. On the other hand, in vivo oral administration of PSW and TAW inhibited tumor growth by decreasing expressions of CD31 in tumor tissues of colon-26 tumor-bearing mice, with PSW being more potent. In addition, , the cytokine levels such as IL-2, IL-6, IL-10, IL-12 and IFN-ϒ were also altered after PSW and TAW treatment in CRC mice.

In conclusion, our study demonstrated that *Thlaspi arvense*, commonly regarded as adulterant of "Bai Jiang Cao", also exhibited anti-tumor effect in colon cancer, though not as potent as *Patrinia scabiosaefolia*. Our findings highlighted the importance of using the correct species of "Bai Jiang Cao" in colon cancer management.

References:

1. Sung H, Ferlay J, Siegel RL, et al. Global cancer statistics 2020: GLOBOCAN Estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin.

2021;71(3):209-249.

2. He X, Luan F, Zhao Z, et al. The genus Patrinia: A review of traditional uses, phytochemical and pharmacological studies. Am J Chin Med. 2017;45(4):637-666.

B-35

Identification of Potential Mitophagy Enhancers from Traditional Chinese Medicine for Alzheimer's Disease Treatment

研究不同針刺的鎮痛效果與鑒定中藥中潛在線粒體自噬促進劑用於治療阿茲海默症

Xiaoming Cui[1], Aston Jiaxi Wu[1], Benjamin Chun-Kit Tong[1], Maggie Ming-Ki Leung[1], Min Li[1] and King-Ho Cheung[1]*

[1] *School of Chinese Medicine and Mr. & Mrs. Ko Chi Ming Centre for Parkinson's Disease Research, Hong Kong Baptist University, Hong Kong SAR, China.*

Abstract:

Background: Alzheimer's disease (AD) is a common form of dementia, but current therapies targeting beta-amyloid (Aβ) and tau pathologies have been ineffective in clinical trials. Mitophagy, the selective degradation of damaged mitochondria, has emerged as a promising pathway to mitigate Aβ and tau pathologies and memory deficits. Age-related accumulation of damaged mitochondria has been implicated in AD and other neurodegenerative diseases. Traditional Chinese Medicine (TCM) has a long history of use in anti-aging therapies, and several natural TCM compounds have shown autophagy-inducing properties. Therefore, identifying novel mitophagy enhancers from TCM compounds for AD drug development is a viable approach.

Methodology and Results: We established a High-Throughput Screening (HTS) platform to monitor mitophagy levels using the mKeima-Red-Mito-7 probe. Through screening our existing neuroprotective TCM compound bank, compounds A, B, and C were identified as potential mitophagy activators based on changes in fluorescence signals from the mKeima-Red-Mito-7 probe. Western blotting analysis of Tim23 and COX Ⅳ, proteins found in the mitochondrial inner membrane, confirmed their mitophagy-inducing effects in HEK-293T and SH-SY5Y cells. Additionally, western blotting and flow cytometry results suggested that compound A may activate mitophagy by depolarizing the mitochondrial membrane potential (ΔΨm) through the PINK1/Parkin pathway, while compounds B and C induce mitophagy by increasing mitochondrial reactive oxygen species (MitoROS) or FUNDC1-dependent flux. To further investigate the importance of mitophagy in AD and the in vivo enhancement of mitophagy, we developed a novel mitophagy monitoring animal model, 5xFAD x mitoQC mice, which express AD pathology. These mice allowed us to assess mitophagy levels in vivo and confirm the efficacy of our candidate drugs.

Conclusion & Discussion: Our preliminary data suggest that compounds A, B, and C from a neuroprotective TCM compound bank possess mitophagy activation effects. Targeting mitochondrial dysfunction through these potential mitophagy enhancers may hold promise as a novel therapeutic strategy for AD treatment.

Keywords: Alzheimer's disease, mitophagy, mitochondria, TCM, PINK1, FUNDC1

Acknowledgement:

This study is supported by the General Research Fund of Hong Kong (GRF) 12100321 & 12102923,

the Guangdong Province Natural Science Foundation (GDNSF) 2023A1515010641, the Health and Medical Research Fund (HMRF) 20212841, and the Innovative and Technology Support Programme (ITSP) ITS/144/22 to K-H.C.

B-36

Effects and Mechanisms of Electroacupuncture on Sepsis-induced Immunosuppression
電針對膿毒症免疫抑制的影響及其機制研究

KD Xu[1], Y YONG[1], W Tang[1]

[1] *Department of Anesthesiology, Shuguang Hospital Affiliated with Shanghai University of Traditional Chinese Medicine.*

Abstract:

Sepsis-induced immunosuppression remains a significant threat to human health, leading to increased susceptibility to secondary infections, prolonged hospital stays, and higher late-stage mortality1. This condition is characterized by T cell exhaustion or dysfunction, regulatory T cell (Treg) expansion, and cytokine secretion imbalance2. Here, we show that electroacupuncture (EA) has a therapeutic effect on sepsis-induced immunosuppression, potentially mediated through the vagus nerve. Using a cecal ligation and puncture (CLP) mouse model, mice were treated with EA at bilateral Zusanli (ST36) for 15 days. Subsequently, wild-type (WT), CLP model, and EA-treated mice were intranasally challenged with Pseudomonas aeruginosa. EA-treated mice showed higher survival rates, enhanced bacterial clearance, and lower levels of IL-10 and IL-4 secretion compared to untreated CLP model mice. Additionally, EA treatment restored the proportion of CD3+CD4+ T cells and inhibited the expansion of Tregs in immunosuppressed mice. However, when vagotomy was performed, the effects of EA were eliminated, implicating the involvement of the vagus nerve. Although the vagus nerve has been previously associated with anti-inflammatory functions3，4，5, our research indicates its role in enhancing immune function. Together, our study suggests that EA may be an effective treatment for sepsis-induced immunosuppression, and its potential neuroimmune mechanisms. This provides new insights and potential methods for the treatment of sepsis-induced immunosuppression.

Acknowledgement:

This work was supported by the National Natural Science Foundation of China (grant No.82204868).

References:

1. Kaukonen K M, Bailey M, Suzuki S, et al. Mortality related to severe sepsis and septic shock among critically ill patients in Australia and New Zealand, 2000-2012[J]. JAMA, 2014,311(13):1308-1316.
2. Torres L K, Pickkers P, van der Poll T. Sepsis-induced immunosuppression[J]. Annual review of physiology, 2022, 84: 157-181.
3. Torres-Rosas R, Yehia G, Peña G, et al. Dopamine mediates vagal modulation of the immune system by electroacupuncture[J]. Nat Med, 2014,20(3):291-295.
4. Liu S, Wang Z, Su Y, et al. A neuroanatomical basis for electroacupuncture to drive the vagal-adrenal axis[J]. Nature, 2021,598(7882):641-645.

5. Liu S, Wang Z, Su Y, et al. A neuroanatomical basis for electroacupuncture to drive the vagal-adrenal axis[J]. Nature, 2021,598(7882):641-645.

B-37

Guizhi-Gancao Decoction Alleviates Phenylephrine-induced Cardiac Hypertrophy and Suppresses Store-operated Ca^{2+} Entry
桂枝甘草湯可緩解苯腎上腺素誘發的心肌肥大並抑制鈣庫操作的 Ca^{2+} 內流

RX Yao[1], KJ Yang [1], XL Shan [1], P Zhao [1], R Lu [1] and C Zhang [2]

[1] *School of Traditional Chinese Medicine, SHUTCM;*

[2] *School of Intergrative Medicine, SHUTCM.*

Abstract:

BACKGROUND: The traditional Chinese medicine Guizhi-Gancao Decoction（GGD）is widely used clinically in the treatment of cardiovascular diseases. Cardiac hypertrophy is one of the pathological process of several cardiac diseases. An abnormal calcium signaling pathway is one of the main mechanisms for the development of cardiac hypertrophy. Store-operated Ca^{2+} entry (SOCE) is a classical calcium pathway and is often involved in cardiac physiology. In the current study, we aimed to determine the anti-hypertrophic effect of GGD and its effect on calcium signaling in cardiomyocytes.

Methods: In vivo, we used phenylephrine (PE) to induce cardiac hypertrophy in C57BL/6J mice and isolated neonatal rat cardiomyocytes for in vitro studies. Real-time polymerase chain reaction（PCR），ion imaging technology，western blotting and immunofluorescence analysis were used to detect our indicators of interest.

RESULTS: We found that GGD attenuated PE-induced ventricular wall thickening in C57Bl/6J mice. PCR analysis revealed that GGD attenuated PE-induced of hypertrophic genes (e.g., ANP, BNP, and MYH7/MYH6) overexpression. In isolated cardiomyocytes, we found that PE induced myocardial hypertrophy along with an increased SOCE amplitude, and GGD could alleviate these effects. Meanwhile, western blotting and immunofluorescence studies showed that GGD could alleviate the PE-induced increase in the expression and colocalization of the SOCE pathway-associated protein STIM1/Orai1. These effects are similar to those of YM58483 (YM, SOCE inhibitor).

CONCLUSIONS: Taken together, our study suggests that GGD inhibits cardiac hypertrophy and that store-operated Ca^{2+} entry in cardiomyocytes may be a potential pathway of action.

Acknowledgement:

This research was funded by the National Natural Science Foundation of China (82074054). Deepest gratitude to Prof. Chen Zhang and Prof. Pei Zhao for their financial supports and detailed experimental guidance. Special thanks to Prof. Chen Yan for her technical supervision of the study.

References:

1. Collins HE, Zhu-Mauldin X, Marchase RB, Chatham JC. STIM1/Orai1-mediated SOCE: current perspectives and potential roles in cardiac function and pathology. Am J Physiol Heart Circ Physiol. 2013 Aug 15;305(4):H446-58.

2. Yang K, Shan X, Songru Y, Fu M, Zhao P, Guo W, Xu M, Chen H, Lu R, Zhang C. Network pharmacology integrated with experimental validation to elucidate the mechanisms of action of the Guizhi-Gancao Decoction in the treatment of phenylephrine-induced cardiac hypertrophy. Pharm Biol. 2024 Dec;62(1):456-471.

B-38

Investigation of the inhibitory effects of active fractions from *Rubia yunnanensis* on colon cancer cells
小紅參有效組份對結腸癌細胞的抑製作用研究

Xiaona Shi[1], Grace Gar-Lee Yue[3], Clara Bik-San Lau,[2,3,4,*], Ninghua Tan[1,*]

[1] *School of Traditional Chinese Pharmacy, China Pharmaceutical University, #639 Longmian Avenue, Jiangning District, Nanjing, 21198, China;*

[2] *Institute of Chinese Medicine, The Chinese University of Hong Kong, Shatin, New Territories, Hong Kong SAR, China;*

[3] *Deparment of Pharmacology and Pharmacy, LKS Faculty of Medicine, The University of Hong Kong, Pokfulam, Hong Kong SAR, China;*

[4] *School of Chinese Medicine, LKS Faculty of Medicine, The University of Hong Kong, Pokfulam, Hong Kong SAR, China.*

Abstract:

Rubia yunnanensis, belonging to the Rubiaceae family, is a plant native to Yunnan Province, China. Its dried roots and rhizomes, Xiao Hong Shen (XHS), have been reported to possess anti-tumor and anti-myocardial ischemia properties[1]. Several cyclopeptide compounds such as RA-V and RA-XII have been previously confirmed to possess anti-tumor properties[2]. This study aims to investigate the inhibitory effects of the crude water extract of XHS (XHSW) and a specially prepared water-ethanol fraction (XHSE) on colon cancer cells.

To evaluate the cytotoxicity, cell proliferation, motility, and migration in colon cancer HCT116 cells, cell-based functional assays including MTT, BrdU, scratch wound healing, and colony formation assays were employed, respectively. The cell cycle phase distribution was then assessed using flow cytometry. Western blotting was conducted to assess the expression of key intracellular signaling proteins.

We first compared the cytotoxicities of XHSW and XHSE and found that XHSE exhibited stronger cytotoxicity in HCT116 cells when compared to XHSW. Further experiments on XHSE showed that it could significantly suppress the cell proliferation and motility. It also induced cell cycle arrest at G2/M phase in HCT116 cells. In addition, XHSE could significantly modulate the expressions of epithelial-mesenchymal transition (EMT) related proteins, such as E-cadherin.

In conclusion, the specially prepared XHSE fraction exhibited more potent cytotoxicity than XHSW. Further investigation on the in vivo efficacy of XHSE will be performed.

References:

1. Itokawa H, *et al. Chem Pharm Bull*, 1984, 32(8):3216.
2. Lin Q, *et al. Phytother Res*, 2022, 36(6):2641-2659

B-39

Small Molecule Mitigates Alzheimer's Disease Pathogenesis in Mouse Models: Involvement of ROR α-CLOCK-C/EBP- α Axis

MF Hossain, S Li and YQ Song[1]

[1] *School of Biomedical Sciences, The University of Hong Kong*

Abstract:

Alzheimer's disease (AD) is characterized by amyloid beta deposition and tau hyperphosphorylation which results in synaptic dysfunction and memory loss. However, the molecular mechanism of AD is not clearly complete yet, and no effective therapeutic option for AD. The transcription factor CCAAT/enhancer-binding protein alpha (C/EBP-α) is involved in cell proliferation, differentiation, and cell cycle control. We previously found that C/EBP-α is essential for brain development. However, C/EBP-α is decreased in 5xFAD model and N2a-APPsw and N2a with A®42 which suggests that downregulation of C/EBP-α is responsible for AD pathogenesis. A small molecule (SM) activates retinoic acid receptor-related orphan receptor alpha (RORα) and enhances clock protein expression. To find out the molecular mechanism, SM was treated in both neuronal cell lines (N2a-APPsw and HT-22) and AD mouse models (5xFAD and 3xTg). The therapeutic potential of SM was determined by behavioral experiments (Open field, Novel object recognition, Morris water maze tests), molecular, and morphological analysis between the treatment and control groups. Soluble and insoluble tau was separated from 3xTg with 1% sarkosyl. The effect of regulatory factors including C/EBP-α, CLOCK, and RORα of SM was identified by the luciferase assay. Our study revealed that SM rescued cognitive impairment and learning ability in 5xFAD mouse model and 3xTg. We also demonstrated that SM upregulated C/EBP-α in AD cellular and animal models, and downregulated AD-related markers including GSK-3®, p-tau (396 and 404) as well as insoluble and soluble tau. In addition, we found that reduced level of RORα significantly improved after SM treatment suggesting that RORα indirectly regulates C/EBP-α expression.

Key words: Alzheimer's disease, Small Molecule, C/EBP-α, CLOCK, RORα, Tau

Acknowledgement:

This symposium is supported by MCMIA. And herein we also want to thank our organization colleagues from The Chinese University of Hong Kong, The University of Hong Kong, The Hong Kong University of Science and Technology, Hong Kong Baptist University, The Hong Kong Polytechnic University, City University of Hong Kong, The University of Macau and Shanghai University of Traditional Chinese Medicine and Nanyang Technological University for their hard work and those who gave us great supports in the organization of this symposium.

B-40

Electroacupuncture at Neiguan(PC6) improves depressive-like behaviors in OBx mice by restoring hippocampal CA1 neurophysiological activity
電針內關穴通過恢復海馬 CA1 區神經電生理活動 改善 OBx 小鼠抑鬱樣行為

Xinyu Wei[1], Yu Lu[1], Zhongzhao Guo[2,3], Zilu Zhu[4] and Deheng Wang[1]*

[1] *School of Integrative Medicine, Shanghai University of Traditional Chinese Medicine;*

[2] *Department of Rehabilitation Medicine, Tong Ren Hospital, Shanghai Jiao Tong University School of Medicine;*

[3] *Institute of Rehabilitation, Shanghai Jiao Tong University School of Medicine;*

[4] *Key Laboratory of Molecular Medicine and Biotherapy, School of Life Science, Beijing Institute of Technology*

Abstract:

Depression is gradually becoming the second leading killer disease globally, following only cancer, severely threatening human mental and physical health. Clinical interventions primarily involve psychiatric medications, which are limited by slow onset, low response rates, and adverse effects. Electroacupuncture, a traditional Chinese medicine therapy, offers significant advantages in treating depression through multiple pathways, levels, and targets. However, the neurophysiological mechanisms remain unclear.

This study constructed a model of olfactory bulbectomy (OBx) depression in mice and treated them with electroacupuncture at the Neiguan (PC6) acupoint. Using in vivo multi-channel, chemogenetic, optogenetic, and other techniques to investigate the neurophysiological mechanisms of this treatment. After 21 days of OBx, mice exhibited depressive-like behaviors such as reduced locomotor activity, anhedonia, and despair. We also observed a significant decrease in dendritic spine density in the hippocampal CA1, which may lead to weaken neurophysiological activity.One week of electroacupuncture at bilateral PC6 improved depressive-like behaviors in OBx mice, restored dendritic spine density in the hippocampal CA1 region and enhanced neurophysiological activity. We hypothesize that electroacupuncture at PC6 acupoint improves depressive-like behaviors in OBx mice by restoring hippocampal CA1 neurophysiological activity.

Acknowledgement:

This study was supported by Shanghai University of Traditional Chinese Medicine and the National Natural Science Foundation of China. Thanks to Dr. Wang for providing the platform and guidance as my mentor. I also appreciate the assistance and support from fellow lab colleagues.

References:

1. Li *et al*.Reinstating olfactory bulb-derived limbic gamma oscillations alleviates depression-like behavioral deficits in rodents. *Neuron*, 2023. 111(13), 2065–2075.
2. NAM *et al*.Acupuncture: a potent therapeutic tool for inducing adult neurogenesis.

NeuralRegen Res, 2015, 10(1): 33-35.

3. BERGERA *et al*. Dult hippocampal neurogenesis in major depressive disorder and Alzheimer's disease. *Trends Mol Med*, 2020, 26(9): 803-818.

B-41

Protective effect of Chinese herb Prunella vulgaris L. on esophageal injury in Esophago-gastro-duodenal anastomosis (EGDA) rat model
夏枯草對食管十二腸吻合 (EGDA) 大鼠食管損傷的保護作用

Xiao Zhang[a,d], Cen Chang[a,b], Tingting Xu[c], Mei Zhu[c,d], Siyuan Gao[a,d], Yangyi Gu[a,d], JingangCui[c], Tiansheng Huang[a,d], Dongyi He[a,b,d], Guangsu Xiong [f], Li Li[a,b,d]

[a] *Guanghua Hospital Affiliated to Shanghai University of Traditional Chinese Medicine, Shanghai 200052, China*

[b] *Institute of Arthritis Research in Integrative Medicine, Shanghai Academy of Traditional Chinese Medicine, Shanghai 200050, China*

[c] *Yueyang Hospital of Integrated Chinese and Western Medicine Affiliated to Shanghai University of Traditional Chinese Medicine, Shanghai 200437, China*

[d] *Shanghai University of Traditional Chinese Medicine, Shanghai 200120, China*

[f] *TongjiHopital OF Tongji University*

Abstract:

Purpose: The aim of this study is to examine the impact of bile reflux on esophageal damage and the potential protective role of PVL in an EGDA rat model.

Methods: The pathological inflammation of esophageal mucosa was evaluated by hematoxylin and eosin (H&E) staining. Cytokines of peripheral blood were detected by Luminex liquid suspension chip. In addition, immunohistochemical staining and immunofluorescence staining were used to observe the expression of the angiogenesis marker CD105 and the cell proliferation marker Ki-67. The major components of PVL in EGDA rat model were identified using UHPLC-QTOF-MS method.

Results: PVL can significantly relief the inflammation of esophageal, and reduce precancerous lesions and canceration in model rats. It can also significantly decrease the levels of chemokine (C-X-C motif) ligand (CXCL)1 and vascular endothelial growth factor (VEGF) in the model rats, and can significantly reduce the expressions of CD105 and Ki-67 in the esophagus. Substances such as Caffeic Acid,Caffeoyl C1, glucuronide, coumaroyl Hexoside,Nivalenol,Armillane, etc., may be the main effective substances of PVL in the treatment of GERD.

Conclusion: PVL can significantly alleviate esophageal inflammatory caused by bile reflux, and it can also inhibit cell proliferation and angiogenesis. It is a natural remedy with potential for preventing esophageal cancer.

Acknowledgement:

This symposium is supported by MCMIA. And herein we also want to thank our organization colleagues from The Chinese University of Hong Kong, The University of Hong Kong, The Hong Kong University of Science and Technology, Hong Kong Baptist University, The Hong Kong Polytechnic University, City University of Hong Kong, The University of Macau and Shanghai University of Traditional Chinese Medicine and Nanyang Technological University for their hard work and those who gave us great supports in the organization of this symposium.

References:

1. Adkins, D., Ley, J.C., Liu, J., Oppelt, P., 2024. Ramucirumab in combination with pembrolizumab for recurrent or metastatic head and neck squamous cell carcinoma: a single-centre, phase 1/2 trial. The Lancet Oncology 0.
2. Andreasson, A., Agréus, L., Mastellos, N., Bliźniuk, G., Waśko-Czopnik, D., Angelaki, A., Theodosaki, E., Lionis, C., Hek, K., Verheij, R., Wright, E., Durbaba, S., Muris, J., Bródka, P., Saganowski, S., Ethiér, J.-F., Curcin, V., Delaney, B., 2024. Effect of on-demand vs continuous prescription of proton pump inhibitors on symptom burden and quality of life: results of a real-world randomized controlled trial in primary care patients with gastroesophageal reflux disease. Annals of Medicine.
3. Atepela, J.H., 2023. Proton Pump Inhibitor (PPI) sebagai Farmakoterapi GERD pada Lansia. Cermin Dunia Kedokteran 50, 379–382.

B-42

Inhibition of JAK2-STAT3 signaling contributes to the effects of egg yolk oil in ameliorating atopic dermatitis in pharmacological models
抑制 JAK2-STAT3 信號傳導有助於蛋黃油在藥理模型上緩解特應性皮炎

Xiao-Yun Fan, Ying Wu, Yan-Ting Liang, Zhi-Ling Yu*

School of Chinese Medicine, Hong Kong Baptist University

Abstract:

Atopic dermatitis (AD), also known as eczema, is a chronic skin disease. The frequency and prevalence of AD have steadily grown over the last several decades. Available drugs for treating AD have limitations. Egg yolk oil (EYO), a traditional Chinese medicinal material prepared from chicken egg yolk, was widely used for AD management in China. However, the mechanisms of action of EYO in treating AD are not fully understood. This study aimed to investigate the anti-AD effects and mechanisms of EYO.

Our results showed that EYO ameliorated MC903-induced AD-like symptoms in mice, evidenced by significantly reduced ear thickness and decreased frequency of scratching. EYO increased viability of, and suppressed apoptosis in, TNF-α/IFN-ϒ-stimulated HaCaT cells. Mechanistically, EYO inhibited the activation of STAT3 (Tyr705 and Ser727) and the STAT3 upstream kinase Janus kinase 2 (Tyr1007/1008), in ear tissues of AD mice and TNF-α/IFN-ϒ-stimulated HaCaT cells. EYO downregulated mRNA levels of inflammatory genes (*IL33*, and *IL6*) and itch-related genes (*TSLP* and *CXCL1*), upregulated mRNA levels of skin barrier-related genes (*TJP1* and *CLDN1*) that are transcriptionally regulated by STAT3 in AD cell and mouse models. To verify the involvement of STAT3 signaling in EYO's effects, we over-activated STAT3 in HaCaT cells by transducing STAT3C (A662C, N664C mutant), a constitutively active STAT3 variant, into the cells. Upon STAT3 over-activation, the anti-AD effects of EYO (0.05%, v/v) in TNF-α/IFN-ϒ-stimulated HaCaT cells were significantly attenuated. Specifically, the mRNA levels of skin barrier-related genes *TJP1* and *CLDN1* were decreased from 33.61% to 31.28% and 18.95% to 13.21%, respectively; the mRNA levels of the inflammatory *gene IL33* and the itch-related gene TSLP were significantly lowered from 55.26% to 36.27% and 64.12% to 52.83%, respectively.

In summary, we for the first time found that EYO ameliorates AD-like symptoms in mouse and cell models; and suppression of JAK2-STAT3 signaling contributes to the mechanisms of action of EYO. This study provides pharmacological justifications for the clinical application of EYO in treating AD.

Acknowledgement:

This work was supported by Laboratory JaneClare Limited.

C-01

Observation on the clinical effect of Astragalus on vascular endothelial function in type 2 diabetes mellitus patients with qi deficiency syndrome
黃芪對氣虛證 2 型糖尿病患者血管內皮功能的臨床效果觀察

Yunyi Yang[1] , Hongjie Yang[1] and Wenjun Sha[2]

[1] *Yueyang Hospital of Integrated Traditional Chinese and Western Medicine, Shanghai University of Traditional Chinese Medicine;*

[2] *Putuo Hospital,Shanghai University of Traditional Chinese Medicin.*

Abstract:

AIM：To explore the clinical efficacy of Astragalus in type 2 diabetes mellitus patients with qi deficiency evidence and its effect on vascular endothelial diastolic function[1].

METHODS：A total of 90 cases of type 2 diabetes mellitus patients with stable glycemic control in qi deficiency syndrome admitted to our hospital were included and randomly divided into the control group and the observation group. The control group maintained the original treatment regimen, and the observation group took Astragalus granules orally on the basis of the original treatment. 12 weeks later, endothelium-dependent diastolic function (FMD), nitric oxide (NO), endothelin (ET-1), monocyte/high-density lipoprotein cholesterol ratio (MHR), and inflammatory factor (CRP) of brachial artery vasculature were observed, and glycemic metabolism indexes (FBG, 2hPBG, HbA1C, FCP), lipid metabolism indexes (TC, TG, HDL-C, LDL-C), Chinese medicine evidence points and clinical efficacy, as well as changes in safety indexes.

RESULTS：The total effective rate of the observation group was higher than that of the control group ($P < 0.05$). Compared with the control group, the improvement of FMD, NO, and MHR levels was more significant in the observation group ($P < 0.05$), and the 2-hour postprandial blood glucose (2hPBG), glycosylated hemoglobin (HbA1C), total cholesterol (TC), and triglyceride (TG) were decreased ($P < 0.05$), and the three TCM symptom scores, namely, "shortness of breath", "fatigue", and "weakness" were decreased more significantly ($P < 0.05$), and no significant adverse effects were found in the two groups.

CONCLUSION：Astragalus granules can effectively improve vascular endothelial dysfunction in type 2 diabetes mellitus patients with qi deficiency syndrome, which is worth promoting in the clinic.

Acknowledgement:

Thank you to the organization of the seminar and the hardworking staff behind the scenes. I would like to express my gratitude to my teachers for providing important advice and assistance in this research.

References:

1. Sha W, Zhao B, Wei H, et al. Astragalus polysaccharide ameliorates vascular endothelial dysfunction by stimulating macrophage M2 polarization via potentiating Nrf2/HO-1 signaling pathway. Phytomedicine. 2023;112:154667.

C-02

Clinical efficacy observation of Modified Huangqi Guizhi Wuwu Decoction in treating diabetic peripheral neuropathy
加味黄芪桂枝五物湯治療糖尿病周圍神经病变的臨床療效觀察

Fengyu Zhang[1] , Tian Shen[2]

Shanghai University of Traditional Chinese Medicine Affiliated Putuo Hospital

Abstract:

Objective：To explore the clinical efficacy and the effect on inflammatory factors of modified Huangqi Guizhi Wuwu Decoction in treating patients with diabetic peripheral neuropathy (DPN) of the qi deficiency and blood stasis type.

Methods：Seventy-four patients with diabetic peripheral neuropathy (DPN) were randomly divided into an observation group and a control group, and all the patients were classified as the type of qi deficiency and blood stasis by traditional Chinese medicine (TCM), with 37 patients in each group. Both groups were treated with conventional hypoglycemic drugs and nutritive nerves, while the observation group was treated with modified Huangqi Guizhi Wuwu Decoction on the basis of conventional treatment. After one course of continuous treatment (12 weeks), the clinical efficacy and changes in Chinese medicine syndrome points of the two groups were observed, and the changes in vibration sensory threshold (VPT) and current sensory threshold (CPT), as well as the Toronto Clinical System Score (TCSS) before and after treatment, and the changes in the concentrations of serum tumor necrosis factor-a (TNF-a) and interleukin-6 (IL-6) and the changes in quality of life scores before and after treatment were compared between the two groups.

Results：The total clinical effective rate of the observation group was higher than that of the control group, and the difference was statistically significant (P<0.05).After the treatment, the Chinese medicine syndrome score, TCSS score, vibration sensation threshold (VPT) and current sensation threshold (CPT) of both groups were significantly improved compared with those of the pre-treatment group (P<0.05), and the observation group was significantly lower than that of the control group (P<0.05); after the treatment, the levels of TNF-a and IL-6 of the two groups were decreased compared with the pre-treatment level, and the decrease of the observation group was more obvious than that of the control group (P<0.05); After treatment, the quality of life score of the observation group was significantly better than that of the control group (P<0.05), and no adverse reactions occurred in the course of treatment in both groups.

Conclusion：The treatment of diabetic peripheral neuropathy with qi deficiency and blood stasis with modified Huangqi Guizhi Wuwu Decoction was effective and safe, and effectively improved the peripheral nerve function of patients with DPN and down-regulated the levels of serum TNF-a and IL-6, which alleviated the clinical symptoms of the patients and improved the patients' quality of life, and the mechanism of its action may be related to the regulation of inflammation.

Acknowledgement:

First of all, I would like to give my heartfelt thanks to my supervisor, Professor Shen Tian, for her kindness, illuminating guidance and profound knowledge. From her insightful and lively lecture, I have obtained a better understanding of translating theories and thus developed interest in it. I also express my appreciation to all teachers who have lectured me for their insightful lectures which are of great benefit to me in my research.

C-03

A multicenter clinical study on the treatment of refractory type 2 diabetes mellitus with deficiency of qi and yin by Xiaoke formula
消渴方治療氣陰兩虛型難治性 2 型糖尿病的多中心臨床研究

Qu Xiaoxiao[1,2] , Yuan Shasha[2], Zhang Dan[2], Zhang Zeng[2], He Xiaoli[2], He Yanming[2], Yang Hongjie[2]

[1] *Shanghai University of Traditional Chinese Medicine;*

[2] *Yueyang Hospital of Integrated Traditional Chinese and Western Medicine, Shanghai University of Traditional Chinese Medicine.*

Abstract:

Objective: To evaluate the clinical efficacy of a traditional Chinese medicine compound—Xiaoke formula based on the principle of sour-sweet herbs nourishing yin in the treatment of refractory type 2 diabetes mellitus and its effect on Chinese medicine syndromes.

Methods: One hundred and twenty patients with refractory type 2 diabetes mellitus of the qi and yin deficiency type from three tertiary-level hospitals in Shanghai were randomly divided into two groups: control group (n = 60) and experimental group (n = 60). Both groups received routine western medicine treatment, but the control group received Xiaoke formula placebo while the experimental group received Xiaoke formula granules. Changes in glycosylated hemoglobin(HbA1c), blood glucose, C-peptide(C-P), and TCM syndrome scores were observed in both groups before and after treatment.

Results: The levels of HbA1c, FPG, 1hGlu, 2hGlu were significantly lower in the test group compared with the pre-intervention period ($P < 0.01$), and the levels of C-P, 1hC-P, 2hC-P, C-P area under curve were significantly higher compared with the pre-intervention period ($P < 0.01$). Compared with the control group, FPG, 1hGlu, and 2hGlu levels were significantly reduced in the test group after the intervention ($P < 0.01$ or < 0.05). Fasting blood glucose of the experimental group was significantly lower than that of the control group at the end of the 8th and 12th week of treatment ($P < 0.01$). Compared with the control group, the TCM symptom score was significantly lower in the test group after the intervention ($P < 0.01$). The treatment effectiveness rate of the experimental group was 68.3%, and that of the control group was 33.3%, and the difference of the treatment effectiveness rate between the two groups was statistically significant ($P < 0.01$).

Conclusion: Xiaoke formula can significantly reduce patients' HbA1c and blood glucose levels, improve pancreatic β-cell function, and at the same time alleviate patients' TCM clinical symptoms, which has good clinical efficacy in the treatment of refractory type 2 diabetes mellitus.

Acknowledgement:

This study was supported by the Department of Endocrinology of Shuguang Hospital affiliated

with Shanghai University of Traditional Chinese Medicine and Longhua Hospital affiliated with Shanghai University of Traditional Chinese Medicine. We would like to thank the clinicians of the Department of Endocrinology of the two hospitals for their hard work.

References:

1. Li PC, Chen LM, Huang PL, *et al*. Improvement of glucose metabolism in diabetic mice by inhibition of PTP1B by Cottonwood bark. *Chinese Journal of Traditional Chinese Medicine*, 2023,41(04):99-103+276.
2. Tang YP. Efficacy of metformin combined with Degu Menthol Insulin in the treatment of refractory type 2 diabetes mellitus and its effect on insulin function. *Medical Theory and Practice*, 2023,36(02):233-235.
3. Chen WN, Zhang T, Liao Z, *et al*. Effects of Yiqi Ganlu Granules combined with insulin intensive therapy on intestinal flora in patients with refractory type 2 diabetes mellitus. *Internal Medicine*, 2022,17(05):499-504.
4. Alharbi TJ, Tourkmani AM, Rsheed AB, *et al*. Sociodemographic and clinical predictors of refractory type 2 diabetes patients: Findings from a case-control study. *Saudi Med J*. 2021,42(2):181-188.
5. Weir GC,Gaglia J,Bonner-Weir S. Inadequate β -cell mass is essential for the pathogenesis of type 2 diabetes. *Lancet Diabetes Endocrinol*. 2020,8(3):249-256.
6. Lee SH, Park SY, Choi CS. Insulin Resistance: From Mechanisms to Therapeutic Strategies. *Diabetes Metab J*. 2022,46(1):15-37.
7. Zhang YF, Zhao JX, Zhu LW, *et al*. On the mechanism of fire-heat in thirst-quenching disease. *Chinese Journal of Traditional Chinese Medicine*,2023,38(07):3198-3202.
8. Li JY, Ding YY, Gong GM, *et al*. Treatment of insulin resistance in type 2 diabetes mellitus based on the spleen theory of "the spleen is the master of transportation and digestion and the master of muscle". *Jiangxi Traditional Chinese Medicine*,2023,54(05):12-14.
9. Lin M, Guo YQ, Fan LF, *et al*. Discussing the method of tonifying deficiency and channelization in traditional Chinese medicine treatment of diabetic nephropathy from inhibition of abnormal vascular neogenesis. *Chinese Journal of Traditional Chinese Medicine*, 2024,39(04):1657-1661.
10. Wang CD, Teng BS, He YM, *et al*. Effect of a novel proteoglycan PTP1B inhibitor from Ganoderma lucidum on the amelioration of hyperglycaemia and dyslipidaemia in db/db mice. *Br J Nutr*. 2012,108(11):2014-25.
11. Chinese Medical Association Diabetes Branch. Guidelines for the prevention and treatment of type 2 diabetes mellitus in China (2020 edition). *Chinese Journal of Endocrinology and Metabolism*, 2021, 37(4):311-398.
12. Ma J, Mao S, Mao ZR. The value of serum C-peptide combined with glycosylated hemoglobin in the clinical diagnosis of type 2 diabetes mellitus. *Diabetes mellitus new world*,2023,26(24):49-52.
13. Liang H, Pan Y, Teng Y, *et al*. A proteoglycan extract from Ganoderma Lucidum protects pancreatic beta-cells against STZ-induced apoptosis. *Biosci Biotechnol Biochem*. 2020,84(12):2491-2498.

C-04

A study on the objectivized characteristics of tongue image in patients with hypopituitarism
垂體功能減退症患者舌象客觀化特徵研究

Qu Xiaoxiao[1,2] , Ma Qixian[1,2], Jiang Tao[1], Xu Jiatuo[1], Wu Wei[3], Lu Hao[2*], Chen Qingguang[2*], Ye Hongying[3*]

[1] *Shanghai University of Traditional Chinese Medicine;*

[2] *Shuguang Hospital, Shanghai University of Traditional Chinese Medicine;*

[3] *Huashan Hospital, Fudan University.*

Abstract:

Objective: Patients with hypopituitarism still have some atypical clinical symptoms or develop secondary metabolic disorders after clinical hormone replacement therapy. Traditional Chinese medicine (TCM) has significant advantages in improving the above conditions, but TCM should refer to the tongue image in diagnosis and treatment. Consequently, it is necessary to analyze the objectivized characteristics of tongue image in such patients.

Methods: In this study, tongue images were collected from eligible patients by TDFA-1 tongue instrument, and the tongue analysis software TDAS3.0 was used to obtain the objectivized parameters of the tongue images, including tongue body (TB) and tongue coating (TC) coloration indicators (hue value, H; intensity value, I; saturation value, S; color space value i.e. Lab, YCrCb) and texture indicators (contrast, CON; angular second-order moment, ASM; entropy, ENT; mean,MEAN), and TC thickness indicators (tongue area/full tongue area, perAll; tongue area/area without tongue, perPart). The patients were sequentially divided into two groups based on impaired pituitary function, and the tongue features and glycolipid metabolism(GLM) of the patients in each pathological state were compared, and the correlation between the tongue features and GLM was analyzed.

Results: A total of 104 patients with hypopituitarism were included in the study. Those without central diabetes insipidus (CDI) had a more delicate TB and TC (TB-ASM, TB-ENT, TC-ASM, TC-ENT, TC-CON, $P < 0.05$) and a fuller and darker color (TB-S, TC-S, $P < 0.05$) than those with CDI, who had a duller red TB, brighter TC, and a larger area of TC (TB-a, TB-b, TC-L , TC-a, TC-b, TB-Y, TB-Cr, TB-Cb, TC-Y , Perall, $P < 0.05$). Patients with hypofunction of the HPA axis had duller TC than those with normal function (TC-Y, $P < 0.05$). The TB was rougher in those with hypofunction of the HPT axis than in those with normal function (TB-ASM, TB-ENT, TB-MEAN, $P < 0.05$), and the TB and TC were brighter in the former (TB-Cb, TB-Y, TC-Y, $P < 0.05$). Blood glucose levels correlated with TB-L, TB-Cr, TB-ENT, TB-ASM and TC-MEAN ($P<0.05$). Lipid metabolism indicators were correlated with TB-ASM, TC-S, TC-Y, and TC-ASM ($P < 0.05$).

Conclusion: Tongue images in hypopituitarism vary significantly in different disease states, and different tongue objectivization features may be closely related to the metabolic condition and disease degree of the patients. Tongue objectification indexes have unique advantages and application value in the treatment of hypopituitarism in Chinese medicine.

Acknowledgement:

We thank Prof. Xu Jiatuo's team at Shanghai University of Traditional Chinese Medicine and Prof. Ye Hongying's team at Department of Endocrinology, Huashan Hospital for their support.

References:

1. *Prencipe N, Marinelli L, Varaldo E, et al*. Isolated anterior pituitary dysfunction in adulthood. *Front Endocrinol (Lausanne)*. 2023.14,1100007.
2. *Yeliosof O, Gangat M.* Diagnosis and management of hypopituitarism. *Curr Opin Pediatr*. 2019.31(4):531-536.
3. *Higham CE, Johannsson G, Shalet SM. Hypopituitarism. Lancet*. 2016.388(10058):2403-2415.
4. *Caputo M, Prencipe N, Bisceglia A, et al*. Primary Pituitary Lymphoma As Rare Cause Of A Pituitary Mass And Hypopituitarism In Adulthood. *Endocr Pract*. 2020.26(11):1337-1350.
5. *Jiang N, Yuan L, Wang L, et al*. Objective study on tongue features of newly diagnosed gastric cancer patients. *Chin J Tradit Chin Med Pharmacy*, 2023.38(01):427-433.
6. *Tian Q, Lyu Q, Ren J, et al*. Research Progress on Characteristics and Objectification of TongueImage in Hypertension. *Journal of basic Chinese Medicine*, 2023.29(01):160-163.
7. *Fleseriu M, Hashim IA, Karavitaki N, et al*. Hormonal Replacement in Hypopituitarism in Adults: An Endocrine Society Clinical Practice Guideline. *J Clin Endocrinol Metab*. 2016.101(11):3888-3921.
8. *Jia Y, Sun J, Jia Z, et al*. Tongue Manifestation in Patients with Osteonecrosis of the Femoral Head: A Cross-sectional Study. *Orthop Surg*. 2022.14(9):2023-2030.
9. *Jiao W, Hu XJ, Tu LP, et al*. Tongue color clustering and visual application based on 2D information. *Int J Comput Assist Radiol Surg*. 2020.15(2):203-212.
10. *Shi YL, Liu JY, Hu XJ, et al*. A New Method for Syndrome Classification of Non-Small-Cell Lung Cancer Based on Data of Tongue and Pulse with Machine Learning. Biomed Res Int. 2021.2021:1337558.

C-05

Baduanjin based on AR technology improves metabolic associated fatty liver disease in breast cancer patients undergoing endocrine treatment: a 12-week randomized controlled trial

基於增強現實技術的八段錦鍛煉改善乳腺癌患者內分泌治療期間代謝相關脂肪性肝病：一項為期 12 周的隨機對照試驗

Junyi Chen, Mengting Dong, Ke Jiang, Jiayu Sheng

Yueyang Hospital of Integrated Traditional Chinese and Western Medicine Affiliated to Shanghai University of Traditional Chinese Medicine, Shanghai.

Abstract:

Background：Metabolic associated fatty liver disease (MAFLD) is considered a risk factor for the progression of breast cancer (BC)[1]. It can lead to liver dysfunction and eventual fibrosis, potentially advancing to cirrhosis. This severely limits treatment options, especially for patients undergoing endocrine therapy. Currently, there are no established treatments for BC patients with MAFLD, and effective pharmaceutical interventions for MAFLD remain elusive. While lifestyle interventions and physical activity are recommended for patients with fatty liver, many BC patients struggle with high-intensity physical activities post-treatment. Research on exercise interventions for BC patients with MAFLD is currently insufficient. Therefore, traditional Chinese exercises like Baduanjin may provide a viable physical therapy option for these patients, warranting further investigation.

Methods：Participants diagnosed with BC and MAFLD were recruited for this study. Intrahepatic triglyceride content assessed by proton magnetic resonance spectroscopy served as a quantitative indicator of liver fat infiltration. Participants were stratified and randomly assigned to one of three groups: Baduanjin exercise (150 minutes per week at 60%-80% of maximum heart rate for 12 weeks), aerobic exercise (jogging 150 minutes per week at 60%-80% of maximum heart rate for 12 weeks), or a control group with no exercise. AR technology-based devices were used to ensure the quality control of the exercise interventions.Post-treatment comparisons of intrahepatic triglyceride content among the three groups will evaluate the impact of Baduanjin exercise on improving liver fat infiltration. Additionally, comprehensive evaluations will include liver function markers (ALT, AST, ALP), glycolipid metabolism indicators (triglycerides, cholesterol, fasting blood glucose), body composition metrics (weight, body mass index, waist circumference, body fat percentage, grip strength), fatigue assessment, and adherence to the exercise regimen, facilitating a comprehensive comparison across the groups.

Outcomes: A total of 126 individuals (mean age 60.9 ± 8.1 years) were enrolled in the study. Of these, 118 (93.6%) completed the 6-month follow-up visit, and 113 (89.7%) completed the 12-month follow-up visit. Intrahepatic triglyceride content decreased by 2.5% ($P<0.001$) in the Baduanjin group and 2.2% ($P<0.001$) in the aerobic exercise group compared to the control group at the 12-week assessment, with no significant difference between the two exercise groups. Liver

function markers did not differ significantly among the three groups. Glycolipid metabolism showed no significant difference between the Baduanjin and aerobic exercise groups but significantly improved compared to the control group. Body weight, waist circumference, and grip strength showed significant differences between the Baduanjin group and the aerobic exercise group compared to the control group. Fatigue levels and compliance were significantly better in the Baduanjin group than in the aerobic exercise group, with improvements observed in both groups compared to the control group.

Conclusion: The Baduanjin and aerobic exercise groups were equally effective in reducing intrahepatic triglyceride content, improving glycolipid metabolism, and enhancing body composition. However, the Baduanjin group exhibited greater improvements in fatigue levels and patient compliance.

Acknowledgement:

This symposium is supported by National Natural Science Foundation of China（82004240，82104952）

References:

1. Sui Y, *et al*. *Non-alcoholic fatty liver disease promotes breast cancer progression through upregulated hepatic fibroblast growth factor 21. Cell Death Dis*. 2024 Jan 18;15(1):67.

C-06

A comprehensive insight on acupuncture for premature ovarian insufficiency: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

針灸治療卵巢早衰的全面見解：隨機對照試驗的系統評價和薈萃分析

Hengjie Cao[1], Huize Li[2], Lianwei Xu[1]

[1] *Department of Gynecology, Longhua Hospital, Shanghai University of Traditional Chinese Medicine, Shanghai, 200032, China.*

[2] *School of Acupuncture-Moxibustion and Tuina, Shanghai University of Traditional Chinese Medicine, Shanghai, 201203, China.*

Abstract:

Objective: Premature ovarian insufficiency (POI) is a multifactorial illness that affects about 1% of women and is characterized by ovarian failure before the age of 40. It frequently leads to various health issues and reduced capacity for reproduction. Although hormone replacement therapy (HRT) is a popular treatment, its limitations in terms of enhancing ovarian function and associated contraindications make the adoption of alternative approaches necessary. Acupuncture has shown potential in reproductive endocrinology since it is safe, effective, and has little adverse effects. Therefore, the aim of this study is to evaluate the therapeutic effects of acupuncture on improving ovarian function in women with POI utilizing randomized clinical trials (RCTs).

Methods: Up until October 5, 2023, eight databases were exhaustively searched in an effort to locate RCTs. The outcomes included measures of sex hormone, antral follicle counts (AFC), Kuperman scores, and overall efficiency. The Risk of Bias technique was used to assess the quality of the included research. To ensure the robustness and reproducibility of the results, sensitivity and subgroup analyses were performed to identify potential sources of heterogeneity.

Results: A total of 13 RCTs comprising 775 patients were included in the study. Acupuncture demonstrated significant efficacy in reducing follicle-stimulating hormone (FSH) (SMD = 0.83, 95% CI [0.27, 1.39], I2 =92%, p = 0.004), enhancing estradiol levels (E2) (SMD = 0.50, 95% CI [0.07, 0.93], p = 0.02, I2 = 87%), and increasing anti-Müllerian hormone (AMH) (SMD = 0.24, 95% CI [0.05, 0.44], p = 0.01, I2 =8%), as well as improving the overall effective rate (RR = 1.22; 95% CI [1.10,1.35]; p < 0.01, I2 =14%). Subgroup analysis revealed that compared to non-acupuncture therapy, the acupuncture with Chinese Herbal Medicine (CHM) and Hormone Replacement Therapy (HRT) group exhibited a substantial reduction in FSH levels (SMD = 1.02, 95%CI [0.52,1.51], I2 =60%, p < 0.01). Furthermore, the acupuncture with CHM group also exhibited a substantial reduction (SMD = 4.59, 95%CI [1.53,7.65], I2 =98%, p < 0.01). However, only the acupuncture with CHM and HRT group demonstrated a significant increase in E2 levels (SMD = 0.55, 95% CI [0.23, 0.87], I2 =12%, p < 0.01).

Conclusion: Acupuncture was proven to be more effective than non-acupuncture in lowering serum FSH levels, raising serum E2 and AMH levels, and overall efficacy in women diagnosed with POI. The results presented highlight the need for a bigger, well-designed trial to completely show

the efficacy and safety of acupuncture in the treatment of women with POI.

Keywords: premature ovarian insufficiency; acupuncture; randomized controlled trials; meta-analysis; review

Acknowledgement:

This symposium is supported by MCMIA. And herein we also want to thank our organization colleagues from The Chinese University of Hong Kong, The University of Hong Kong, The Hong Kong University of Science and Technology, Hong Kong Baptist University, The Hong Kong Polytechnic University, City University of Hong Kong, The University of Macau and Shanghai University of Traditional Chinese Medicine and Nanyang Technological University for their hard work and those who gave us great supports in the organization of this symposium.

C-07

Fusing Pulse and ECG Data for Coronary Heart Disease and Complications Identification
脈象和心電多源資訊融合技術在冠心病及其合併症中的研究

Lei-xin HONG[1], Rui GUO[1], Wen-jie WU[1], Cong-ying LIU[1], Jian-jun YAN[2], and Ye-qing ZHANG[3]

[1] *School of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China*

[2] *Institute of Intelligent Perception and Diagnosis, School of Mechanical and Power Engineering, East China University of Science and Technology, 130 Meilong Road, Xuhui District, Shanghai 200237, China*

[3] *Department of Chinese Internal Medicine, Shanghai Municipal Hospital of Traditional Chinese Medicine, Shanghai 200071, China*

Abstract:

Objectives: This study aimed to explore the potential of combining wrist pulse with limb lead electrocardiogram (ECG) data to develop an identification model for coronary heart disease (CHD) and its associated comorbidities.

Methods: We utilized a pulse-detecting device equipped with a pressure sensor and an ECG sensor to simultaneously collect wrist pulse and limb lead ECG signals from patients with coronary heart disease (CHD) and various comorbidities, including hypertension and diabetes. Time-domain analysis was applied to extract features such as time-domain parameters and pulse rate variability from the wrist pulse signals, as well as time-domain parameters and heart rate variability from the limb lead ECG signals. We implemented the random forest (RF) machine learning algorithm, to establish disease identification models based on these features, and evaluated their performance.

Results: The results indicated that the disease identification model which incorporated features from both pulse and ECG signals, exhibited improvements of 1.99%, 3.13%, 3.78% and 3.32% in terms of accuracy, average precision, average recall and F1 value, respectively, when compared to the model based solely on pulse features. Furthermore, when compared to the ECG-based model, the results were improved by 3.99%, 3.13%, 3.78% and 3.32% respectively.

Conclusions: The fusion of information from multiple sources enhances the reliability of decision-making of the system. This approach presents a novel method for managing cardiovascular diseases and offers insights into the application and promotion of wearable pulse-detecting products.

Acknowledgement:

The authors would like to express their gratitude to the mentors and colleagues at Shanghai University of Traditional Chinese Medicine for their support and guidance. Special thanks are extended to all participants of the study.

C-08

The application of traditional Chinese medicine combined with surgical treatment in bronchopleural fistula and a case report of BPF complicated by occluder-induced esophageal perforation after left pneumonectomy
中醫聯合外科手術在支氣管胸膜瘺治療中的應用 並左全肺切除術后支氣管胸膜瘺併發封堵器 食管穿孔 1 例病例報告

Guan Haolin, Ye Liang

Department of Thoracic Surgery, Seventh People's Hospital of Shanghai University of Traditional Chinese Medicine, Shanghai 200137, China.

Abstract:

Bronchopleural fistula (BPF) is a serious complication of pulmonary surgery with a high mortality rate of up to 23.6%~71.2%[1]. A variety of surgical and endoscopic procedures have been proposed over the years, but we did not reach a consensus on which method is more suitable. In contrast to these treatments, traditional Chinese medicine (TCM) rarely has a profound overview in the field of BPF. Herein, we report our approach, closing the bronchial stump with Omental flap and combined with Traditional Chinese Medicine treatment. This procedure was successfully applied in 37 patients, 22 of them received traditional Chinese medicine treatment.

Acknowledgement:

This work is supported by Shanghai Pudong New Area Health System Discipline Leader Training Plan（PWRd2021-05）. And herein we also want to thank Shanghai University of Traditional Chinese Medicine for giving us great supports in this study.

References:

1. Hanaoka T, et al. Transposition of modified latissimus dorsi musculocutaneous flap in the treatment of persistent bronchopleural fistula after posterolateral incision. Jpn J Thorac Cardiovasc Surg. 2004 Feb;52(2):84-7. doi: 10.1007/s11748-004-0091-2. PMID: 14997979.
2. 葉亮，高紹滿，管昊琳，腹腔鏡獲取帶蒂大網膜在支氣管胸膜瘺外科治療中的應用 . 中華胸心血管外科雜誌， 2023. 39(4): p. 234-236.

C-09

Research progress of traditional Chinese medicine on the spleen deficiency syndrome of colorectal adenoma
中醫藥對於結直腸腺瘤脾虛證的研究進展

Zhang Yalin, Hu Dan, Zhang Guangtao, Shi Yilin

Department of Gastroenterology, Seventh People's Hospital of Shanghai University of Traditional Chinese Medicine, Shanghai 200137, China.

Abstract:

Colorectal Adenomas (CRA) refer to tumors with abnormal hyperplasia of the colorectal mucosal epithelium [1]. They are generally referred to as protruding benign lesions in the intestinal cavity that the swelling on the surface of the colorectal mucosa, belonging to the category of intraepithelial neoplasia and being the most common type of polyp in the colorectum, accounting for approximately 60%-70% of colorectal polyps [2]. As the main precancerous lesion of colorectal cancer, the prevention and treatment of colorectal adenoma (CRA) have always been a hot topic in medical research. From the perspective of traditional Chinese medicine, spleen deficiency can lead to obstructed qi and imbalance of qi and blood, thereby affecting the normal functions of organs and viscera, including the transmission function of the large intestine. Therefore, theoretically, spleen deficiency may have a certain indirect relationship with the occurrence and development of colorectal adenoma [3].Research has found that the main pathogenesis of spleen deficiency syndrome in CRA is the deficiency of spleen qi, and the intertwinedness of damp-heat, phlegm, and stasis. In response to this pathogenesis, traditional Chinese medicine (TCM) compound prescriptions effectively block or reverse the occurrence and development of CRA through various mechanisms such as invigorating spleen qi, clearing heat and removing dampness, resolving stasis, and dispersing masses. Therefore, this review summarizes the clinical research and mechanism exploration studies on TCM compound prescriptions in the prevention and treatment of colorectal adenoma in recent years. The formulation is mainly based on invigorating the spleen and strengthening qi, with additional functions of clearing heat, removing dampness, resolving phlegm, and eliminating stasis. Furthermore, TCM compound prescriptions emphasize individualized treatment in the treatment of spleen deficiency syndrome in CRA, providing precise treatment according to factors such as patients' constitution and disease conditions. This further improves the effectiveness and safety of TCM compound prescriptions in the treatment of spleen deficiency syndrome in CRA. For the future, TCM compound prescriptions will further explore their mechanism of action and optimize treatment plans, providing more effective TCM treatment methods for the prevention and treatment of CRA.

Acknowledgement:

This work is supported by Shanghai Pudong New Area Health System Discipline Leader Training Plan（PWRd2021-05）. And herein we also want to thank Shanghai University of Traditional Chinese Medicine for giving us great supports in this study.

References:

1. 房靜遠 . 中國結直腸腫瘤篩查、早診早治和綜合預防共識意見 （ 一 ）[J]. 胃腸病學，2011,16（11）：666-675.
2. FLÉJOU J.WHO classification of digestive tumors:the fourth edition[J].Ann Pathol,2011,31(5 Suppl):S27
3. 肖靜 . 脾虛質在預防結直腸腺瘤性息肉發生及復發中的價值探析 [D]. 浙江中醫藥大學，2023.DOI：10.27465/d.cnki.gzzyc.2023.000350.

C-10

Bridging the Gap: A Comprehensive Study on Traditional Chinese Medicine Strategies for Managing Adult Irritable Bowel Syndrome
旨在彌合差距針對成人腸易激綜合征中醫治療策略的綜合性研究

Dong-jue Wei[1], Hui-juan Li[1], Ai-ping Lyu[1], Zhao-Xiang Bian[1], Kewin TH Siah[3], Linda LD Zhong[1,2*]

[1] *School of Chinese Medicine, Hong Kong Baptist University, Hong Kong 999077, China*

[2] *School of Biological Sciences, Nanyang Technological University 639798, Singapore*

[3] *Department of Medicine, Yong Loo Lin School of Medicine, National University of Singapore, Singapore*

Abstract:

Recent studies have witnessed the incorporation of herbal medicine into the management of Disorders of Gut-Brain Interactions, reflecting a paradigm shift towards holistic healing modalities. There exists a substantial gap in comprehending the utilization of Traditional Chinese Medicine (TCM) for Irritable Bowel Syndrome (IBS), particularly beyond the confines of China. This study endeavors to bridge this knowledge gap by meticulously identifying existing guidelines, critically reviewing TCM practices, and crafting contemporary treatment recommendations. We systematically searched several databased to retrieve related evidence in June 2023. Firstly, we employed the AGREE II tool to evaluate the guideline recommendations within IBS TCM guidelines, establishing a structured treatment selection hierarchy for different TCM patterns of IBS patients. Subsequently, we conducted an expert questionnaire to gain insights into the common treatment methods and medication choices practiced by clinical TCM doctors. Based on CM theory and expert' opinions, IBS with predominant Diarrheal (IBS-D) is divided into five Chinese medicine syndrome patterns, and IBS with predominant Constipation (IBS-C) is classified to four. A total of twenty-two CM prescriptions were recommended for the management of IBS, thirteen for IBS-D and nine for IBS-C. The findings provide IBS patients with enhanced treatment choices while offering clinical physicians more specific treatment regimens. The uniqueness of this research lies in being the first to conduct a comprehensive study that combines guidelines with real clinical practices in the realm of TCM IBS treatment. This serves as a foundation for providing more personalized treatment options and improving the quality of life for patients.

Acknowledgement:

This study was supported by Chinese Medicine Development Fund (No. 19B2/057A).

References:

1. Aziz, M. N. M., J. Kumar, K. N. Muhammad Nawawi, R. A. Raja Ali and N. M. Mokhtar. Irritable bowel syndrome, depression, and neurodegeneration: a bidirectional communication from gut to brain. *Nutrients*. 13, 2021.
2. Brozek, J.L., E.A. Akl, P. Alonso-Coello, D. Lang, R. Jaeschke, J.W. Williams, B. Phillips, M.

Lelgemann, A. Lethaby, J. Bousquet, G.H. Guyatt and H.J. Schünemann. Grading quality of evidence and strength of recommendations in clinical practice guidelines. Part 1 of 3. An overview of the GRADE approach and grading quality of evidence about interventions. *Allergy*. 64: 669-677, 2009.

3. Canavan, C., J.West and T. Card. Review article: the economic impact of the irritable bowel syndrome. *Aliment Pharmacol Ther*. 40: 1023-1034, 2014.
4. Chen, Y. L., C. Zhao, L. Zhang, B. Li, C. H. Wu, W. Mu, J. Y. Wang, K. H. Yang, Y. P. Li, C. Chen, Y. Y. Wang, C. Wang, Z. X. Bian and H.C. Shang. Toward evidence-based Chinese medicine: status quo, opportunities and challenges. *Chin J Integr. Med*. 24: 163-170, 2018.
5. Chong, P.P., V. K. Chin, C. Y. Looi, W. F. Wong, P. Madhavan and V. C. Yong. The microbiome and irritable bowel syndrome - a review on the pathophysiology, current research and future therapy. *Front Microbiol*. 10: 1136, 2019.

C-11

The Effects of Tai Chi Combined with Acupressure in Treating Anxiety-induced Insomnia Among College Students: A Randomized Controlled Trial

太極聯合穴位按揉治療大學生焦慮性失眠的效果：一項隨機對照試驗

JY Deng[1], YM Wang[1] and XX Fu[2]

[1] *School of Basic Medical Sciences, Chengdu University of Traditional Chinese Medicine*

[2] *Hospital of Chengdu University of Traditional Chinese Medicine.*

Abstract:

Background: This study was to evaluate the efficacy and the optimal treating timing of Tai Chi combined with acupressure in the treatment of anxiety induced insomnia among college students in China mainland.

Methods: A total of 126 eligible participants were randomly assigned to three groups: treatment group A (participants treated before sleeping), treatment group B (participants treated after sleeping), and control group C (waiting list group). The treatment groups underwent a 12-week intervention consisting of 24-step Tai Chi exercises and acupressure, while all groups received regular psychological counseling. The primary outcome were the Pittsburgh Sleep Quality Index (PSQI) and the Hamilton Anxiety Scale (HAMA). Secondary outcome included the Generalized Anxiety Disorder-7 (GAD-7) and the Insomnia Severity Index (ISI).

Results: The treatment group displayed significant reductions in scale scores compared to the waiting group, and the changes in scale scores during the follow-up period were statistically different between the treatment and waiting groups ($P< 0.05$). Notably, the treatment group before bedtime displayed greater improvement compared to the treatment group after waking up ($P< 0.05$).

Conclusions: Tai Chi combined with acupressure demonstrated significant efficacy in the treatment of anxiety-induced insomnia among college students. The intervention was found to be most effective when administered before bedtime.

Trial registration: ClinicalTrials.gov, Identifier: ChiCTR2200057003.

Acknowledgement:

We would like to express our gratitude to all the participants who took part in this study. Their willingness to participate and dedication to improving their health has made this research possible.

C-12

Efficacy of USEA in Preventing Recurrence of Uric Acid Stones After Minimally Invasive Surgery
泌尿排石合劑在尿酸結石術后復發預防的療效研究

Jielong Zhou[1,2,3], Dexin Song[1,2,3] and Dongliang Xu[1,2,3,*]

[1] *Urology Centre, Shuguang Hospital Affiliated to Shanghai University of Traditional Chinese Medicine;*

[2] *Surgical Institute of Integrative Medicine, Shuguang Hospital Affiliated to Shanghai University of Traditional Chinese Medicine of Chinese Medicine;*

[3] *Surgical Institute, Shuguang Hospital Affiliated to Shanghai University of Traditional Chinese Medicine.*

Abstract:

Objective: Uric acid stones constitute a prevalent subset of urinary tract calculi, intricately linked to persistently low urinary pH levels1. The study's objective was to assess the efficacy of a Urinary Stone-Expelling Agent (USEA) in preventing post-surgical recurrence and growth of uric acid stones following minimally invasive procedures2,3.

Methods: This prospective, randomized controlled trial enrolled 50 patients who underwent URL or PCNL for uric acid stones4. Post-infrared spectroscopy confirmation of stone composition5, participants were randomized into treatment and control cohorts of 25 each. The treatment group received 70ml of the USEA daily in two divided doses, while the control group received no intervention. A 3-month longitudinal 24-hour urine analysis was conducted to monitor urine volume6, uric acid concentration, and pH1. Stone recurrence was evaluated at 6 and 12 months post-treatment using KUB radiography and ultrasonography.

Results: The treatment group exhibited a significant increase in 24-hour urine output to 4.7±2.8L ($p<0.001$) and an elevation in urine pH from 5.35 to 5.59 ($p<0.001$), alongside a 39.6% reduction in uric acid levels ($p<0.001$). The recurrence and growth rate of stones was markedly diminished in the treatment group (6.4% vs. 35.4%). In patients with complete stone clearance, the stone-free rate was significantly higher in the treatment group (47.3%) compared to the control group (7.5%). For residual insignificant stones post-surgery, only 6.6% in the treatment group showed an increase in stone volume, contrasting with 49.7% in the control group.

Conclusion: The USEA effectively modulates uric acid metabolism and enhances urine pH, thereby inhibiting uric acid stone formation. The findings underscore the compound's potential as a preventive strategy against post-surgical recurrence of uric acid stones. However, long-term studies are warranted to evaluate its safety and sustained efficacy.

Acknowledgement:

This project was supported by the National Natural Science Foundation of China (82174122), the Shanghai Municipal Health Commission Health Discipline Leader Program (220XD011), and the Shanghai Shenkang Hospital Development Center City Hospital Clinical Skills and Management Enhancement Program (SHDC12023113).

References:

1. Xu, Li Hao Richie et al. "Temporal Changes in Kidney Stone Composition and in Risk Factors Predisposing to Stone Formation." *The Journal of urology vol*. 197,6 (2017): 1465-1471.
2. Shao Haibo, Zhang Li, Zhai Xinyu, et al. Observational Study on the Effect of Urinary Stone-Expelling Agent on the Expulsion of Residual Stones After Extracorporeal Shock Wave Lithotripsy for Kidney Stones [J]. Journal of Shanghai University of Traditional Chinese Medicine, 2022, 36(S1): 36-39+53.
3. Zhai Xinyu, Hua Jinjun, Guo Dongdong, et al. Observational Study on the Stone-Expelling Effect of Urinary Stone-Expelling Agent on Residual Stones After Ureteroscopy for Kidney Stones [J]. Journal of Traditional Chinese Medicine and Modern Development, 2022, 31(14): 1961-1964.
4. Türk, Christian et al. "EAU Guidelines on Interventional Treatment for Urolithiasis." *European urology vol*. 69,3 (2016): 475-82.
5. Ma, Rui-Hong et al. "The systematic classification of urinary stones combine-using FTIR and SEM-EDAX." *International journal of surgery (London, England) vol*. 41 (2017): 150-161.
6. Song, Shen et al. "Twenty-Four Hour Urine Testing and Prescriptions for Urinary Stone Disease-Related Medications in Veterans." *Clinical journal of the American Society of Nephrology: CJASN vol*. 14,12 (2019): 1773-1780.

C-14

Research on syndrome identification model for patients with different degrees of coronary artery lesions based on multimodal data of traditional Chinese medicine diagnosis
基於中醫診斷多模態數據的冠狀動脈不同程度病變患者證候識別模型研究

Wei LI[1], Rui GUO[1] , Jian-jun YAN[2] , and Xiaotian Ma[1]

[1] *School of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China*

[2] *Institute of Intelligent Perception and Diagnosis, School of Mechanical and Power Engineering, East China University of Science and Technology, 130 Meilong Road, Xuhui District, Shanghai 200237, China*

Abstract:

Objective: This study aims to explore the application value of a multi-source sensor pulse diagnosis instrument combined with a heart system inquiry collection system in collecting multimodal data of traditional Chinese medicine diagnosis, and in constructing a syndrome identification model for patients with different degrees of coronary artery disease. The aim is to provide new auxiliary means for syndrome differentiation and treatment of patients with different coronary artery diseases, and to provide a scientific basis for the development of personalized treatment plans.

Method: This study focused on 493 patients who planned to undergo coronary angiography (CAG). A multi-source sensor pulse generator was used to synchronously collect the patient's pressure pulse (Wrist Pulse) and finger photoplethysmographic pulse (FPPG). The patient's consultation data was collected using a cardiac consultation collection system (Inquiry data). According to the "Syndrome Differentiation and Diagnosis Standards for Coronary Heart Disease and Angina Pectoris Syndrome Elements", calculate the scores of patients on seven syndrome elements: Qi Deficiency Syndrome, Blood Stasis Syndrome, Phlegm Turbidity Syndrome, Yin Deficiency Syndrome, Yang Deficiency Syndrome, Qi Stagnation Syndrome, and Heat Accumulation Syndrome, and have 2-3 experts with senior professional titles re-evaluate and confirm the type of syndrome elements. This study used the Multi-Label Learning (MLL) method proposed by the research group to establish evidence identification models based on different modal data. As the evaluation indicators of classical single label models, such as accuracy, precision, recall, and F1 value, are not suitable for multi-label learning models, this study used the average accuracy (AP), coverage (CV), Hamming Loss (HL), Ranking Loss (RL), and One Error (OE) of the evaluation indicators of multi-label learning to evaluate different evidence models. The identification accuracy of the prime model.

Results: The multi-marker syndrome element model (Model-3) based on Pulse, PPG, and Inquiry three mode data had the best evaluation indicators AP, CV, HL, RL, OE. Compared with the model based on Pulse and Inquiry (Model-2), the average accuracy rate was increased by 2.03%, and the ranking loss, 1-error rate, coverage, and Hamming loss were reduced by 1.99%, 4.26%, 1.11%, and 1.10%, respectively; Compared with the model based on consultation (Model-1), the average

accuracy has increased by 2.53%, and the ranking loss, 1-error rate, coverage, and Hamming loss have decreased by 2.03%, 4.85%, 0.96%, and 1.45%, respectively; Moreover, SE-Model3 achieved high identification accuracy in Qi deficiency syndrome, blood stasis syndrome, phlegm turbidity syndrome, Yin deficiency syndrome, and Qi stagnation syndrome, with rates of 76.72%, 71.46%, 76.52%, 70.24%, and 72.06%, respectively.

Conclusion: Pulse and PPG collected synchronously obtain objective physiological data of patients, while Inquiry can obtain patient signs and subjective feelings. Therefore, Pulse, PPG, and Inquiry three mode data can reflect the patient's condition more comprehensively and have higher accuracy for the syndrome element identification model.

Acknowledgement:

The authors would like to express their gratitude to the mentors and colleagues at Shanghai University of Traditional Chinese Medicine for their support and guidance. Special thanks are extended to all participants of the study.

H-01

Health and Economic Evaluation of Herbal Medicines for Heart Failure: A Population-Based Cohort Study
中草藥對心力衰竭患者的衛生經濟學評價：一項基於人群的佇列研究

Jianbo Guo[1,a], Xinyu Lu[2,a], Pei Zhang[2,a], Ruolin Du[2,a], Chen Liu[3], Guang Chen[1], Xiangjun Yin[4], Tiantian Meng2, Anqi Li[2], Qingyong He[2*], Haiyong Chen[1,5*]

[1] *School of Chinese Medicine, LKS Faculty of Medicine, The University of Hong Kong;*

[2] *Guang'anmen Hospital, China Academy of Chinese Medical Sciences;*

[3] *Department of Statistics and Actuarial Science, The University of Hong Kong;*

[4] *School of Basic Medical Sciences, Zhejiang Chinese Medical University;*

[5] *Department of Chinese Medicine, The University of Hong Kong-Shenzhen Hospital*

Abstract:

Introduction: Heart failure (HF) represents the advanced phase of various cardiovascular disorders, with its elevated admission rates and resultant health economic burden posing an ongoing global concern.

Objectives: To evaluate the health and economic benefits of using herbal medicine (HM) as an adjunctive treatment option for patients with HF.

Methods: A 5-year retrospective cohort study was conducted in a national renowned hospital in China. The propensity score matching (PSM) method was employed to match HF patients with/without using HM. The analysis of dichotomous variables employed chi-square tests, while t-tests were used for continuous variables. Logistic regression was applied to analyze the hospital readmission rate, and multiple linear regression was employed to assess direct medical costs. Statistical significance was defined as p-value less than 0.05.

Results: After implementing PSM, the analysis included 1924 HF patients. Patients who received adjunctive HM treatment exhibited a significantly lower readmission rate compared to those without HM treatment (adjusted odds ratio [OR] = 0.76, 95% confidence interval [CI] [0.64, 0.92]). Age over 65 years (adjusted OR = 1.25, 95% CI [1.02, 1.53]) and smoking (adjusted OR = 1.31, 95% CI [1.01, 1.70]) were identified as risk factors that significantly influenced the readmission rate. During the hospitalization of patients, the adjuvant use of HM (coefficient (coef.) = 300.08, 95% CI [-228.58, 828.74]) did not significantly impact on the direct medical expenses and but provided positive health economic benefits with an incremental cost-effectiveness ratio (ICER) of 9289.11. Over 65 years of age (coef. = 60.78, 95% CI [36.25, 85.31]), and cardiac function grading (NYHA III: coef. = 1979.92, 95% CI [1401.82, 2558.03]; NYHA IV: coef. = 6052.48, 95% CI [5166.59, 6938.38]) were identified as factors that significantly influenced direct routine medical costs.

Conclusions: The adjunctive use of HM for patients with HF led to a reduced readmission rate and had positive health economic outcomes.

Acknowledgement:

The study was supported by the Beijing Science and technology new star project (Z181100006218035), the Traditional Chinese Medicine Ancient Book Documents and Characteristic Technology Inheritance Project of the National Administration of Traditional Chinese Medicine (GZY-KJS-2020-079), the Research and Transformation Application of Clinical Characteristic Diagnosis and Treatment Techniques in the Capital (Z221100007422081), the Shenzhen Science and Innovation Fund (JCYJ20210324114604013), the Hong Kong Research Grants Council (GRF 17109019, 17113416) and the HKU seed funds (202011159210, 202111159235).

Q-01

Spin practices and low reporting quality in studies on prediction model of diagnosis based on TCM information: A systematic review and evidence mapping
中醫病證預測模型相關研究的報告質量系統評價與證據圖譜

Li Jieyun

[1] *School of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai*

[2] *Shanghai key laboratory of health identification and evaluation, Shanghai*

Abstract:

Background: Despite the abundance of published studies on prediction models for diagnosing Traditional Chinese medicine (TCM), there remains a lack of comprehensive assessment regarding reporting and methodological quality, as well as an absence of examination into the objectivity of linguistic aspects within these studies.

Methods: The PubMed, Cochrane Library, Web of Science, CNKI, VIP, and WANFANG databases were systematically searched from inception to October 30th, 2023, to identify studies developing and/or validating diagnostic and prognostic TCM prediction models using supervised machine learning. PROBAST and TRIPOD were employed to assess the reporting and methodological quality of identified studies. A previous article about spin in prognostic factor studies already identified several practices, which we modified for our data extraction The present study was registered on PROSPERO with the registration number CRD42023450907.

Results: 35 and 19 eligible studies published in Chinese and English were identified respectively from 1746 records. The clinical diseases with the most publications were diabetes (n=7, 14.8%), coronary heart disease (n=6, 11.1%), and lung cancer (n=5, 9.26%). Primary analysis and sensitivity analysis confirmed that the reporting and methodological quality of included studies were correlated (rs= 0.504, $p < 0.001$). The quality of the CM prediction model requires improvement by including a structured title, participants and predictors selection, statistical analysis methods, model performance and interpretation. Two studies (4.55%) recommended the model to be used in daily practice lacked any external validation of the developed models. Six studies (13.63%) made recommendations for clinical use in their main text without any external validation. Reporting guidelines were only cited in one study (1.85%).

Conclusion: The available evidence indicated TCM information can provide predict information for different diseases, but the scientific quality of published studies needs to be improved.

Keywords: Traditional Chinese Medicine; Prediction Model; Reporting Standards; Methodological Quality; Spin Practice

Acknowledgement:

This research was funded by the National Natural Science Foundation of China (No.82074333) and Shanghai Key Laboratory of Health Identification and Assessment (No.21DZ2271000).

References:

1. Collins, *et al*. Transparent reporting of a multivariable prediction model for individual prognosis or diagnosis (TRIPOD): the TRIPOD statement. BMJ (Clinical research ed) 2015;350:g7594.
2. Wolff RF, *et al*. PROBAST: A Tool to Assess the Risk of Bias and Applicability of Prediction Model Studies. Annals of internal medicine 2019;170(1):51-58.
3. Li Q, *et al*. Machine learning prediction of motor function in chronic stroke patients: a systematic review and meta-analysis. Frontiers in neurology 2023;14:1039794.
4. Andaur Navarro CL, *et al*. Systematic review finds "spin" practices and poor reporting standards in studies on machine learning-based prediction models. Journal of clinical epidemiology 2023;158:99-110.

P-01

Phytochemical analysis of Prunus seed for medical value evaluation
李屬種子的植物化學分析及其藥用價值評價

Ka-Yi Man[1], Chi-On Chan[1], Sibao Chen[1,3] and Daniel Kam-Wah Mok[1,2,3*]

[1] *Department of Food Science and Nutrition, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong, China*

[2] *Research Institute for Future Food, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong, China*

[3] *State Key Laboratory of Chinese Medicine and Molecular Pharmacology (Incubation), Shenzhen 518057, China*

Abstract:

The *Prunus* genus encompasses over 400 species of flowering shrubs and trees that belong to the *Rosaceae* family [1], including economically significant plants such as cultivated almond, peach, plum, cherry, and apricot. In this study, the seeds from five medicinal Prunus plants was collected to investigate their phytochemical profiles. LC-MS analysis was employed to precisely identify and quantify a broad range of bioactive molecules found in the seeds, including amygdalin, epicatechin, quercitrin, and quercetin. These compounds have been extensively studied for their potential health benefits, exhibiting diverse physiological properties such as antioxidant, anti-inflammatory, and anticancer activities [2,3]. Among the five medicinal Prunus plants examined, Kuxingren exhibited the highest amygdalin content. Amygdalin is a unique compound found in *Rosaceae* plants, which has garnered considerable attention due to its potential health benefits. It has been investigated for its anticancer properties and has demonstrated promise in inhibiting the growth of cancer cells [4]. However, it is important to note that the metabolites of amygdalin after oral dosing have been found to be toxic to humans. This study provides valuable insights into the phytochemical composition of medicinal *Prunus* seeds, shedding light on the presence of bioactive compounds with potential health benefits.

References:

1. Natić, M., et al. (2020). Cold pressed oils from genus Prunus. In Cold pressed oils (pp. 637-658). Academic Press.
2. Jan, R., et al (2022). Plants, 11(19), 2623.
3. Memariani, H., et al (2024). BioMed Research International, 2024(1), 7632408.
4. Jaszczak-Wilke, E., et al (2021). Molecules, 26(8), 2253.
5. He, X. Y., et al (2020). Journal of ethnopharmacology, 254, 112717.

P-02

Stachydrine hydrochloride ameliorates chronic heart failure in mice by inhibiting GRK3-mediated β1-AR desensitization

益母草水蘇鹼通過抑制 GRK3 介導的 β1-AR 脫敏改善小鼠慢性心力衰竭

Songru Yang[1,#], Shuting Guo[1,#], Jiali Zheng[1,#], Xiaoli Shan[1], Pei Zhao[1], Wei Guo[2], Ming Xu[2], Chen Zhang[2], Huihua Chen[1,*], Rong Lu[1,*]

[1] *School of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai, 201203, China*

[2] *School of Integrative Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai, 201203, China.*

[#] *These authors contributed equally to this work.*

Abstract:

Systolic function decreases in advanced stages of chronic heart failure primarily due to desensitization of myocardial β1-adrenergic receptors (β1-AR), which leads to reduced protein expression. Although this desensitization is facilitated by G protein-coupled receptor kinases (GRKs), the involvement of GRK3 remains unclear. In a previous study, we found that stachydrine hydrochloride (Sta) upregulates the expression of β1-AR in the heart of mice with isoproterenol (ISO)-induced heart failure, and its specific mechanism of action is still unknown.

In this study, chronic heart failure was induced in mouse models using ISO osmotic pump implantation, followed by the investigation of Sta's potential effects on cardiac outcome and function as well as β1-AR desensitization in CHF mice through pharmacological methods and molecular biotechnology. Additionally, cardiac-specific GRK3 overexpression mice models were created to further study the molecular mechanism of Sta in treating chronic heart failure using bioinformatics, western blot, immunofluorescence, and other methods.

GRK3 overexpression induced a desensitizing effect on β1-AR and decreased its expression. Cardiac-specific GRK3 overexpression mice developed cardiac hypertrophy and exhibited decreased cardiac contractile function. However, Sta inhibited GRK3 overexpression, alleviated GRK3 overexpression-induced β1-AR desensitization, and restored the β1-AR levels. Sta inhibited myocardial hypertrophy and improved cardiac function in the mouse model of cardiac-specific GRK3 overexpression.

Sta inhibition of GRK3-mediated β1-AR desensitization could be a promising strategy for treating chronic heart failure.

Keywords: Stachydrine hydrochloride; Chronic heart failure; G protein receptor kinase 3; β1-adrenergic receptor; Desensitization

Acknowledgement:

This work was supported by the National Natural Science Foundation of China (grant number 82074054), and the Shanghai Municipal Commission of Health and Family Planning (grant number ZY (2021-2023)-0208).

P-03

Untargeted metabolomics-based identification of insomnia-ameliorating compounds from five mushrooms
基於非靶向代謝組學從五種靈芝中鑒定改善失眠化合物

Wei Chen, Jun-Wen Yu, Yu-Yi Deng, Ying-Jie Chen, Zhi-Ling Yu*

School of Chinese Medicine, Hong Kong Baptist University, Hong Kong, China

Abstract:

Insomnia, a common sleep disorder in the general population, is defined by difficulties in fall asleep, staying asleep, or nonrefreshing sleep[1]. Five edible Polyporales mushrooms, namely *Amauroderma rugosum* (AR), *Ganoderma lucidum* (GL), *G. resinaceum* (GR), *G. sinense* (GS) and *Trametes versicolor* (TV), have been widely used in China for managing insomnia[2-5]. However, their active components for this application are not fully understood, restricting their universal recognition. To identify sedative-hypnotic compounds shared by the mentioned five Polyporales mushrooms using untargeted metabolomics.

UPLC-Q-TOF-MS/MS was used to establish chemical profiles for the ethanolic extracts of six batches of each mushroom species. The chemoprofile raw data were processed using MS-DIAL software to extract shared compounds of the five mushrooms. Differential content compounds [differential metabolites; VIP (variable importance in the projection) ≥ 2] in the shared compounds were identified using OPLS-DA (orthogonal projection of potential structure discriminant) analysis. A pentobarbital sodium (i.p. 45 mg/kg) induced sleeping mouse model was used to assess the sedative-hypnotic effects of the five mushrooms. The differential metabolites contributing to sedative-hypnotic effects were identified as sedative-hypnotic compounds (VIP ≥ 1.5; Correlation coefficient > 0) by OPLS (orthogonal projections to latent structures) analysis. The sedative-hypnotic effects of the identified compounds were validated in the mentioned mouse model.

Our results showed that a total of 1,860 compounds shared by the five mushrooms were extracted. Ninety-two common differential metabolites were identified. Daily i.g. administration of 0.3 g/kg of the ethanolic extract of AR, GL, GR, GS, or TV for eight consecutive days shortened sleep latency and prolonged sleep duration of model mice, with different potencies. Six triterpenes, four ganoderic acids (B, C1, F and H) and two ganoderenic acids (A and D), were found to be the sedative-hypnotic compounds shared by the five mushrooms. Each of the six triterpenes (i.g. 15, 30 mg/kg; Once) dose-dependently shortened sleep latency and prolonged sleep duration in mice.

To summarize, we for the first time found that the six identified triterpenes contribute to the sedative-hypnotic effects of the five Polyporales mushrooms. Our novel findings provide pharmacological and chemical justifications for the use of the five edible mushrooms in managing insomnia.

Acknowledgement:

This work was supported by Hong Kong Ganoderma Centre Limited and the grant PRP-034-19FX (Hong Kong Innovation and Technology Commission).

References:

1. Madari, Sarika, et al. "Pharmacological management of insomnia." Neurotherapeutics 18.1 (2021): 44-52.
2. Chen, Tianci, et al. "Effects of alcohol extracts from Ganoderma resinaceum on sleep in mice using combined transcriptome and metabolome analysis." Frontiers in Nutrition 9 (2022): 745624.
3. Habibi, Emran, et al. "Mycochemical investigation of the turkey tail medicinal mushroom Trametes versicolor (higher basidiomycetes): A potential application of the isolated compounds in documented pharmacological studies." *International Journal of Medicinal Mushrooms* 17.3 (2015).
4. El Sheikha, Aly Farag. "Nutritional profile and health benefits of Ganoderma lucidum "Lingzhi, Reishi, or Mannentake" as functional foods: Current scenario and future perspectives." *Foods* 11.7 (2022): 1030.
5. Huie, Carmen W., and Xin Di. "Chromatographic and electrophoretic methods for Lingzhi pharmacologically active components." *Journal of Chromatography B* 812.1-2 (2004): 241-257.

P-04

Artemisia annua L. essential oil alleviates 2,4-dintrochlorobenzene-induced atopic dermatitis in mice by inhibiting inflammatory response and repairing the skin barrier
青蒿精油通過抑制炎症反應和修復皮膚屏障來緩解 DNCB 誘導的小鼠特應性皮炎

ZY Huang[1], M Zhou[1],Pei Zhao[2],YQ Wang[3] and X Miao[1*]

[1] *Department of Dermatology, Yueyang Hospital of Integrated Traditional Chinese and Western Medicine, Shanghai University of Traditional Chinese Medicine.*

[2] *School of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine.*

[#] *Jiangxi Ruixiulang Technology Co., Ltd., Building 24, No. 8, Dongyang Road, Zhouxin, Xinqi, Ganjiang New District, Jiangxi Province, China, 330115*

Abstract:

Background: Volatile oil is widely used in traditional Chinese medicine owing to its unique hydrophobic and lipophilic properties and rapid skin absorption. *Artemisia annua* L. (*A.annua*) essential oil (AAEO), a volatile oil extracted from *A. annua*, exhibits anti-inflammatory properties. However, few studies have investigated its effects on skin inflammation.To investigate and elucidate the mechanisms of action of AAEO in the treatment of atopic dermatitis (AD).

Materials and Methods: Gas chromatog-raphy-mass spectrometry (GC–MS) was used to analyse the main chemical constituents of Artemisia annua essential oil (AAEO). Network pharmacology was used to predict the targets and pathways of AAEO for the treatment of AD. The AD mouse model was established by topical application of 2,4-dintrochlorobenzene (DNCB), AAEO, and the positive control drug *hydrocortisone butyrate cream* (HBC). We evaluated the symptoms of AD, SCORAD scores, histological analysis, and serum IgE and TNF-α levels in mice. Immunofluorescence, western blotting, and qPCR were used to investigate the signaling pathways.

Results: GC–MS revealed the presence of 13 compounds in AO; the majorcompounds were caryophyllene (32.16%), eucalyptol (28.62%), α-pinene (19.08%), and β-pinene(14.72%). Network pharmacology analysis indicated that AAEO may exert its effects via the MAPK/NF-κB signaling pathway. Animal experiments demonstrated that topical application of AAEO and HBC significantly ameliorated skin lesions, reduced dermatitis score, and decreased spleen weight compared to DNCB treatment. AAEO reduced skin epidermal thickness and mast cell infiltration. DNCB markedly reduced the protein levels of filaggrin (FLG) and loricrin (LOR), whereas AAEO reversed these changes. Notably, the 5% concentration of AAEO demonstrated substantial improvement in skin barrier function. Compared to the DNCB group, the levels of FLG and LOR remained almost unchanged following HBC treatment. DNCB markedly elevated IgE and TNF-α levels, which were reversed by AAEO and HBC treatment. Among the inflammatory cytokines, DNCB increased mRNA expression of TNF-α, IL-1β, and IL-6, however, it reduced IL-10, with AAEO and HBC reversing these changes to various degrees. Additionally, DNCB-induced ERK, JNK, and P38 phosphorylation, associated with the upregulation of phosphorylation of NF-κB, whereas,

AAEO and HBC exhibited potent inhibition of the MAPK/NF- κ B signaling pathway.

pharmacological and chemical justifications for the use of the five edible mushrooms in managing insomnia.

Conclusions: This study systematically demonstrated the possible therapeutic effects and mechanisms of AAEO in AD via network pharmacological analysis and experimental confirmation. These results revealed that topical application of AAEO can suppress skin inflammation and restore skin barrier function. These findings provide the potential application of AAEO in synthesizing external preparations for both pharmacological and cosmetic industries.

Acknowledgement:

This study was supported by a grant from the Shanghai Clinical Key Speciality Construction Project (No. shslczdzk05001). We thank Makinoy for providing the plant material and the Institute of Innovative Chinese Medicine of Shanghai University of Traditional Chinese Medicine for providing the GC-MS data.

References:

1. Chu DK, Chu AWL, Rayner DG, Guyatt GH, Yepes-Nunez JJ, Gomez-Escobar L, Perez-Herrera LC, et al. 2023.Topical treatments for Atopic dermatitis (eczema): systematic review and network meta-analysis of randomized trials. 152 (6):1493-1519. https://doi.org/10.1016/j.jaci.2023.08.030.
2. Eichenfield LF, Tom WL, Chamlin SL, Feldman SR, Hanifin JM, Simpson EL, Berger TG, Bergman JN, Cohen DE, Cooper KD, Cordoro KM, Davis DM, Krol A, Margolis DJ, Paller AS, Schwarzenberger K, Silverman RA, Williams HC, Elmets CA, Block J, Harrod CG, Smith Begolka W, Sidbury R. 2014. Guidelines of care for the management of atopic dermatitis: section 1. Diagnosis and assessment of atopic dermatitis. J Am Acad Dermatol, 70(2):338-351. https://doi.org/10.1016/j.jaad.2013.10.010.
3. Bieber T. 2022. Atopic dermatitis: an expanding therapeutic pipeline for a complex disease. Nat Rev Drug Discovery, 21(1):21-40. https://doi.org/10.1038/s41573-021-00266-6.
4. Faya O,Flohr C, Kabashima K, Ma L, Paller AS, Rapelanoro FR, SteinhoffM, Su JC, Takaoka R, Wollenberg A, Yew YW, Postigo JAR, Schmid-Grendelmeier P, Taieb A. 2023. Atopic dermatitis: A global health perspective. J Eur Acad Dermatol Venereol, 27. https://doi.org/10.1111/jdv.19723.
5. Gu C, Yao X, Li W. 2023. Burden of disease: the current status of the diagnosis and management of atopic dermatitis in China. J Clin Med, 12 (16):5370. https://doi.org/10.3390/jcm12165370.

P-05

Design and Synthesis of Justicia Plant-Derived Arylnaphthalene Lignans as Novel Anti-Avian Influenza Virus Agents
基於從爵床屬植物發現的芳基萘木脂素化合物設計和合成新型抗禽流感病毒劑

Terence Ka-Hei Lam[1], Nga-Yi Tsang[1] and Hongjie Zhang[1]

[1] *School of Chinese Medicine, Hong Kong Baptist University.*

Abstract:

The transmission of avian influenza virus (AIV) to humans was first reported in Hong Kong in 1997. Although only 18 individuals were infected, the mortality rate is high, up to 33%.[1] The spread of the avian influenza virus can be halted by the total elimination of poultry in farms. However, the persistent threat of the highly pathogenic AIV to the public health remains, as there is currently no specific medication for treatment. In 2024, the United States Center for Disease Control and Prevention (CDC) documented new cases of humans contracting H5N1, a highly pathogenic AIV (HPAI) strain. Three dairy workers contracted the virus from H5N1-infected dairy cows. While in Europe, the European Centre for Disease Prevention and Control reported the circulation of HPAI among domestic and wild birds.[2] These occurrences could signify the beginning of a global AIV outbreak.

Diphyllin, an arylnaphthalene lignan derived from *Justicia* medicinal plants has demonstrated promising antiviral properties against viruses such as HIV and Zika virus.[3,4,5] This suggests that diphyllin and its derivatives may possess broad-spectrum antiviral effects, potentially effective against AIV. This project aims to explore the anti-AIV potential of diphyllin derivatives through structural modification at the C-7 position. A series of structural analogues of diphyllin have been designed and synthesized using a range of chemical reactions, including the linking of ester, ether, triazole, and alkyne groups.

The synthesized diphyllin analogues have been evaluated for their cytotoxicities and antiviral activities via various in vitro bioassays, such as SRB and the “One-Stone-Two-Birds” pseudovirus assay.[6] The “One-Stone-Two-Birds” pseudovirus assay is a rapid screening method developed to determine of inhibitory effect of a compound against viral infection of specified virus. Pseudovirus is a defective virus composed of a modified core and an outer shell, which only allows it to infect cells but prevents it from replicating once inside the cell. Using this viral screening method, it is possible to determine if a compound is specifically affecting the virus itself or targeting the host.[7] By incorporating the cytotoxicity data, selectivity index (SI) data can be obtained to assess the antiviral potential of diphyllin analogues. This data, along with consideration of physical properties such as water solubility and bioavailability, aids in understanding the structure-activity relationship of these compounds and helps refine synthetic design of potent antiviral diphyllin analogues with reduced toxicity. Our data have shown that the synthetic diphyllin analogues demonstrated strong anti-H5N1 activities with IC50 values ranging from 0.02-1861 nM. Additionally, certain analogues exhibited SI values up to 247. Through our present studies, we

hope to identify highly effective anti-AIV diphyllin analogues that serve as promising candidates for the development of drugs to treat AIV infections of both human and animals.

Acknowledgement:

This work is supported by the Research Grants Council of the Hong Kong Special Administrative Region, China (Project No. HKBU12103021), and the Innovation and Technology Commission of Hong Kong Special Administrative Region, China (MHP/105/19).

References:

1. Sims LD, Ellis TM, Liu KK, Dyrting K, Wong H, Peiris M, Guan Y, & Shortridge KF (2003). Avian influenza in Hong Kong 1997–2002. *Avian Diseases*, 47(s3), 832–838. https://doi.org/10.1637/0005-2086-47.s3.832
2. Fusaro A, Gonzales JL, Kuiken T, Mirinavičiūtė G, Niqueux É, Ståhl K, Staubach C, Svartström O, Terregino C, Willgert K, Baldinelli F, Delacourt R, Georganas A, & Kohnle L (2024). Avian Influenza Overview December 2023–March 2024. *EFSA Journal*, 22(3). https://doi.org/10.2903/j.efsa.2024.8754
3. Amritha CK, Suma C, Ananya VM, Thushara PV, & Deepak VS (2020). Phytochemical and pharmacological activities of Justicia procumbens L.: A Review. *International Journal of Research in Ayurveda and Pharmacy*, 11(5), 190–193. https://doi.org/10.7897/2277-4343.1105167
4. Zhang HJ, Rumschlag-Booms E., Guan YF, Liu KL, Wang DY, Li WF, Nguyen VH, Cuong NM, Soejarto DD, Fong HHS, & Rong LJ (2017). Anti-HIV diphyllin glycosides from Justicia Gendarussa. *Phytochemistry*, 136, 94–100. https://doi.org/10.1016/j.phytochem.2017.01.005
5. Štefánik M, Bhosale DS, Haviernik J, Straková P, Fojtíková M, Dufková L, Huvarová I, Salát J, Bartáček J, Svoboda J, Sedlák M, Růžek D, Miller AD, & Eyer L (2022). Diphyllin shows a broad-spectrum antiviral activity against multiple medically important enveloped RNA and DNA viruses. *Viruses*, 14(2), 354. https://doi.org/10.3390/v14020354

X-01

Prospects of Janus nanofiber membrane loaded with Huangbai liniment for diabetic wound healing
負載復方黃柏液的 Janus 結構納米纖維膜應用於糖尿病傷口癒合的展望

DY Li, J Guo and YY Qian

Yueyang Hospital of Integrative Medicine, Shanghai University of Traditional Chinese Medicine

Abstract:

Diabetic wounds are difficult to heal, and the key to wound healing is effective antibacterial treatment and effective disinfection. Various studies have utilized electrospinning technology to load antibiotics into nanofiber membranes for wound healing. However, due to high bacterial resistance, the wound healing outcomes have been suboptimal.

Traditional Chinese medicine formulations have good antibacterial properties and are less likely to develop bacterial resistance. In clinical experiments, Shen et al.[1] found that Huangbai liniment effectively promotes diabetic foot ulcer healing. It significantly reduces inflammatory cytokine levels, improves vascular endothelial function, clears pathogens, and inhibits bacterial biofilm formation. Huangbai liniment is composed of Huangbai, Lianqiao, Jinyinhua, Pugongying, and Wugong. It has the functions of clearing heat, detoxification, reducing swelling, and eliminating decay. It is used for ulceration after sores, wound infection, and is suitable for those with yang syndrome. Huangbai liniment can also be loaded onto nanofiber membranes to leverage its beneficial properties. Xu et al.[2] used electrospinning technology to prepare a nanofiber membrane loaded with Huangbai liniment and applied it to wounds. The results showed that it significantly promoted wound healing in diabetic mice and reduced wound inflammation. However, the absorption of exudate of electrospun dressing is limited, and high glucose exudate can exacerbate bacterial infections, hindering the wound healing process. Zhang et al.[3] prepared a biomimetic asymmetric Janus membrane using electrospinning technology. The membrane utilizes contact points at the Janus interface to "pump" the exudate, which is hydrophobic in the inner layer, to the hydrophilic outer layer, significantly enhancing absorption of high-glucose exudate and accelerating diabetic wound healing.

In conclusion, the author believes that utilizing electrospinning technology to prepare a biomimetic asymmetric Janus membrane loaded with Huangbai liniment can simultaneously address two major points: bacterial resistance and exudate absorption. This approach can thereby improve the skin wound environment and promote wound healing.

Acknowledgement:

I am very grateful for this symposium, which has provided us with the opportunity to learn and exchange ideas with teachers on an international stage. This platform not only allows for in-depth communication and learning but also greatly enriches our professional knowledge and perspectives. Additionally, I would like to express my heartfelt thanks to Professor Qian Yiming for his guidance and support, and for setting a rigorous academic example for me. Lastly, I appreciate the guidance from friends in engineering disciplines and commend my own continuous efforts.

References:

1. Shen ZY, et al. Effects of negative-pressure instillation with Fufang Huangbaiye on the formation of bacterial infection biofilm in diabetic foot. Chinese Journal of Nosocomiology, 2022. 32(19), 2992-96.
2. Xu XQ, et al. Silk fibroin/poly-(L-lactide-co-caprolactone) nanofiber scaffolds loaded with Huangbai Liniment to accelerate diabetic wound healing, Colloids and Surfaces B: Biointerfaces, 2021. 199, 111557.
3. Zhang XJ, et al. Janus Nanofiber Membranes with Photothermal-Enhanced Biofluid Drainage and Sterilization for Diabetic Wounds, Advanced Functional Materials, 2024. 34, 2315020.

X-02

Global Trends and Hotspots in Moxibustion Therapy: A Bibliometric Analysis
全球艾灸治療的趨勢與熱點：文獻計量學

Manqin Sun[1] , Fengjun Ni[1] and Huayuan Yang[1]

[1] *School of Acupuncture-Moxibustion and Tuina, Shanghai University of Chinese Traditional Medicine.*

Abstract:

Due to the high input-output ratio of modern drug development, more attention has been drawn to the safety and cost-effectiveness of traditional ethnic therapies. On a global scale, there has been a rapid increase in publications related to moxibustion therapy. Moxibustion, a traditional external treatment method in Chinese medicine, has been preliminarily verified for its safety and effectiveness through thousands of years of clinical use. It has also been demonstrated in modern clinical research to have a positive effect on gastrointestinal diseases, neurological disorders, and immune system diseases. Studies have found that its effects may be attributed to its thermal, light, and volatile substance properties. This paper reviews the safety studies, mechanisms, and clinical applications of moxibustion therapy. Additionally, through bibliometric analysis using CiteSpace and Bibliometrix software, the publication status, core countries, authors, institutions, and journals in the global field of moxibustion therapy over the past 20 years were summarized. The current status of the field was visualized, and future hotspots were predicted. China made the largest contribution to the field of moxibustion, with Shanghai University of Traditional Chinese Medicine being the most prolific institution. The Wu HuangGan team from Shanghai University of Traditional Chinese Medicine was identified as the core author team. The journal Evidence-Based Complementary and Alternative Medicine had the highest number of publications. Ulcerative colitis remains an important research hotspot, while stroke is expected to become an emerging focus of future research.

Acknowledgement:

This symposium is supported by MCMIA. And herein we also want to thank our organization colleagues from The Chinese University of Hong Kong, The University of Hong Kong, The Hong Kong University of Science and Technology, Hong Kong Baptist University, The Hong Kong Polytechnic University, City University of Hong Kong, The University of Macau and Shanghai University of Traditional Chinese Medicine and Nanyang Technological University for their hard work and those who gave us great supports in the organization of this symposium.

X-03

Photobiomodulation and mucosal lesions: a visual and bibliometric analysis of 2004-2024

光生物調節和粘膜病變：2004-2024 年的可視化和文獻計量分析

Manqin Sun[1] , Fengjun Ni[1] and Huayuan Yang[1]

[1] *School of Acupuncture-Moxibustion and Tuina, Shanghai University of Chinese Traditional Medicine.*

Abstract:

Background: Moxibustion exerts its effects on the body through photobiological modulation, thermal effects, and the volatilization of burning substances. Photobiomodulation(PBM), as a treatment method that is similar to moxibustion therapy, exerts beneficial effects by irradiating tissues and cells with low-level light. Currently, PBM has been demonstrated to have significant advantages in mucosal injury and mucositis. However, no literature bibliometric analysis has been conducted to evaluate global scientific productivity in this area. This paper aims to summarize the current characteristics, explore research trends, and clarify the future direction of photobiomodulation in mucosal lesions.

Methods: Relevant publications from 2004 to 2024 were collected from the Web of Science Core Collection as of June 1, 2024. CiteSpace, Vosviewer, bibliometrix-R package, Online site (bibliometric) and Microsoft Excel 2019 were used for bibliometric and visualization analysis.

Results: We identified 4305 publications related to PBM and mucosal lesions, including 3567 articles and 738 reviews. From 2004 to 2024, annual output significantly increased, with the highest production from the USA and UNIVERSIDADE DE SAO PAULO. The most prolific author was Hamblin MR. The leading journal was "LASERS IN MEDICAL SCIENCE," with 284 publications. Keywords clustering could be categorized into "wound healing," "oral mucositis," "photodynamic therapy," "hypertrophic scars," "peri-implantitis," "ulcerative colitis," "diabetes mellitus," and "blood flow." Keyword burst analysis revealed that "systematic review," "photothermal therapy," "nanoparticles," "antibacterial," and "photobiomodulation therapy" are emerging research hotspots.

Conclusion: We found that from 2004 to 2024, significant progress has been made in the application of PBM in mucosal lesions. However, the majority of the current literature primarily focuses on exploring the optimal irradiation dose and effects of PBM on different mucosal lesions such as skin and gastrointestinal tract. In the future, the use of nanomaterial-based photothermal therapy (PTT) and the antibacterial properties of PBM in the field of oncology will be hotspots in the future.

Keywords: bibliometrics; photobiomodulation; mucosal lesions; mucositis; trends

Acknowledgement:

This symposium is supported by MCMIA. And herein we also want to thank our organization colleagues from The Chinese University of Hong Kong, The University of Hong Kong, The Hong Kong University of Science and Technology, Hong Kong Baptist University, The Hong Kong

Polytechnic University, City University of Hong Kong, The University of Macau and Shanghai University of Traditional Chinese Medicine and Nanyang Technological University for their hard work and those who gave us great supports in the organization of this symposium.

X-04

Diagnosis from the "Whole Tongue": Objectification of tongue diagnosis and construction of intelligent diagnosis model based on multimodal data of non-puerperal mastitis
基於“全舌”的診斷：非哺乳期乳腺炎舌診客觀化及多模態人工智慧診斷模型構建

SY Tu[1], YL Yin1, HF Chen[1] and MN Ye[1]

[1] *Department of Breast Surgery, Longhua Hospital, Shanghai University of Traditional Chinese Medicine.*

Abstract:

Background: Tongue-coating microbiota takes a different profile in the development of systemic diseases and supports the reliability of tongue diagnosis. However, the profile of tongue-coating microbiota and the efficiency of tongue diagnosis in non-puerperal mastitis (NPM) have never been reported. In this study, we implemented a muti-modal analysis and developed diagnostic models for predicting NPM onset using non-invasive tongue features.

Methods: A total of 100 NPM patients from the Breast Surgery Department of Longhua Hospital and 20 healthy volunteers were included. All the participants were collected clinical characteristics, tongue image features and tongue-coating microbiota. After quantitative and multidimensional analysis of tongue images and high-throughput sequencing analysis on tongue-coating microbiota, classical machine learning models, including logistic regression, random forests, support vector machine (SVM) and the gradient boosting decision tree (GBDT) was applied to select predictors and construct models.

Results: The microbiota profile of NPM group differed significantly from that of healthy group. The GBDT model correctly distinguished NPM patients from healthy people (auROCs of 0.906 to 0.95), outperforming other classical machine learning models based on the same features (auROCs of 0.55 to 0.725), or GBDT models based solely on clinical characteristics or tongue image features or tongue-coating microbiota (auROCs of 0.7 to 0.925).

Conclusions: A cluster of microbial species and tongue changes were associated with NPM and some of them participated in an important way in the immune and inflammatory response of the human body. The integrative GBDT model may be an effective and non-invasive method used for the early detection of NPM in clinical settings.

Acknowledgement:

Tongue image data collection and analysis for this project was supported by Shanghai National Health Company.

References:

1. Shen ZY, et al. Effects of negative-pressure instillation with Fufang Huangbaiye on the formation of bacterial infection biofilm in diabetic foot. Chinese Journal of Nosocomiology, 2022. 32(19), 2992-96.

X-05

A RISK WARNING MODEL FOR ANEMIA RISK BASED ON FACIAL VISIBLE LIGHT REFLECTANCE SPECTROSCOPY
基於面部可見光反射光譜的貧血風險預警模型

Yahan Zhang[1], Yi Chun[1], Wen Jiao[2], Jizhang Bao[2], Liping Tu[1*], Jiatuo Xu[1*]

[1] *Traditional Chinese Medicine College, Shanghai University of Traditional Chinese Medicine, Shanghai;*

[2] *Shanghai Municipal Hospital of Traditional Chinese Medicine, Shanghai.*

***Yahan Zhang** and **Yi Chun** contributed equally to this work*

Abstract:

Purpose: Anemia is a common clinical condition, the survival rate of elderly patients with anemia is significantly lower than that of the elderly non-anemic population, Anemia is associated with a variety of diseases, which have a negative impact on the patient's prognosis. This paper explore the facial spectral features of anemic patients and construct a warning model for anemia risk using machine learning methods.

Methods: We collected 285 physical examination population in Shanghai Jiading Community Health Center and Shanghai Gaohang Community Health Center, finally random selected 78 healthy controls. And we collected 128 patients hospitalized in the hematology ward of Shanghai Hospital of Traditional Chinese Medicine, finally included 78 anemic patients. Use the CS-600CG spectrophotometric colorimeter to collect spectral information of eight points on the face including forehead, glabellum, nose, jaw, right zygomatic, left zygomatic, right cheek and left cheek. We analyzed statistical characteristics and correlations of the facial spectral index, and used ten machine learning algorithms were to build prediction models of anemic.

Results: We found that facial spectral features of anemic patients were significantly different from those of healthy controls, and among the classification models based on facial spectral data, the Random Forest prediction model performed the best. In the classification of the anemia group and the healthy control group, the model accuracy was 0.875 (0.825, 0.925). The top 10 contributing spectral bands of the Random Forest model were: nose-400nm, right cheek-540nm, right cheek-580nm, right cheek-570nm, nose-570nm, right cheek-560nm, right cheek-590nm, nose-430nm, nose-700nm, nose-440nm. Among the regression models based on facial spectral data, the Support Vector Regression model predicted the best, R2 was 0.664.

Conclusion: Collectively, facial spectral data had clinical value in anemia diagnosis, it also provides a basis for the objectification of TCM diagnosis. The findings of this paper indicate that Random Forest for predictive modeling and Support Vector Machine for regression modeling, and the early warning model of anemia risk constructed based on spectral information has a high accuracy rate.

Keywords: Anemia, Hemoglobin, Spectrum, Machine learning, Risk warning model.

Acknowledgement:

This abstract was completed by Yahan Zhang and Yi Chun. At the same time it is supported by Wen Jiao, Jizhang Bao, Jiatuo Xu, Liping Tu and Xipeng Qiu. And herein we also want to thank our organization colleagues from Shanghai Jiading Community Health Center, Shanghai Gaohang Community Health Center and Shanghai Hospital of Traditional Chinese Medicine.

X-06

Observation on the clinical effect of Astragalus on vascular endothelial function in type 2 diabetes mellitus patients with qi deficiency syndrome
黃芪對氣虛證 2 型糖尿病患者血管內皮功能的臨床效果觀察

Yunyi Yang[1] , Hongjie Yang[1] and Wenjun Sha[2]

[1] *Yueyang Hospital of Integrated Traditional Chinese and Western Medicine, Shanghai University of Traditional Chinese Medicine;*

[2] *Putuo Hospital,Shanghai University of Traditional Chinese Medicin.*

Abstract:

AIM: To explore the clinical efficacy of Astragalus in type 2 diabetes mellitus patients with qi deficiency evidence and its effect on vascular endothelial diastolic function[1].

METHODS: A total of 90 cases of type 2 diabetes mellitus patients with stable glycemic control in qi deficiency syndrome admitted to our hospital were included and randomly divided into the control group and the observation group. The control group maintained the original treatment regimen, and the observation group took Astragalus granules orally on the basis of the original treatment. 12 weeks later, endothelium-dependent diastolic function (FMD), nitric oxide (NO), endothelin (ET-1), monocyte/high-density lipoprotein cholesterol ratio (MHR), and inflammatory factor (CRP) of brachial artery vasculature were observed, and glycemic metabolism indexes (FBG, 2hPBG, HbA1C, FCP), lipid metabolism indexes (TC, TG, HDL-C, LDL-C), Chinese medicine evidence points and clinical efficacy, as well as changes in safety indexes.

RESULTS: The total effective rate of the observation group was higher than that of the control group ($P < 0.05$). Compared with the control group, the improvement of FMD, NO, and MHR levels was more significant in the observation group ($P < 0.05$), and the 2-hour postprandial blood glucose (2hPBG), glycosylated hemoglobin (HbA1C), total cholesterol (TC), and triglyceride (TG) were decreased ($P < 0.05$), and the three TCM symptom scores, namely, "shortness of breath", "fatigue", and "weakness" were decreased more significantly ($P < 0.05$), and no significant adverse effects were found in the two groups.

CONCLUSION: Astragalus granules can effectively improve vascular endothelial dysfunction in type 2 diabetes mellitus patients with qi deficiency syndrome, which is worth promoting in the clinic.

Acknowledgement:

Thank you to the organization of the seminar and the hardworking staff behind the scenes. I would like to express my gratitude to my teachers for providing important advice and assistance in this research.

References:

1. Sha W, Zhao B, Wei H, et al. Astragalus polysaccharide ameliorates vascular endothelial dysfunction by stimulating macrophage M2 polarization via potentiating Nrf2/HO-1 signaling pathway. Phytomedicine. 2023;112:154667.

X-07

Effects of Transcutaneous Auricular Vagus Nerve Stimulation for Management of Insomnia: A Protocol for Systematic Review and Meta-analysis

經皮耳迷走神經刺激對失眠治療的影響：系統綜述和 Meta 分析的研究方案

Jingbo Li[#1,2], Henghua He[#1,2], Zhenrui Li[1], Tianyi Zhang[2], Youduo Jia[3], Rui Qi [1]

Corresponding author: Rui Qi

#Contributed equally.

[1] *Yueyang Hospital of Integrated Traditional Chinese Medicine and Western Medicine, Shanghai University of Traditional Chinese Medicine;*

[2] *Shanghai University of Traditional Chinese Medicine;*

[2] *Liaocheng Traditional Chinese Medicine Hospital.*

Abstract:

Background: The investigation of the application of transcutaneous auricular vagus nerve stimulation (taVNS) has contributed to advancements in the treatment of encephalopathy, with a particular focus on insomnia. Nevertheless, studies examining the clinical efficacy of taVNS in addressing insomnia are rare. Consequently, a systematic review and meta-analysis protocol will be implemented to evaluate the impact of taVNS on the management of insomnia.

Methods: The systematic review and meta-analysis have been registered in PROSPERO (CRD42023472730). The following nine databases were searched for articles published in English and Chinese: PubMed, CINAHL(EBSCO), MEDLINE(Ovid), Scopus, Web of Science, Embase, China National Knowledge Infrastructure (CNKI), Wanfang Data, and the VIP Database for Chinese Technical Periodicals (VIP) from their inception to April 2024. Results The systematic review and meta-analysis will provide a synthesisof the present evidence of taVNS for insomnia from randomized controlled trials (RCTs) and the results will be submitted for peer review. Conclusion We expect that this systematic review and meta-analysis will provide a convincing result to treat insomnia by taVNS to fill the gap of high-level evidence.

X-08

Director Sun Jianming based on "cultivating earth and flourishing wood" treatment of foreskin balanitis highlights
孫建明主任基於「培土榮木」論治包皮龜頭炎擷英集萃

WANG Jun-bo[1], Liang Bo wen[1], Liang Shi jia[2], SUN Jian-ming[2]

[1] *Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China;*

[2] *The Seventh People's Hospital Affiliated to Shanghai University of Traditional Chinese Medicine, Shanghai 200137, China.*

Abstract:

Preputial balanitis is a general term of balanitis and foreskin inflammation, which refers to the inflammatory lesions occurring in the head of the balanus or the prepuce and the coronary groove. Its core pathogenesis is related to the heat of the lower-jiao and the internal invasion of pathogenic bacteria.Director Sun pointed out that the five viscera belong to the five elements, although the five elements are different, the generation is balanced, and based on the theory of "Cultivate earth and flourishing wood" from the deficiency and excess, from the liver, spleen and kidney, from the damp heat, from the insect-poison to treat the prepuke balanitis.This article introduces the clinical experience of director Sun Jianming in the treatment of prepuce balanitis, in order to give full play to the advantages of traditional Chinese medicine in the treatment of prepuce balanitis.

Acknowledgement:

This article is supported by Department of Andrology, the Seventh People's Hospital Affiliated to Shanghai University of Traditional Chinese Medicine. And herein we also want to thank our organization colleagues from The Shanghai University of Traditional Chinese Medicine, The Seventh People's Hospital Affiliated to Shanghai University of Traditional Chinese Medicine for their hard work and those who gave us great supports in the organization of this symposium.

References:

1. 駱丹主編;周炳榮,吳迪,許陽等副主編;方紅,尹志強,尹慧彬等編.皮膚性病診療及處方手冊[M].南京:江蘇科學技術出版社,2012.07
2. 劉斌.包皮龜頭炎患者的真菌感染情況和敏感性分析[J].實驗與檢驗醫學,2021,39(02):386-387.
3. 吳秀全,楊俊岑.包皮龜頭炎患者超高倍鏡下病原體分析研究[J].中國性科學,2017,26(02):17-18.
4. 秦國政等主編.實用男科病臨床手冊[M].北京:中國中醫藥出版社,2016.05.
5. 戎平安,朱清.從肝論治男科疾病探析[J].浙江中醫藥大學學報,2022,46(05):551-554.

X-09

Meta-analysis of Traditional Chinese Medicine External Application for the Treatment of Malignant Pleural Effusion
中藥外敷治療惡性胸腔積液的 Meta 分析

GE A, Q Wang, LJ Jiao, RC Liu and YB Gong*

Department of Oncology, Yueyang Hospital of Integrated Traditional Chinese and Western Medicine, Shanghai University of Traditional Chinese Medicine.

Abstract:

Objective: Evaluate clinical studies on the combination of traditional Chinese medicine external application and conventional Western medicine treatment for MPE，to obtain clinical evidence for the treatment of malignant pleural effusion (MPE) with traditional Chinese medicine external application.

Methods: CNKI，VIP，Wanfang Data，Sinomed，PubMed，Embase，and The Cochrane Library were systematically searched for randomized controlled trials on the treatment of MPE with traditional Chinese medicine external application from the inception of the databases to April 12, 2024.The RevMan 5.4 software is used to assess the efficacy of the included studies.

Results: A total of 18 studies were ultimately included, involving a total of 1,163 patients. The trial group consisted of 584 participants, and the control group had 579 participants. All 18 included studies reported clinical overall efficacy, and the forest plot revealed no heterogeneity among the results ($P = 0.74$, $I2 = 0\%$), where a fixed-effect model was employed for the risk ratio (RR) as the statistical measure. Among the included studies, only three reported the Karnofsky Performance Status (KPS) scores, and the forest plot indicated significant heterogeneity ($P < 0.00001$, $I2 = 100\%$), necessitating a random-effects model for the analysis.the combination of Chinese herbal external treatment and conventional Western medicine in managing MPE has been found to moderately increase the clinical treatment efficacy and KPS scores compared to Western medicine treatment alone (Total effective rate: RR = 1.35, 95% CI: 1.24-1.46, $P < 0.00001$; KPS score: MD = 7.89, 95% CI: 0.62-15.16, $P = 0.03$).A funnel plot was created for the total effective rate outcome indicator, where the scattered points are unevenly distributed along the line or on both sides, with no apparent symmetry.

Conclusion: The meta-analysis showed that the Chinese herbal external treatment approach in treating MPE could enhance the clinical effectiveness.However, due to the large number of literatures and the span of years of research reports, there is a certain publication bias, which is expected to be further demonstrated in subsequent studies.

Acknowledgement:

I would like to thank the IPSCM Organizing Committee and MCMIA for providing us with a platform for academic exchange, and thanks to my tutor Professor Yabin Gong and the team led by him.

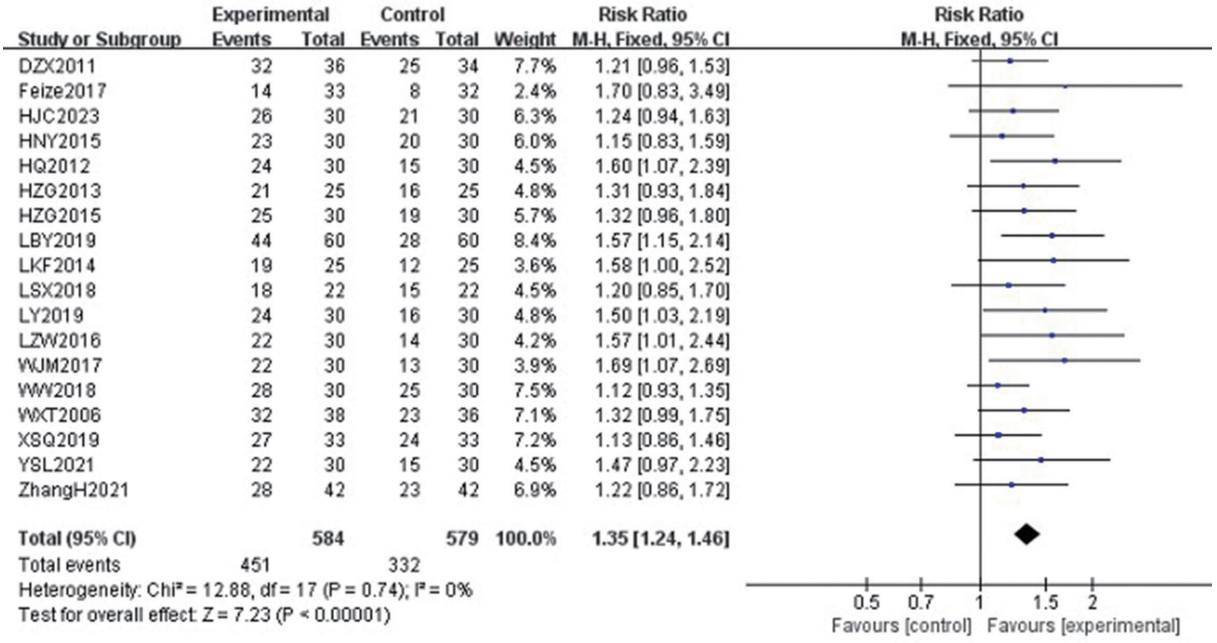


Figure 1 Forest Plot of Effective Rate

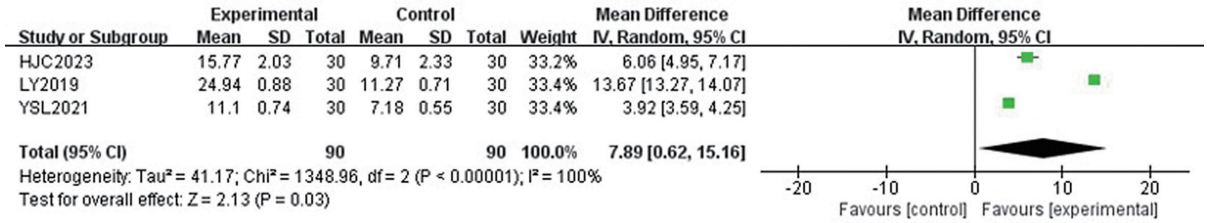


Figure 2 Forest Plot of KPS Score

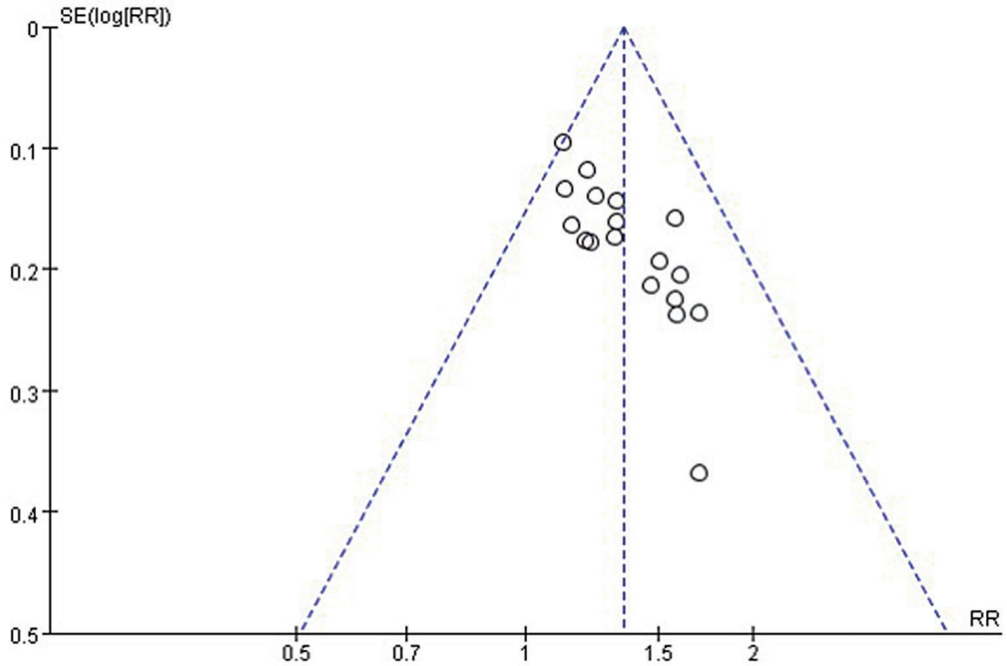


Figure 3 Funnel Plot for Publication Bias Test of Effective Rate

X-10

Clinical study on the characteristics and patterns of acupoint sensitization in cervical and shoulder myofascial pain syndrome
頸肩肌筋膜疼痛綜合征穴位敏化特徵與規律的臨床研究

CL Wu[1,2], K Wang[1] and J Zhou[2]

[1] *Yueyang Clinical Medical College, Shanghai University of TCM;*

[2] *Yueyang Hospital of Integrated Traditional Chinese and Western Medicine, Shanghai University of TCM*

Abstract:

Objective: To study patients with cervical and shoulder myofascial pain syndrome, using the sensitized points as the entry point and pressure pain threshold and body surface temperature as the main observation indexes, and to clarify whether sensitization phenomena objectively exist in patients with cervical and shoulder myofascial pain syndrome and their sensitization characteristics and patterns by comparing with the patient's healthy side.

Methods: Using a cross-sectional study, 119 patients with cervical and shoulder myofascial pain syndrome were included. The sensitized points were identified by palpation and the changes in pressure pain threshold and body surface temperature at each sensitized points were observed by combining the Wagner pressure pain meter and the Fotric226 full-platform infrared thermography, while the overlap between the location of the sensitized points and the corresponding muscles, meridians and acupuncture points was recorded. The pressure pain threshold and body surface temperature were measured at the same location on the patient's healthy side.

Results:

1. Characteristics and patterns of morphological sensitization of sensitized points

(1) Morphological and sensory variation occurred in all sensitized points in patients with neck and shoulder myofascial pain syndrome, i.e., the trigger points were definitely morphology-sensitized, and their sensitivity rate on palpation was 100%.

(2) Most of sensitized points are located on the right side of the patient and are site-specific. Most of these points did not overlap with acupuncture points, but did overlap with the Foot-Taiyang meridian and the Foot-Shaoyang meridian, the points that did overlap were the Jianjing point and the Tianzong point.

2. Characteristics and patterns of pressure pain threshold sensitization at sensitized points

(1) The pressure pain threshold at sensitized points was significantly lower than at the same location on the healthy side, with the incidence of pressure pain threshold sensitization being 73.90% (>60%), indicating that pressure pain threshold sensitization at sensitized points is common in the disease state.

(2) The pressure pain threshold sensitization occurred mostly on the right side of the patient and was site-specific. Most of sensitized points do not overlap with acupuncture points, but they do

overlap with the Foot-Taiyang meridian and the Foot-Shaoyang meridian, and the sensitized points that do overlap were the Jianjing point and the Tianzong point.

(3) The degree of pressure pain threshold sensitization at sensitized points is related to the patient's age and tends to decrease with age, but is not related to the patient's gender, duration of illness or severity of illness.

3. Characteristics and patterns of surface temperature sensitization at sensitized points

(1) The surface temperature at sensitized points is significantly higher than at the same location on the healthy side, and the incidence of surface temperature sensitization is 50.94% (less than 60%), indicating that surface temperature sensitization at sensitized points is not widespread in the disease state. Pressure pain threshold sensitization may be the dominant form of sensitization at sensitized points compared to surface temperature sensitization at sensitized points.

(2) Surface temperature sensitization of sensitized points is mostly located on the right side of the patient and is site-specific. Most of these points do not coincide with acupuncture points, but they do coincide with the Foot-Taiyang meridian and the Foot-Shaoyang meridian, and the points that do coincide are mostly the Jianjing point.

(3) The degree of surface temperature sensitization at sensitized points is lower than the degree of pressure pain threshold sensitization. The degree of surface temperature sensitization is related to the severity of the condition, but not to the patient’s age, gender or duration of illness, and is higher in patients with moderate conditions than in patients with mild conditions.

4. Overlap between sensitization forms of sensitized points

There is a certain degree of overlap between morphological sensitization, pressure pain threshold sensitization and surface temperature sensitization of sensitized points in patients with cervical and shoulder myofascial pain syndrome. The sensitized points sensitized by both pressure pain threshold and surface temperature are site-specific and are mostly located at the right rhomboid muscle stop, supraspinatus muscle belly and scapularis muscle stop, overlapping with the Foot-Taiyang meridian and the Foot-Shaoyang meridian.

Conclusions:

1. The prevalence of morphological sensitization and pressure pain threshold sensitization in patients with cervical and shoulder myofascial pain syndrome was common. It is likely that pressure pain threshold sensitization is the dominant sensitization form compared to surface temperature sensitization.

2. Site specificity of morphological sensitization, pressure pain threshold sensitization and surface temperature sensitization at sensitized points is closely related to muscles and meridians, with the rhomboid muscle stop, supraspinatus muscle belly, scapular raphe stop, Foot-Taiyang meridian and the Foot-Shaoyang meridian, likely to be the dominant sensitization sites in patients with cervical and shoulder myofascial pain syndrome.

3. The degree of pressure pain threshold sensitization and body surface temperature sensitization at sensitized points is related to the patient’s age and severity of disease, but not to gender, duration of disease.

4. There is some overlap between morphological sensitization, pressure pain threshold sensitization and surface temperature sensitization, and the appropriate treatment should be

selected in conjunction with the form of sensitization and the patient's disease characteristics.

Acknowledgement:

This study is supported by Shanghai University of TCM and Yueyang Hospital of Integrated Traditional Chinese and Western Medicine. The authors thank Prof. Jia Zhou and Ke Wang for their design and critical suggestion.

X-11

Implication for the Traditional Chinese Physician's Career Path from The Doctor's Oral History - The Life History of a Traditional Chinese Physician ANG Liang Kuan

醫師口述史蘊含的中醫職業生涯啓示 - 以新加坡華人中醫師洪兩寬個人生活史為例

XIA Xue

Institute of Science, Technology and Humanities, Shanghai University of Traditional Chinese Medicine

Abstract:

Oral history, as a sound document, has different historical research characteristics from traditional text documents. This recording pattern expands the interpretation scope of traditional history. In particular, it concerns disadvantaged groups without writing ability or prominent status, giving the power of historical interpretation to the general public and making historical research more authentic and realistic. The oral history of doctors is the combination of oral history and medicine. Under the call of the humanistic spirit of modern medicine, it has become academic research trend. Moreover, as medical staff with busy working life, they don't have much time to make relevant literal record, so the interview type of oral record has become a convenient choice.

At present, the National Archives of Singapore has collected more about oral archives of the Chinese medicine industry. Up to now, a total of 30 Chinese medicine doctors have been interviewed. The oral process has been recorded and the manuscript can be seen from the Internet. Among these, the audio material of ANG Liang Kuan is relatively abundant, and his life of traditional Chinese medicine is also quite representative. ANG Liang Kuan (1937-2020) was born in Singapore, his ancestral home was Chaozhou of Guangdong province. He was a registered Chinese medicine practitioner in Singapore and honorary director of Chinese Medicine Association. In his early years, he started as an apprentice in a herbal medicine shop, and then gradually becomes the highest working position "toushou"(頭手) in the herbal medicine shop. In his leisure time, ANG chose to study the course from Singapore Chinese Physicians' Training School and obtained doctor professional qualification after graduation. After that, he founded his own herbal medicine shop named "Wan Chun He". In addition to running the herbal medicine shop and treating patients in it, he also provided free medical treatment at Chung Hwa Free Clinic, joined in executive committee of Singapore Chinese Physicians' Association and served as a director of Chung Kuo Refined Chinese Medicine Dealers Ltd.1 All of it had contributed to the Chinese medicine community in Singapore.

ANG Liang Kuan's personal experience has inspired today's practitioners of Chinese traditional medicine. In terms of life values, it is essential to firmly establish Chinese medicine basic knowledge and strengthen the life ideals. In terms of professional values, a traditional Chinese physician should be responsible for patients and try to give back to society in his own actions. In terms of industry values, the physician could keep the general public's interests in mind to contribute personal strength for the TCM industry.

Acknowledgement:

I want to thank Shanghai University of Traditional Chinese Medicine for giving me this valuable opportunity and the National Archives of Singapore for providing related resources.

X-12

Acupuncture for Chronic Post-Surgical Pain: A Systematic Review
針灸治療慢性術後疼痛的系統評價

Bernice XY Lim[1], Jia Hui Sim[1], Venus QH Woon[1] and Linda LD Zhong[1]

[1] *School of Biological Sciences, Nanyang Technological University*

Abstract:

Background: Chronic post-surgical pain (CPSP) is when pain lasts longer than the normal healing process and it is an unwanted adverse event in any surgical operation. CPSP may lead to functional limitations and psychological trauma for patients. Acupuncture, as a traditional therapeutic treatment, has been internationally accepted for its undeniable effectiveness in the treatment of various pain-related conditions and is one of the ideal non-pharmacological treatments to control post-surgical pain. In this systematic review, we aim to assess the efficacy of Manual Acupuncture (MA), Auricular Acupuncture (AA), Electroacupuncture (EA), Scalp Acupuncture, warm needle and fire needle in the treatment of CPSP.

Methods: Six databases (Cochrane Library, Allied and Complementary Database (AMED via EBSCO), Chinese National Knowledge Infrastructure (CNKI), Excerpta Medica dataBASE (EMBASE via OVID), MEDLINE/PubMED and Wanfang Database) were searched from inception to June 2024. Randomised Control Trials (RCTs) comparing standard care treatment with acupuncture treatment for CPSP were included. Pain levels were measured using the Brief Pain Inventory (BPI), Numerical Rating Scale of Pain (NRS) and Visual Analogue Scale (VAS). Additional measurements related to specific surgeries were also taken to indirectly assess pain levels. Relevant studies were included if they met the following criteria: the included trials were RCTs investigating acupuncture for CPSP; the included patients experienced post-surgical pain for a period of one month or more, regardless of the surgical method, their nationality, race, gender, or age. On the other hand, studies were excluded if the patients experienced post-surgical pain of less than one month; the studies were animal studies, case reports, reviews or non-RCTs.

Results: A total of 14963 research articles were obtained through searches of the six databases and a preliminary screening excluded 14801 of duplicate and unqualified studies. Following full-text screening for eligibility, a total of 21 studies involving 4,493 participants, published between 2008 and 2024, were included in the study. Out of the 21 studies, 10 studies focused on manual acupuncture, 9 studies focused on electroacupuncture, one study focused on both manual and auricle acupuncture and one study focused on manual acupuncture, auricle acupuncture, electroacupuncture, scalp acupuncture and the use of warm and fire needles. Acupuncture treatment demonstrated varying degrees of effectiveness in alleviating CPSP, depending on the patient's condition and type of surgical procedures. The study highlights several commonly utilised acupoints for CPSP relief, mainly Zusanli (ST-36), Xuehai (SP-10), Neiguan (PC-6), Yanglingquan (GB-34), Sanyinjiao (SP-6), and Taichong (LR-3).

Conclusions: The results of this study suggest that acupuncture is effective in alleviating CPSP. However, its pain relief benefits are limited, indicating that standard post-surgical care and treatment should remain integral to patient pain management strategies.

Acknowledgement:

We would like to thank our research supervisor and mentor, Associate Professor and Director for Biomedical Sciences & Chinese Medicine Linda LD Zhong, for her support and guidance.

X-13

Anti-depressant effects of 20(S)-protopanaxadiol-loaded nanomicelles in corticosterone-induced mouse model of depression
20(S) - 原人參二醇負載納米膠束對皮質酮誘導的抑鬱小鼠模型的抗抑鬱作用

Weiyao Liao[1], Yilu Sun[1], Jia Zhao[1] and Jianhui Rong[1,*]

[1] *School of Chinese Medicine, The University of Hong Kong*

Abstract:

Depression is a common and serious disorder worldwide, affecting an estimated 3.8% of the population[1]. 20(S)-protopanaxadiol (PPD) is a basic aglycone of the dammarane type saponins found in Panax ginseng, which exert a prominent antidepressant effect in mice, as demonstrated by the forced swimming test (FST) and tail suspension test (TST)[2]. However, PPD's poor water solubility (<50 ng/mL) results in low oral bioavailability and limits its efficient delivery into the brain to treat depression. In terms of this issue, the nano-drug delivery system has great promise as it effectively extends the half-life of the drug's cycle and allows for the administration of lower doses and at a lower frequency to minimize toxicity. Specifically, copolymers of the hydrophilic PEG and hydrophobic PCL, characterized by a high biocompatibility, biodegradability, and long-circulating properties, are good candidate for poorly water-soluble or hydrophobic drugs where the drugs stay in the core and the hydrophilic shell provides a stabilizing interface between the core and the outside aqueous environment[3].

The present study was designed to investigate the anti-depressant effects and toxic activities of PPD-loaded nanomicelles (nano-PPD) in corticosterone-induced depression mice. PPD was loaded into PEG-PCL nanoparticles, yielding nano-PPD with optimal size, spherical morphology, good bioavailability, slower peak time and clearance in mice. PPD and nano-PPD was administered into corticosterone-induced depression C57BL/6 J male mice for 3 weeks. As result, PPD and nano-PPD ameliorated depressive-like behaviors in the CORT-induced mice, increasing the travel distance in open field test and decreasing the immobility time in FST and TST. Moreover, nano-PPD did not cause many changes in the histopathology of heart, kidney, lung, and spleen, nor did it damage liver and kidney functions. Collectively, nano-PPD represents a translatable therapeutic opportunity for treating depression.

Acknowledgement:

This work was supported by General Research Fund (GRF) grants (17146216, 17100317, 17119619), National Natural Science Foundation of China (81701464, 81703726, 21778046), Health and Medical Research Fund (16171751, 17181231) and Midstream Research Programme for Universities (MRP) 053/18X (2018).

X-14

Standardization of English Translation for Traditional Chinese Medicine Disease Terminology: A Case Study of "Ben Tun"

中醫疾病術語英譯標準化研究 - 以「奔豚」為例

Hanyi Ding[1], Lin Zhang[1] and Shanghua Liang[1]

[1] *Institute of Science, Technology and Humanities, Shanghai University of TCM, Shanghai 201203*

Abstract:

Standardizing the English translation of Traditional Chinese Medicine (TCM) disease terminology is a crucial step in promoting the international dissemination of TCM. Unified and standardized translation of TCM terms is significant for facilitating cultural exchange, as well as advancing the modernization and internationalization of TCM. This paper takes the TCM internal medicine term "*Ben Tun*" as an example, compiling and comparing its different representations in various TCM English-Chinese dictionaries and national standards. By analyzing the interpretation from the dimensions of definition mode and content, the study finds that differences in translators' understanding of the disease's connotation lead to variations in translation principles and methods. Consequently, there is no standardized, unified English translation for "*Ben Tun*" yet. The discrepancies among different standards have, to some extent, reduced the scientific nature of TCM and raised new controversies. Therefore, it is necessary to establish a unified English translation standard by considering the unique characteristics, historical features, and cultural connotations of TCM disease terms, along with the polysemy and referential nature of the Chinese language. This will help build a standardized translation system for TCM disease terminology.

Keywords: Traditional Chinese Medicine; Disease Terminology; Standardization; Ben Tun

X-15

A historical investigation of the "Unified case of diseases in traditional Chinese medicine" in the Republic of China
民國「中醫統一病名案」歷史考察

Hanyi Ding[1], Lin Zhang[1] and Shanghua Liang[1]

[1] *Institute of Science, Technology and Humanities, Shanghai University of TCM, Shanghai 201203*

Abstract:

In 1933, the Central State Medical Museum began to carry out the work of unifying the names of diseases in Chinese medicine, which is commonly known as the "Unified case of disease names in Chinese medicine". There is a lack of monographic research on the case in the field of medical history literature, although a few of the works mention the problem, but there are some defects such as lack of reference literature, viewpoint and history. This article takes time as a clue, combs the general course and main contents of the case, on this basis, combined with the specific opinions of many traditional Chinese medicine practitioners at that time, from the aspects of the law of the development of traditional Chinese medicine, the present situation of Chinese society, the principle of integration of traditional Chinese and western medicine, and the scientization of traditional Chinese medicine, this paper sums up and analyzes the contents of the social disputes caused by the case, this paper expounds the deep-seated causes of social disputes from the aspects of academic theory, objective reality and subjective trend of thought.

Keywords: Chinese medicine; name of disease; combination of Chinese and Western medicine; Scientization of Chinese medicine

X-16

Assessing the efficacy of Chinese herbal medicine in managing chronic post-surgical pain in adults
評估中藥在成人術后慢性疼痛管理中的療效

Georgia Lim Min Han, Nerissa Chong Yu Wei, Linda Zhong

School of Biological Science, Nanyang Technological University

Abstract:

Chronic post-surgical pain is caused by damage to nerves during the surgical procedure. At present, chronic post-surgical pain is treated with pharmaceutical drugs, namely painkillers, other forms of therapy as well as lifestyle changes. Conventional painkillers such as opioids are known to have many side effects thus giving rise to the increase in demand for alternative therapies for managing chronic pain. Chinese herbal medicine, known for its holistic approach to treatment and for treating pain, has been increasing in popularity as an alternative to pharmaceutical drugs. This study aims to review the effects of Chinese herbal medicine on managing post-surgical chronic pain and to review the most frequently used CHM herbs and formulae, proprietary CHMs, as well as their mechanisms.

Methods: A comprehensive search was conducted on PubMed, EBSCO, EMBASE, and China National Knowledge Infrastructure (CNKI) to identify relevant articles.

The search strategy involved using specific keywords and medical subject headings (MeSH) related to Chinese herbal medicine and post-surgical pain. Keywords included "Chinese herbal medicine," "post-surgical pain," "chronic pain," "herbal therapy," "TCM," and "postoperative recovery." Filters were applied to select studies involving patients aged 18 to 80 years who had undergone surgery and received treatment for at least one month (30 days or 4 weeks).

Forms of herbal medication included oral, intravenous (IV), topical, and nasal irrigation. The clinical study types considered were prospective, non-randomized controlled studies, and randomized controlled studies. Data from these studies were extracted and analyzed to determine the impact of herbal treatments on postoperative recovery and outcomes.

Results: A total of 2081 relevant records were screened, of which, 2065 were excluded for various reasons of irrelevance. The full text of 16 articles underwent a detailed assessment, of which 2 were excluded for reasons of irrelevance. Reasons for exclusion included lack of sufficient data, failure to meet the specified age range, inability to isolate the effects of herbal medicine on chronic pain, use of non-standardized pain measurement scales, and omission or inconsistencies in the treatment period. The most commonly used herb and its mechanisms are Glycyrrhizae Radix et Rhizoma, which supplements the spleen, boosts qi, clears heat, resolves toxins, dispels phlegm, relieves cough, relaxes tension, relieves pain, and harmonises the nature of other medicinals. This is followed by Poria, which promotes urination, leaches out dampness, fortifies the spleen and stomach, and calms the spirit. Lastly, Cinnamomi Ramulus, which promotes sweating, resolves the flesh, warms and frees the channels and vessels, assists yang in transforming qi, and downbears qi. The common form of herbal medication used is herbal decoction.

X-17

Uncovering the Potential Dose-Effect Relationship in Acupuncture Analgesia through Motion Tracking and Machine Learning Techniques

通過運動跟蹤和機器學習技術揭示針灸鎮痛的潛在量效關係

TA Huang[1], F Wang[1], LL Xu[2], G Xu[1], HY Yang[1], C Zhao[1] & WC Tang[1]

[1] *School of Acupuncture-Moxibustion and Tuina, Shanghai University of Traditional Chinese Medicine;*

[2] *Seventh People's Hospital of Shanghai University of Traditional Chinese Medicine.*

Abstract:

Objective: This study aimed to determine the dose-effect relationship in acupuncture analgesia, addressing its inconsistent efficacy in pain management.

Methods: We applied motion tracking to two acupuncture techniques, lifting-thrusting and twisting, in a CFA-induced arthritis SD rat model. Pain indicators, including PWT, PWL, HIS, BK, SP, cAMP, and cell degranulation rates were measured pre and post-intervention, with machine learning analyzing the data.

Results: Both manipulations improved pain indicators, with the twisting method exhibiting a more significant dose-effect. Higher amplitudes and frequencies were linked to superior pain modulation.

Conclusion: The study lays a foundation for optimizing acupuncture parameters and demonstrates machine learning's potential to increase the predictability and effectiveness of acupuncture in pain management.

Acknowledgement:

We extend our sincere gratitude to the National Natural Science Foundation of China for their financial support (grant number: 82174506). Our thanks also go to Shanghai University of Traditional Chinese Medicine for its resources and facilities, and to all individuals involved in this research endeavor.

X-18

Effect of low intensity pulse ultrasound on pain of knee osteoarthritis: A meta-analysis of randomized controlled trials
低強度脈沖超聲對膝骨關節炎疼痛的影響：隨機對照試驗的 meta 分析

FJ Ni[1], MQ Sun[1] and HY Yang[Corresp. 1]

[1] *School of Acupuncture-Moxibustion and Tuina, Shanghai University of Chinese Traditional Medicine.*

Abstract:

Objective: To systematically evaluate the impact of low-intensity pulsed ultrasound on pain in knee osteoarthritis and explore its potential as an alternative therapy to acupuncture analgesia.

Methods: Databases searched included PubMed, Cochrane, EBSCOhost Medline, Scopus, Web of Science, Embase, CNKI, SinoMed, Wanfang Medical Database, VIP Chinese Science and Technology Periodical Database, and prospective literature databases (National Institute for Health and Clinical Excellence, Canadian Medical Association Clinical Practice Guidelines website). Search dates ranged from inception to April 2024. Initial screening was conducted using Jadad scores, and literature was assessed for inclusion using the Cochrane risk of bias assessment tool. Meta-analysis was performed using Revman 5.4 software. Treatment sites were EX-LE 4 (Neixiyan) and ST 35 (Dubi). Pain outcomes were evaluated between control and therapeutic ultrasound groups. Standardized mean differences (SMD) or mean differences (MD) with 95% confidence intervals (CI) were calculated, and data were pooled using fixed or random effects models.

Results: A total of 18 clinical studies involving 1,346 knee osteoarthritis patients were included. Meta-analysis results demonstrated significant pain relief effects of low-intensity pulsed ultrasound. Compared to controls, Visual Analog Scale (VAS) scores significantly decreased (SMD = -0.97, 95% CI = -1.32 to -0.62, $P < 0.00001$), with sustained pain relief observed during 2-4 weeks of follow-up post-treatment (MD = -1.51, 95% CI = -1.69 to -1.33, $P < 0.00001$). Subgroup analyses indicated that both pure pulsed ultrasound and ultrasound combined with other therapies were effective in pain relief. Both low-intensity pulsed focused ultrasound and non-focused ultrasound were effective in pain relief.

Conclusion: Current randomized controlled trials (Jadad score ≥ 4) provide clinical evidence that low-intensity pulsed ultrasound intervention effectively alleviates pain in knee osteoarthritis, with sustained effectiveness observed 2-4 weeks post-intervention. This finding contributes to further exploration of therapeutic ultrasound as a potential alternative to acupuncture analgesia.

Keywords: low-intensity pulsed ultrasound, knee osteoarthritis, pain, meta-analysis

Acknowledgement:

This symposium is supported by MCMIA. And herein we also want to thank our organization colleagues from The Chinese University of Hong Kong, The University of Hong Kong, The Hong Kong University of Science and Technology, Hong Kong Baptist University, The Hong Kong

Polytechnic University, City University of Hong Kong, The University of Macau and Shanghai University of Traditional Chinese Medicine and Nanyang Technological University for their hard work and those who gave us great supports in the organization of this symposium.

X-19

Chinese Herbal Medicine for Chronic Headache: A Systematic Review
中藥治療慢性頭痛的系統評價

Linda L D Zhong, J X Hew, F N Teo

School of Biological Sciences, Nanyang Technological University

Abstract:

Background: Chronic headaches and migraines are recurring conditions with complex pathogenesis that continue to challenge patients and healthcare providers worldwide. As they become more common, effective treatments remain elusive. Consequently, an increasing number of patients are turning to Chinese medicine (CM), particularly Chinese herbal medicine (CHM), for relief.

Aim: This study aimed to review the most frequently used CHM herbs and formulae, Chinese Proprietary Medicines (CPM), and decoctions for chronic headaches and migraines, and to evaluate their efficacy and safety in treating these conditions.

Methods: A systematic literature search was conducted using eight databases, including PubMed, EBSCOhost, Wiley, CNKI, CJGMCM, Europe PMC, ClinicalKey, and World Scientific, from their inception to May 31st, 2024. The search strategy encompassed various types of CHM, including single herbs and polyherbal formulae. Polyherbal formulae were further categorised into CPM and decoctions to assess their efficacy in treating chronic headaches and migraines.

This research included randomised controlled trials that evaluated CHM treatment for chronic headaches (occurring on 15 or more days per month, each lasting 4 or more hours) and migraines (lasting 4 to 72 hours) in participants experiencing these conditions. Participants with secondary headaches due to other medical conditions, those who had undergone treatments other than CHM, and studies involving animals were excluded from this analysis.

Results: A total of twenty-nine studies, encompassing over 1,023,886 patients, were included in this research. Six articles investigated single herbs, 21 articles examined polyherbal formulae, and two articles studied both single herbs and polyherbal formulae. Polyherbal formulae were further categorised into CPM and decoctions. The most frequently used single herb was Ginkgo Biloba (N = 3), while the most frequently used CPMs were Tianshu capsule (N = 3), Zhengtian Capsule/Pill (N = 3), Duliang soft capsule (N = 3), Tongtian Oral Liquid (N = 3), *Chuanxiong Ding Tong* herbal formula granule (N = 3), and *Chuan Xiong Cha Tiao San* (N = 3). The most frequently used decoction is *Tian Ma Gou Teng Tang* (N = 3).

Conclusion: Upon this research, CHM is proven by the majority of the articles to be efficient in alleviating chronic migraine. However, a minority of the articles are unable to provide a firm conclusion due to the potential bias associated with the findings and experiments. Higher quality studies conducted with CHM treatment are required.

The included articles and accessed data are checked and assessed by 3 independent reviewers.

Acknowledgement:

We wish to express our heartfelt gratitude to our mentor and supervisor from Nanyang Technological University of Singapore, the School of Biological Sciences, Professor Linda Zhong Lidan for her patient guidance and those who gave us great support in the completion of this research project.

X-20

Acupuncture for Chronic Headache: A Systematic Review
針灸治療慢性頭痛的系統評價

Zoe Z Y Teo, J W Chye, John Chiang, Linda L D Zhong

School of Biological Sciences, Nanyang Technological University

Abstract:

Background: Chronic headaches (CH) and migraine are prevalent neurological disorders that significantly impact the quality of life and productivity. Western-style treatments are primarily employed to treat CH, however, its effects have a defined range (from ineffective to very effective). As such, there has been increasing interest in exploring alternative therapies such as acupuncture and its variants. This study aims to evaluate the efficacy of acupuncture-based treatments in comparison to conventional interventions for managing chronic headaches and migraine.

Methods: This systematic review analyzed various randomised controlled trials involving acupuncture and its variants compared to conventional treatments, such as fenbid, benzodiazepines and flunarizine, and preventive medications. The databases that were searched include PubMed, Cochrane Central Register of Controlled Trials (CENTRAL), Excerpta Medica dataBASE (EMBASE), China National Knowledge Infrastructure (CNKI), and Wanfang database.

A total of 24 studies were included, involving 2304 participants, with 17 studies focusing on manual acupuncture, 4 papers on electroacupuncture, 2 papers on auricular acupuncture, and 1 paper on laser acupuncture. The most commonly used acupuncture points involved in the studies includes fengchi - GB20 (n=13), taichong - LR3 (N=11), baihui - GV20 (N=10), taiyang - M-HN-9 (N=10), touwei - ST8 (N=9), shenting - GV24 (N=8), hegu - LI14 (N=5), , shuaigu - GB8 (n=4), fenglong - ST40 (N=2), zhongwan - CV12 (N=2).

Inclusion criteria

Participants were included if they were diagnosed with chronic headache (defined as having recurring headache episodes, persisting for more than 1 month). For migraines, participants were included if they had a history of migraine for at least 12 months and a minimum of 2 days of migraine per 4 weeks, or had recurrent attacks lasting between 8 and 72 hours. Additionally, participants were only included if consent was given.

Exclusion criteria

Participants with secondary headaches due to other medical conditions, those who had undergone acupuncture treatment within the last 6 months, pregnant women, and individuals with contraindications to acupuncture or prescribed medications were excluded.

Primary outcome:

The primary outcome was assessed using various tools and methods such as the Visual Analogue Scale (VAS), as well as follow-up assessments to determine recurrence rates and the long-term effectiveness of the treatments.

Acknowledgement:

This symposium is supported by MCMIA. And herein we also want to thank our organization colleagues from The Chinese University of Hong Kong, The University of Hong Kong, The Hong Kong University of Science and Technology, Hong Kong Baptist University, The Hong Kong Polytechnic University, City University of Hong Kong, The University of Macau and Shanghai University of Traditional Chinese Medicine and Nanyang Technological University for their hard work and those who gave us great supports in the organization of this symposium.

X-21

Acupuncture for neurological and neuropsychiatric symptoms of Long COVID: a systematic review and meta-analysis
針灸治療長新冠病毒的神經和神經精神症狀：系統評價和薈萃分析

Wai Ching Lam[1,2]; Dongjue Wei[2]; Huijuan Li[2], Shiping Zhang[2]; Michael XY Lai[2]; Aiping Lyu[2]; Zhaoxiang Bian[2]; Linda L D Zhong[1,2]

School of Biological Sciences, Nanyang Technological University

Abstract:

The objective of our study is to explore the feasibility of acupuncture in the treatment of neurological and neuropsychiatric symptoms in long COVID patients. Through systematic search conducted in 4 English and 4 Chinese databases from inception to 23rd June 2023, randomized controlled trials (RCTs) exploring the effect of acupuncture for fatigue, depression, anxiety, cognitive abnormalities, headache, and insomnia were included. Meta-analysis was performed using the R software. Heterogeneity was measured by I^2. Subgroup analyses were conducted for duration of treatment and acupuncture modalities. The systematic review protocol was registered on PROSPERO (registration number: CRD42022354940).

A total of 110 RCTs were included in the systematic review with meta-analysis. Overall, acupuncture was found to improve scores of Fatigue Scale (vs. medication: MD: -2.27, P<0.01; vs. sham acupuncture: MD: -3.36, P<0.01), Hamilton Depression Rating Scale (vs. medication: MD: -1.62, 95%, P<0.01; vs. sham acupuncture: MD: -9.47, P<0.01), Mini-Mental State Examination (vs. medication: MD: 1.15, P<0.01; vs. sham acupuncture: MD: 1.20, P<0.01), headache Visual Analogue Scale (vs. medication: MD: -1.05, P<0.01; vs. waitlist: MD: -0.48, P=0.04) , and insomnia (vs. medication: MD: -2.33, P<0.01; vs. sham acupuncture: MD: -4.19, P<0.01).

This systematic review suggested acupuncture as a potentially beneficial approach for treatment of neurological and neuropsychiatric, as assessed by clinical scales, and it may have applicability in long COVID patients. Further well-designed clinical studies specifically targeting long COVID patients are needed to validate the role of acupuncture in alleviating long COVID symptoms.

Acknowledgement:

We thank for the financial support from Chinese Medicine Development Fund (Ref. no. 22B2/011A) and Health and Medical Research Fund (Ref. no. 20211471).

X-22

Cutaneous nodular polyarteritis presenting as refractory ulcers on both lower extremities: a case report
一例表現為雙下肢難愈性潰瘍的皮膚結節性多動脈炎：病例報告

Fang Cao[1], Yongkang Zhang[1], Yongcheng Xu[2] , Yemin Cao[2]

[1] *Shanghai University of Traditional Chinese Medicine;*

[2] *Diagnosis and Treatment Center of Vascular Disease, Shanghai TCM-Integrated Hospital, Shanghai University of Traditional Chinese Medicine.*

Abstract:

Background: Cutaneous polyarteritis nodosa (cPAN) is a systemic disease that is limited to the skin. cPAN usually presents with cutaneous reticular cyanotic, erythematous and palpable nodules, and cutaneous ulcers.Research has indicated that the use of hormones and immunosuppressive drugs can delay ulcer healing and associated neuropathy, and also elevate the risk of disease recurrence upon their reduction or withdrawal. Therefore, it is a necessary to find a safe and effective approach that minimize hormone side effects in ulcer treatment.

Case presentation: The patient, a 48-year-old female of Han Chinese ethnicity, has suffered from recurrent erythema nodosum on both lower limbs for 8 years. The condition was aggravated by skin breakdown over the last 3 months. Despite multiple treatments, the patient's condition did not improve significantly, leading to the exploration of a combined approach of traditional Chinese and Western medicine. Following six months of combined traditional Chinese and Western medicine treatment, t the patient's newborn erythema and ulcers on both lower limbs did not reappear, and the ulcers gradually decreased in size and the erythema disappeared. The patient took the TCM regularly until April 15, 2023, when the ulcers were completely healed. Three months after the patient stopped taking TCM, the ulcers had completely healed with no recurrence, as observed during the follow-up visit on July 14th, 2023.

Conclusion: Traditional Chinese Medicine Combined with Low-Dose Hormones May Effectively Treat Bilateral Lower Extremity Skin Ulcers Caused by Cutaneous Polyarteritis Nodosa.

Acknowledgement:

This work was supported by the following funding sources: National Natural Science Foundation of China (82174382); Science and Technology Innovation Action Plan of Shanghai Municipal Science and Technology Commission (20Z21900200); Clinical Research Special Project of Shanghai Municipal Health Commission (20224Y0387).

X-23

THE STUDY ON TONGUE COATING MICROBIOME POTENTIAL BIOMARKERS OF CHRONIC ATROPHIC GASTRITIS WITH SPLEEN-STOMACH DAMPNESS-HEAT SYNDROME
慢性萎縮性胃炎脾胃濕熱證潛在舌苔菌群生物標誌物研究

Y Liu[1], X Gai[1], BQ Guo[1], Y Cao[1], GP Liu[1]

[1] *School of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai, China.*

Abstract:

Objective: Chronic Atrophic gastritis (CAG) is the loss of gastric glands due to chronic inflammation, mainly caused by Helicobacter pylori infection or autoimmunity, and is a precursor lesion for gastric cancer[1-2]. Spleen-stomach dampness-heat syndrome (SSDHS) is a common traditional Chinese medicine (TCM) syndrome in CAG, which plays a crucial role in the progression from precancerous lesions to early carcinoma[3-4]. Tongue inspection is a vital diagnostic method in TCM, with tongue coating formation closely linked to spleen, stomach (Wei-qi)[5-7]. This study aims to observe the characteristics of tongue coating microbiome in patients with CAG, screening potential biomarkers of CAG with SSDHS.

Methods: 16S rRNA gene high-throughput sequencing (V3-V4 region) was performed on tongue coating samples from 34 healthy controls (HC), 34 CAG patients with SSDHS and 34 CAG patients with spleen-stomach deficiency-cold syndrome (SSDCS). Sobs, simpson and shannon indices were applied to assess the species richness and diversity; PLS-DA analysis was used to assess the microbial community structure; Based on taxonomic analysis to assess the species composition of tongue coating microbiome from 3 groups at the phylum and genus level. Significance test of difference and random forest were combined to screen potential tongue coating microbiome biomarkers of CAG-SSDHS, receiver operating characteristic curve (ROC) was plotted and area under the curve (AUC) was calculated for diagnostic effect evaluation.

Results: Compared to CAG patients with SSDCS and HC, 12 genera (*g_Actinomyces, g_Haemophilus, g_Porphyromonas, g_Fusobacterium, g_TM7x, g_Atopobium, g_Gemella, g_ unclassified_c__ Actinobacteria, g_Bergeyella, g_Catonella, g_unclassified_f__Peptostreptococcaceae and g_ Alysiella*) were enriched in CAG patients with SSDHS. The ROC curve showed that 5 genera (*g_TM7x, g_Fusobacterium, g_Haemophilus, g_Actinomyces, and g_Catonella*) had a certain sensitivity and specificity for the diagnosis of SSDHS, which could distinguish SSDHS not only from HC (AUC=0.909), but also from SSDCS (AUC=0.951). Furthermore, *g_TM7x* could also both distinguish SSDHS from HC (AUC=0.869) and from SSDCS (AUC=0.814).

Conclusion: In this study, we found 5 genera including *g_TM7x*, *g_Fusobacterium, g_Haemophilus, g_Actinomyces, and g_Catonella* may be used for non-invasive diagnosis biomarkers of CAG patients with SSDHS.

Acknowledgement:

This study was supported by Shanghai Municipal Natural Science Foundation (No.202340166).

References:

1. Shah SC, Piazuelo MB, Kuipers EJ, Li D. AGA Clinical Practice Update on the Diagnosis and Management of Atrophic Gastritis: Expert Review. Gastroenterology.2021Oct;161(4):13251332. e7.doi:10.1053/j.gastro.2021.06.078. Epub 2021 Aug 26. PMID: 34454714; PMCID: PMC8740554.
2. Raza M, Bhatt H. Atrophic Gastritis. 2021 Aug 8. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan–. PMID: 33085422.
3. Li ZG, LYB, WJW et al. Meta-analysis of the distribution frequency of TCM syndromes of chronic atrophic gastritis. Chinese Journal of Integrated Traditional Chinese and Western Medicine, 2020, 40(1): 52-58.
4. Zou XM, WY, WH.Mechanism of Sanren decoction on gastric cancer precancerous lesion model rats of spleen-stomach damp-heat syndrome.Yunnan Journal of Traditional Chinese Medicine, 2020, 41(11): 63-66.
5. Zhao Y, Gou XJ, Dai JY, Peng JH, Feng Q, Sun SJ, Cao HJ, Zheng NN, Fang JW, Jiang J, Su SB, Liu P, Hu YY, Zhang YY. Differences in metabolites of different tongue coatings in patients with chronic hepatitis B. Evid Based Complement Alternat Med. 2013;2013:204908. doi: 10.1155/2013/204908. Epub 2013 Apr 17. PMID: 23690837; PMCID: PMC3652181.

X-24

20th International POSTGRADUATE SYMPOSIUM ON CHINESE MEDICINE

妊娠併發症與糖尿病及心血管病的因果關係研究

Yuan Xie[1†], Jie Zhang[2†], Shuang Ni[1], and Ji Li[1*]

[1] *Department of Gynecology, Longhua Hospital, Shanghai University of Traditional Chinese Medicine, Shanghai 200032, China;*

[2] *Central Laboratory for Research, Longhua Hospital, Shanghai University of Traditional Chinese Medicine, Shanghai 200032, China*

Abstract:

Background: To the best of our knowledge, numerous observational studies have linked pregnancy complications to increased risks of diabetes and cardiovascular disease (CVD), causal evidence remains lacking. Our aim was to estimate the association of adverse pregnancy outcomes with diabetes and cardiovascular diseases.

Methods: A two-sample Mendelian randomization (MR) analysis was employed, which is not subject to potential reverse causality. Data for pregnancy complications were obtained from the FinnGen consortium. For primary analysis, outcome data on diabetes, related traits, stroke, and coronary heart disease (CHD) were extracted from the GWAS Catalog, MAGIC, MEGASTROKE, and CARDIoGRAMplusC4D consortium. The MAGIC and UKB consortium datasets were used for replication and meta-analysis. Causal effects were appraised using inverse variance weighted (IVW), weighted median (WM), and MR-Egger. Sensitivity analyses were implemented with Cochran's Q test, MR-Egger intercept test, MR-PRESSO, leave-one-out (LOO) analysis and the funnel plot.

Results: Genetically predicted gestational diabetes mellitus (GDM) was causally associated with an increased diabetes risk (OR=1.01, 95% CI=1-1.01, P<0.0001), yet correlated with lower 2-hour post-challenge glucose levels (OR=0.89, 95% CI=0.82-0.97, P=0.006). Genetic liability for pregnancy with abortive outcomes indicated decreased fasting insulin levels (OR=0.97, 95% CI=0.95-0.99, P=0.02), but potentially elevated glycated hemoglobin levels (OR=1.02, 95% CI=1.01-1.04, P=0.01). Additionally, hypertensive disorders in pregnancy was tentatively linked to increased risks of stroke (OR=1.11, 95% CI=1.04-1.18, P=0.002) and CHD (OR=1.3, 95% CI=1.2-1.4, P=3.11E-11). Gestational hypertension might have a potential causal association with CHD (OR=1.11, 95% CI=1.01-1.22, P=0.04). No causal associations were observed between preterm birth and diabetes, stroke, or CHD.

Conclusion: The findings of this study provide genetic evidence that gestational diabetes, pregnancy with abortive outcomes, and hypertensive disorders in pregnancy may serve as early indicators for metabolic and cardiovascular risks. These insights are pivotal for the development of targeted screening and preventive strategies.

Acknowledgement:

We thank all the participants and investigators of the FinnGen, GWAS Catalog, MAGIC, MEGASTROKE, CARDIoGRAMplusC4D, and UK Biobank consortium.

X-25

Effective Treatment of a Brain Abscess Through the Integration of Traditional Chinese Medicine and Western Medicine: A Case Report
中西醫結合有效治療腦膿腫 1 例

Jielian Luo[1†], Changya Liu[1†], Jinhua Li[2†], Chenxing Huo[1], Yiying Lu[3], Liang Liu[1], Wei Peng[1], Bangjiang Fang[1*]

[1] *Department of Emergency, Longhua Hospital, Shanghai University of Traditional Chinese Medicine;*

[2] *Jiangxi Provincial Traditional Chinese Medicine Nephropathy Clinical Research Center, Jiujiang Hospital of Traditional Chinese Medicine;*

[3] *Department of Neurology, Shanghai TCM-Integrated Hospital Affiliated to Shanghai University of TCM.*

Abstract:

Brain abscess is life-threatening and carries a high risk of mortality. Despite advances in sensitive imaging techniques, effective antimicrobial therapies, and sophisticated surgical procedures, diagnosing and treating brain abscesses remains challenging. Although empirical antimicrobial therapy and neurosurgery are considered primary treatments for brain abscesses, their efficacy is limited by potential side effects including neutropenia development, the need for repeat surgeries, and the risk of new-onset epilepsy.

Here, we present a case of a 52-year-old male who experienced paroxysmal convulsions accompanied by left-sided limb weakness and numbness for over two months. The patient was ultimately diagnosed with a cryptogenic brain abscess after an extensive workup. Despite a brain MRI revealing a multilocular cystic lesion in the right frontal lobe, with about 28 mm ×19 mm × 21 mm in size, the patient declined neurosurgical interventions and completed a six-week course of antimicrobial therapy. Subsequently, the patient sought traditional Chinese medicine (TCM) treatment due to antibiotic side effects and concerns about surgical risks. Following a four-month TCM regimen involving a modified Xianfang Huoming Yin formula, combined with Angong Niuhuang Pill and antelope horn powder, the patient remained free of convulsions for approximately 60 days. A follow-up MRI imaging at eight months showed a reduction in the size of the lesion to 8 mm × 4 mm. To the best of our knowledge, this is the first well-documented case of a brain abscess that was successfully managed using both antimicrobial therapy and TCM. This case report suggests that TCM may provide significant supplementary benefits in managing infections like brain abscesses. However, further evidence from prospective studies is necessary to substantiate the efficacy of Chinese herbal medicine for the treatment of brain abscesses.

Acknowledgement:

All authors would like to express their gratitude to the patient mentioned in this paper, who graciously granted permission for his case to be reported.

X-26

Digital Characteristics of Tongue and Pulse Images in Patients with Upper Urinary Tract Stones
上尿路結石患者的舌脈象數據化特徵

GH Zhang[1], JL Zhou[2], DX Song[2]

[1] *School of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China;*

[2] *Shuguang Hospital affiliated to Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China*

Abstract:

Objective: This study aims to collect standardized digital information on tongue and pulse from patients with upper urinary tract stones at Shu Guang Hospital in Shanghai to preliminarily investigate the digital characteristics and patterns of their tongue and pulse data.

Methods: This study was conducted from October 31, 2023, to June 12, 2024, in the Department of Urology at Shu Guang Hospital Affiliated to Shanghai University of Traditional Chinese Medicine. Patients with upper urinary tract stones were divided into three groups based on recurrence: initial onset, recurrence within five years, and recurrence over five years. The study utilized the TFDA-1 digital tongue diagnostic instrument (Figure 1) [1]and the PDA-1 single-part pulse diagnostic instrument (Figure 2)[1], developed by the Intelligent Diagnosis Technology Research Laboratory of Shanghai University of Traditional Chinese Medicine, to collect tongue images and pulse waves.

Acknowledgement:

All authors would like to express their gratitude to the patient mentioned in this paper, who graciously granted permission for his case to be reported.

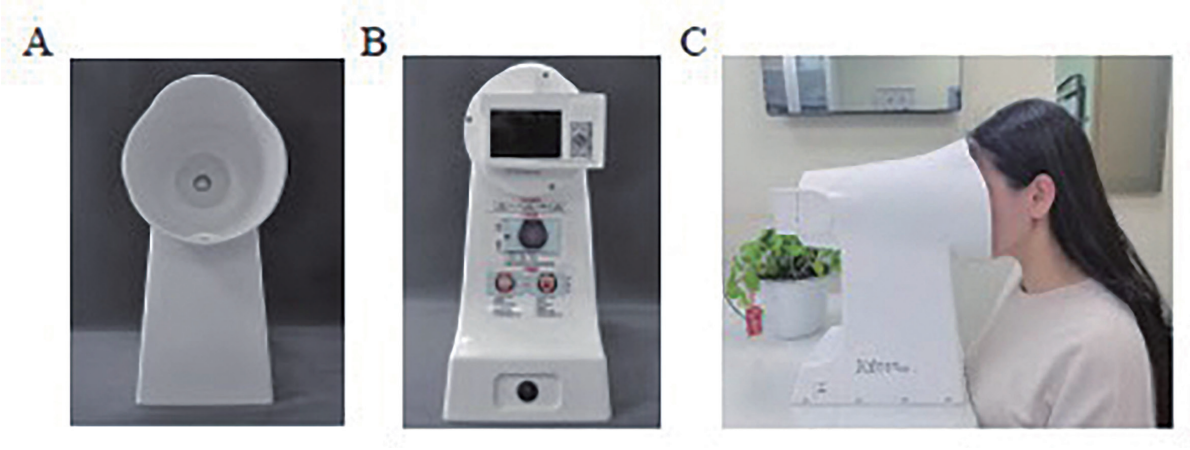


Figure 1 The TFDA-1 digital tongue diagnostic instrument

A, front view. B, back view. C, tongue image acquisition.

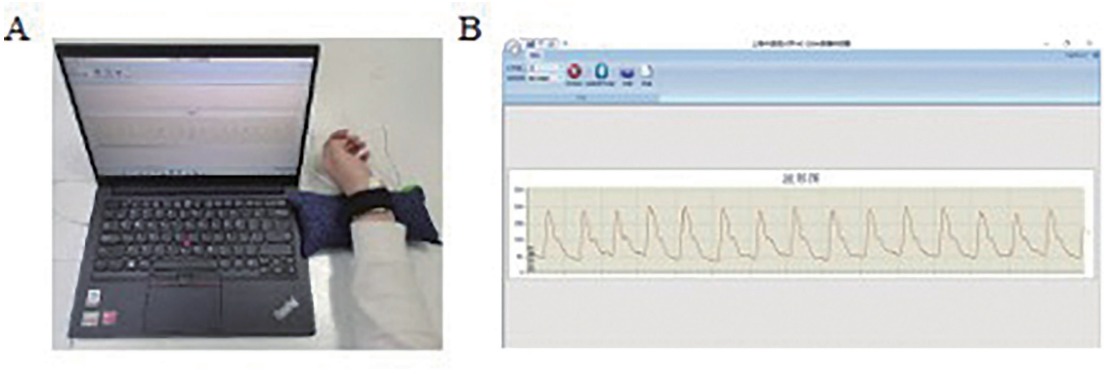


Figure 2 PDA-1 single-part pulse diagnostic instrument

A, pulse wave acquisition. B, acquisition software interface.

Tongue images were primarily analyzed from color space and tongue coating parameters using the "TCM Tongue Diagnosis Analysis System V2.0 (Figure 3)[2]. Differences in tongue and pulse indices among the three groups were analyzed using one-way ANOVA when data met normal distribution and homogeneity of variance; otherwise, the Kruskal-Walli's test was used.

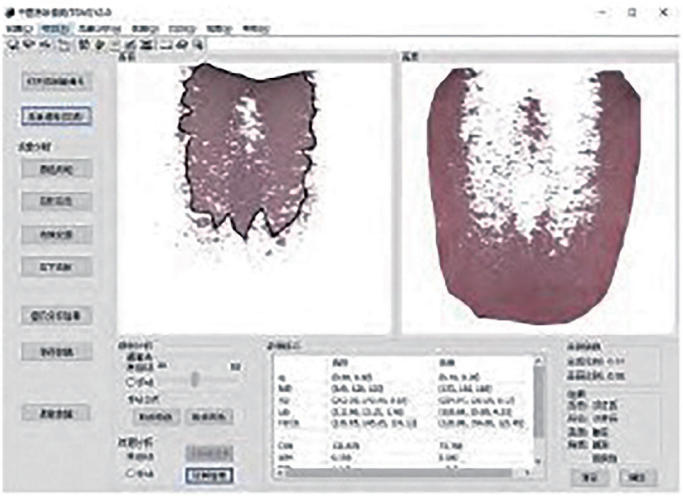


Figure 3 The interface of the TDAS V2.0 tongue image analysis software

Results: A total of 167 patients in the initial onset group, 89 in the recurrence within five years group, and 72 in the recurrence over five years group were included in this study.

The second-order moment (TC-ASM) of the tongue coating showed a decreasing trend across the three groups ($P = 0.045$), while the entropy (TC-ENT) and h1/t1 ratio showed increasing trends ($P = 0.029$, $P = 0.032$).

The H values of the tongue (TB-H, TC-H, TC-b) and pulse indices t4/t5 and w/t ratios showed similar decreasing trends, with the initial onset group having the highest values, followed by the recurrence within five years group, and the recurrence over five years group having the lowest values ($P = 0.016$, $P = 0.021$, $P = 0.041$, $P = 0.013$, $P = 0.017$).

The Cb values of the tongue (TB-Cb, TC-Cb) and pulse index h5 showed an opposite trend, with the recurrence over five years group having the highest values, followed by the recurrence within five years group, and the initial onset group having the lowest values (P= 0.041, P = 0.018, P = 0.001).

Conclusion: In patients with upper urinary tract stones, the tongue coating texture indices TC-ASM and TC-ENT indicate that the initial onset group has the thickest tongue coating3, with the coating becoming progressively thicker with increased recurrence.

The tongue and coating color indices in multiple color spaces, such as TB-H, TC-H, TC-b, TB-Cb, and TC-Cb, show that the initial onset group has the most yellow tongue and coating[4-5], which become increasingly yellow with more frequent recurrences. The pulse index h5 suggests that the initial onset group has the lowest arterial compliance and the hardest blood vessels, with arterial compliance worsening with more frequent recurrences. The pulse index w/t indicates that the initial onset group has the highest peripheral resistance, which increases with more frequent recurrences.

X-27

Development and Validation of a Postoperative Recurrence Risk Assessment Model for Upper Urinary Tract Stones Incorporating Traditional Chinese Medicine Constitutions
結合中醫體質的上尿路結石微創術后復發風險評估模型的開發與驗證

Jielong Zhou[1,2,3], Dexin Song[1,2,3] and Dongliang Xu[1,2,3,*]

[1] *Urology Centre, Shuguang Hospital Affiliated to Shanghai University of Traditional Chinese Medicine;*

[2] *Surgical Institute of Integrative Medicine, Shuguang Hospital Affiliated to Shanghai University of Traditional Chinese Medicine of Chinese Medicine;*

[3] *Surgical Institute, Shuguang Hospital Affiliated to Shanghai University of Traditional Chinese Medicine.*

Abstract:

Objective: This study urinary tract stones are a common urological condition with high recurrence rates[1,2], significantly impacting patient health and quality of life. Current recurrence risk assessment models focus primarily on Western medical indicators[3]. The theory of Traditional Chinese Medicine (TCM) constitutions offers a novel perspective that may enhance the accuracy of recurrence risk assessment[4]. This study aimed to develop and validate a recurrence risk assessment model for upper urinary tract stones following minimally invasive surgery, incorporating factors of TCM constitutions.

Methods: This study retrospective cohort study included 378 patients who underwent minimally invasive surgery for upper urinary tract stones at the Shanghai University of Traditional Chinese Medicine Affiliated Shuguang Hospital from January to June 2023. TCM constitutions were comprehensively assessed using traditional diagnostic techniques combined with a TCM constitution questionnaire and followed up for one year post-surgery[5,6]. Additionally, other clinical indicators such as dietary preferences, Body Mass Index (BMI), postoperative residual stones, family history of stones, the number of stones identified by imaging, maximum Hounsfield Units (HU) on CT, and stone composition were considered[7]. Multivariable Logistic regression analysis was used to identify independent risk factors and construct the risk assessment model. Internal validation of the model was performed using the Bootstrap method, and predictive accuracy and discrimination were evaluated using calibration curves and the area under the receiver operating characteristic (ROC) curve.

Results: This study revealed a significant association between TCM constitution types and stone recurrence, with damp-heat (aOR: 2.1, 95% CI 1.2-3.7) and phlegm-dampness (aOR: 1.9, 95% CI 1.1-3.3) constitutions being significant predictors of stone recurrence. Furthermore, clinical factors such as postoperative residual stones, higher BMI, family history, and multiple stones identified by imaging were also associated with an increased risk of recurrence. The constructed risk assessment model demonstrated high predictive accuracy, with a C-index of 0.83 and an AUC of 0.86 (95% CI: 0.81-0.91).

Conclusion: This study successfully developed and validated a recurrence risk assessment model for upper urinary tract stones following minimally invasive surgery, incorporating TCM constitutions. The model's high predictive accuracy provides a novel clinical tool, aiding in the early identification of high-risk patients and the formulation of personalized prevention strategies.

Acknowledgement:

This project was supported by the National Natural Science Foundation of China (82174122), the Shanghai Municipal Health Commission Health Discipline Leader Program (220XD011), and the Shanghai Shenkang Hospital Development Center City Hospital Clinical Skills and Management Enhancement Program (SHDC12023113).

References:

1. Thongprayoon, Charat et al. "Determining the true burden of kidney stone disease." Nature reviews. Nephrology vol. 16,12 (2020): 736-746.
2. Huang, Wei-Yi et al. "Epidemiology of upper urinary tract stone disease in a Taiwanese population: a nationwide, population based study." The Journal of urology vol. 189,6 (2013): 2158-63.
3. Rule, Andrew D et al. "The ROKS nomogram for predicting a second symptomatic stone episode." Journal of the American Society of Nephrology : JASN vol. 25,12 (2014): 2878-86.
4. Yu Q, Lu ZJ, Chen XX, et al. A Single-Center Study on the Correlation between Adult Urinary System Stones and Traditional Chinese Medicine Constitutions [J]. Journal of Nanjing University of Chinese Medicine, 2020, 36(03): 313-317.
5. Xu Jiatuo, Tu Liping, Di Zhi, et al. Analysis of Diagnostic Information and Syndrome Classification Study on Sub-healthy State [J]. Journal of Beijing University of Chinese Medicine, 2011, 34(11): 741-745+750.

X-28

PATHOGENESIS AND CHARACTERISTICS OF METABOLIC SYSTEM IN OFFSPRING FROM MATERNAL POLYCYSTIC OVARY SYNDROME BASED ON THE THEORY OF FETAL TOXICITY-LATENT PATHOGENICITY

基於“胎毒 - 伏邪”理論探討多囊卵巢綜合征子代代謝系統發病特點及機制

QR Yang[1,2], X Xin[1,2] and JF Zhang[1,3]

[1] *Guanghua Hospital Affiliated to Shanghai University of Traditional Chinese Medicine;*

[2] *Shanghai University of Traditional Chinese Medicine;*

[3] *Shenzhen Hospital of Shanghai University of Traditional Chinese Medicine.*

Abstract:

Polycystic ovary syndrome (PCOS) is a prevalent and multifaceted condition encompassing reproductive, endocrine and metabolic disorders in women of childbearing age. It is characterized by high familial aggregation and intergenerational transmission. The pathological changes and pathogenesis of the metabolic system in PCOS patients and their offspring are highly similar to those described in the theory of fetal toxicity-latent pathogenicity in traditional Chinese medicine. According to this theory, the offspring of women with PCOS grow and develop in the abnormal intrauterine environment characterized by elevated levels of androgens, insulin, and/or anti-Müllerian hormone (AMH), which may result in a latent pathogenic state that persists after birth and may manifest as clinical symptoms during puberty or childbearing age.

Latent pathogenicity hidden for a long time in the five viscera, "Such as the gradual fumigation of smoke and steady accumulation of water (*Yimen Banghe*)", and further damages the qi of five viscera, causing qi deficiency, fluid stagnation and the formation of phlegm and blood stasis. With blood stasis and phlegm turbidity stalemate, an increased risk of insulin resistance and hyperinsulinemia can occur as early as adolescence[1, 2]. Conglomerated phlegm-dampness and blocked pulse channel lead to increased blood viscosity and can be manifested as higher levels of cholesterol, triglyceride and low-density lipoprotein and lower levels of adiponectin in the umbilical cord blood of PCOS female neonates[2-4].

In addition, if combined with irregular eating habits and a penchant for fatty, greasy, sweety, pungent or spicy foods will further impair the congenitally deficiency in spleen and stomach, leading to an accumulation and excess of fat that is difficult to transform and metabolize. "Externally, it manifests as fatty flesh; internally, it accumulates as full fatty grease (*Lingshu·Nine Needles and Twelve Sources*)". This indicates that children born to mothers with PCOS have an increased risk of early childhood obesity and a higher body mass index in the mid-term, particularly noticeable in female offspring between the ages of 42 to 54 months and 66 to 80 months[5, 6]. Similarly, animal model experiments have also shown that prenatal testosterone exposure can result in a pathological state of fetal toxicity-latent pathogenicity, leading to rapid weight gain in offspring, decreased insulin sensitivity in early development, abnormal glucose metabolism, increased peripheral neutral lipid accumulation around the liver's central vein, and other changes.

This suggests that offspring of PCOS mothers may experience impaired glucose metabolism and the accumulation of excess lipids, indicating metabolic abnormalities[7, 8].

Therefore, it is of great clinical significance to explore the characteristics and pathological mechanism of the metabolic system of PCOS offspring based on the fetal toxicity-latent pathogenicity theory of traditional Chinese medicine, which provides a theoretical basis for the early identification and early blocking of the intergenerational genetic effect of PCOS.

Acknowledgement:

The authors would like to thank Zirong Ruan for the language support of this article.

References:

1. YAN X, DAI X, WANG J, *et al*. Prenatal androgen excess programs metabolic derangements in pubertal female rats. *The Journal of endocrinology*, 2013. 217(1), 119-129.
2. SIR-PETERMANN T, CODNER E, PéREZ V, *et al*. Metabolic and reproductive features before and during puberty in daughters of women with polycystic ovary syndrome. *The Journal of clinical endocrinology and metabolism*, 2009. 94(6), 1923-1930.
3. SUN M, SUN B, QIAO S, *et al*. Elevated maternal androgen is associated with dysfunctional placenta and lipid disorder in newborns of mothers with polycystic ovary syndrome. *Fertility and sterility*, 2020. 113(6), 1275-1285.e2.
4. ALIZADEH S, JAHANIAN SADATMAHALLEH S, RAZAVINIA F, *et al*. Metabolic parameters in cord blood of neonate of mothers with obese and non-obese PCOS and controls: retrospective cohort study. *BMC pregnancy and childbirth*, 2021. 21(1), 223.
5. ZHU J, ELIASEN A U, ARIS I M, *et al*. Pediatric Features of Genetic Predisposition to Polycystic Ovary Syndrome. *The Journal of clinical endocrinology and metabolism*, 2024. 109(2), 380-388.

X-29

Professor Zhang Zhiwen's experience in the treatment of interstitial lung fibrosis using the Sanjiao sub-regulation method
張之文運用三焦分調法治療肺間質纖維化經驗

YM Wang[1], JY Deng[1], QS Feng[1]

[1] *School of Basic Medical Sciences, Chengdu University of Traditional Chinese Medicine*

Abstract:

Pulmonary interstitial fibrosis (PIF) is one of the common lesions of interstitial lung diseases caused by a number of different factors, which can lead to structural destruction of the organism's lung tissue, loss of function, and even respiratory failure. As the pathogenesis is still unclear, and the understanding of the disease or fibrosis evolution and influencing factors is still unclear, the treatment is still based on symptomatic support, immunosuppression and antifibrosis, and the commonly used drugs are glucocorticoid, piroxicam, nidazanib, etc., which can delay the disease progression to a certain extent, but due to the high number of adverse effects, the economic cost is on the high side, which leads to the patients' high mental stress. Interstitial lung fibrosis belongs to the category of "lung impotence" and "lung paralysis" in Chinese medicine. In modern Chinese medicine, the treatment of interstitial fibrosis is based on the theories of lung deficiency, phlegm, blood stasis, and collateral disease, etc. It has achieved a certain degree of efficacy and fewer adverse effects, which can significantly improve the quality of life of patients. Professor Zhang Zhiwen adopted Wu Jutong's idea of triple-jiao diagnosis and used it in the diagnosis and treatment of interstitial lung fibrosis, which is divided into the upper jiao heart and lungs, the middle jiao spleen and stomach, and the lower jiao kidney, and the disease involves the triple jiao, and the treatment is also derived from the triple jiao, so it is common to use the triple-jiao method to guide the treatment of the disease. According to Professor Zhang's description of the clinical evidence, cases with good results, and his understanding of the consultation, the triple-jiao method is considered as the main method of treatment.

Acknowledgement:

We would like to express our gratitude to Professor Zhang Zhiwen, a nationally renowned Chinese medicine doctor, for his clinical account, which has allowed us to summarize the insights gained from attending the clinic into this paper.

References:

1. Duan Chunlei, Wang Minghang, Zhou Linqiong et al. Review of Chinese medicine treatment of pulmonary fibrosis[J]. China Journal of Basic Chinese Medicine,2023,29(04):672-674.
2. Fan Yali, Ye Pretty. Biomarkers for diagnosis and risk prediction of pulmonary fibrosis disease. Chinese Medical Journal, 2021, 101(12):893-898.

X-30

Recognition of Traditional Chinese Medicine Pulse Signals Based on Convolutional Recurrent Neural Networks
基於捲積循環神經網絡的中醫脈搏信號識弊

Yichen Wang[1], Tianyu Gu[1], Huayuan Yang[1]

[1] *School of Acupuncture -Moxibustion and Tuina, Shanghai University of Traditional Chinese Medicine, Shanghai (201203), China*

Abstract:

Pulse diagnosis is an essential component of traditional Chinese medicine (TCM) diagnostics[1], heavily reliant on clinical experience and lacking standardized diagnostic criteria. Therefore, this study aims to establish a convolutional recurrent neural networks for recognition of TCM pulse signals.

This study preprocesses and normalizes pulse signals, extracting consistently-sized segments of pulse signal time series using windowing techniques. We adopt a deep learning model combining Convolutional Neural Networks (CNN) and Long Short-Term Memory Networks (LSTM) as classifiers. CNN extracts high-dimensional features from pulse signals via convolutional kernels[2], while LSTM captures long-term dependencies in pulse signal time series, compensating for temporal feature deficiencies in CNN. The combined CNN-LSTM model[3] enhances both the accuracy and robustness of pulse signal recognition.

Experiments conducted on a dataset comprising categorical and time-series pulse signal data demonstrate the performance of CNN(accuracy 80%; sensitivity 46%; specificity 94%), LSTM(accuracy 92%; sensitivity 88%; specificity 97%), and CNN-LSTM(accuracy 90%; sensitivity 83%; specificity 94%) models. CNN exhibits superior robustness across training and test sets. LSTM achieves the highest accuracy (92%) on the training set . The CNN-LSTM model achieves moderate accuracy (90%) and robustness both in training and test sets. The CNN+LSTM model outperforms individual models in both accuracy and robustness, overcoming CNN's lack of temporal features and LSTM's overfitting and instability.

The experimental results show that recognition of TCM pulse signals based on CNN-LSTM is effective and highly reproducible.It provides a new way for the development of pulse signal recognition and practical insights for clinical diagnostics in TCM.It is also expected to establish the standardized diagnostic criteria and further promote the modernization of traditional Chinese medicine.

Acknowledgement:

Supported by the National Natural Science Foundation of China (Grant No. 81473759), and Shanghai Municipality Traditional Chinese Medicine Inheritance and Innovation Development Three -Year Action Plan Fund Project (ZY (2021 -2023) -0502) .

References:

1. Bi R, Zhao Y, Ma Y, et al. Research of pulse position based on gradient pressure method[J]. Biomedical Signal Processing and Control, 2023, 80: 104372.
2. 朱光耀 , 顏建軍 , 郭睿 , 王憶勤 , 鷰海霞 . 基於時間序列和時序捲積網絡的脈象信號識彆研究 [J]. 世界科學技朮 - 中醫藥現代化 ,2021,23(9):3056-3064
3. Demir F, Taşcı B. An effective and robust approach based on r-cnn^{+} lstm model and ncar feature selection for ophthalmological disease detection from fundus images[J]. Journal of Personalized Medicine, 2021, 11(12): 1276.

X-31

CONSTRUCTION OF KNOWLEDGE GRAPH FOR TCM SYNDROME DIFFERENTIATION OF DIABETES MELLITUS
糖尿病中醫辨證知識圖譜構建

RQ Xu[1], R Wang[1] , XJ Hu[2], YZ Li[3] and JT Xu[1]

[1] *School of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine;*

[2] *Shanghai Innovation Center of TCM Health Service, Shanghai University of Traditional Chinese Medicine;*

[3] *China Astronaut Research and Training Center.*

Abstract:

Diabetes is a common chronic disease[1] that falls under the category of Xiaoke disease in Traditional Chinese Medicine (TCM). TCM has rich experience in treating diabetes. Knowledge graph exhibit powerful functions in knowledge organization, expression forms, and knowledge modeling, and are often used in the medical field for knowledge organization and Visualization2.

By organizing literature such as disease guidelines and textbooks related to TCM diabetes, we designed the architecture for a knowledge graph model of TCM syndrome differentiation for diabetes based on the logical knowledge of TCM syndrome differentiation. The organization is primarily conducted from dimensions such as diseases, syndrome, symptoms, signs, syndrome elements, and objective indicators. Standardized expression is applied to nodes of diseases, syndrome types, symptoms, and sign types using TCM terminology standards and normative texts. Through the design of the TCM syndrome differentiation element framework, the etiology, disease location, and disease nature of diabetes were analyzed and labeled. Combined with real clinical data from both Chinese and modern medicine and TCM syndrome differentiation diagnoses, discriminant analysis was used to extract indicators with high efficacy for TCM syndrome differentiation. The improved Gini index was applied to calculate the association degree between syndrome types and symptoms/signs, and the contribution of indicators to each syndrome type in discriminant analysis was set as the semantic relationship weight attribute between nodes. The semantic relationship patterns between different types of nodes were determined with reference to the Traditional Chinese Medicine Language System (TCMLS). The above knowledge data was imported into the Neo4j graph database using Cypher language to construct a knowledge graph for TCM syndrome differentiation of diabetes. A total of 14 types of labels, 538 nodes, and 4058 semantic relationships were constructed, achieving retrieval and visualization of knowledge for TCM syndrome differentiation of diabetes.

Acknowledgement:

This research was funded by National Natural Science Foundation of China(NO.81873235, NO.82104738, NO.82004258). We would like to thank Professor Xu Jiatuo and Associate Researcher Hu Xiaojuan for their guidance on the theme and structure of the paper. We also extend our gratitude to Dr. Wang Rui for his guidance and assistance in the knowledge graph aspect of this study.

References:

1. Chinese Diabetes Society. Guideline for the prevention and treatment of type 2 diabetes mellitus in China(2020 edition)(Part 1). *Chinese Journal of Practical Internal Medicine*, 2021,41(08):668-695.
2. Wang S, *et al*.Current Status and Development Trend of Knowledge Graph Research in Traditional Chinese Medicine. *Nanjing University Traditional Chinese Medicine*, 2022,38(03):272-278.

X-32

Comparative analysis of solvent efficiency in extracting active components of Atractylodis macrocephalae rhizome (AMR) (白術) using herbal extraction at 60°C, solid phase extraction (SPE), and targeted liquid chromatography-mass spectrometry (LC-MS) multiple reaction monitoring (MRM).

基於草藥提取、固相提取 （SPE） 和 液相色譜 - 質譜 （LC-MS） 多反應監測 （MRM） 對比分析不同溶劑在 60°C 條件下提取白術活性成分的效率

HY Chen, JH Goh, SH Lim, ZT Tay, XM Dong

Nanyang Technological University, School of Biological Sciences

Abstract:

Atractylodis macrocephalae rhizome (AMR) or 白術 Baizhu is a commonly used traditional Chinese medicinal herb to treat digestive disorders. Functions of AMR include spleen strengthening, qi boosting (健脾益氣), dispelling dampness (燥濕利水), reducing excessive perspiration (止汗) and fetus-calming (安　胎). It is known to be rich in pharmacologically active compounds such as Atractylenolide I, II, III, and Atractylone (白術內酯Ⅰ、Ⅱ、Ⅲ 及蒼術酮) Atractylenolides I, II, and III demonstrate potent anticancer effects by inducing apoptosis,inhibiting proliferation, and modulating pathways like Notch, JAK2/STAT3, and PI3K/Akt. They also regulate blood sugar and lipid levels, highlighting their broad therapeutic potential. This study compares the extraction efficiency of these four active components between two brands of AMR at 60°C using solvents of relatively different polarities: methanol, isopropanol, deionised water and rice wine (黃酒). AMR crude extract was obtained by sonicating the powdered herb with 300mL methanol, isopropanol, and deionised water respectively. Next, the samples were heated at 60°C, filtered and then purified using Solid Phase Extraction (SPE) to concentrate the target compounds and eliminate impurities. The purified extracts were then analyzed using targeted Liquid Chromatography-Mass Spectrometry (LC-MS) multiple reaction monitoring (MRM) to quantify Atractylenolide I, II, III, and Atractylone levels. Preliminary data from mass spectrometry shows Atractylenolide I, II, III were extracted out successfully from both brands A and B in methanol. Relative concentrations of Atractylenolide I,II,III of brand B are higher than brand A by 31x, 8x, 3x respectively in methanol. This suggests that brand B may have a superior extraction efficiency or higher initial content of these compounds, indicating its potential greater efficacy for therapeutic use. However, Atractylone was not detected in the preliminary LC-MS analysis as it is not stable under heat and light and thus in theory cannot be detected, to some extent serving as a negative control for our analysis method. Furthermore, raw extracts recovered from 10g of powdered AMR herb in deionised water were 39.9% for brand A and 25.8% for brand B respectively. The percentage of analytes extracted in isopropanol were 0.73% and 0.88% for brands A and B respectively, and in methanol, 8.76% and 6.05% respectively. Hence, deionised water demonstrated the highest recovery rate of raw extracts, while isopropanol

showed the lowest. Additionally, more extracts were recovered from brand A in deionised water and methanol, whereas more extracts were recovered in isopropanol for brand B.

Acknowledgement:

We would like to express our deepest appreciation and gratitude to Associate Professor Linda Zhong and Asst Professor Dong Xueming from School of Biological Sciences (SBS), Nanyang Technological University (NTU) Singapore. We also would like to thank Ms. Meng Wei from SBS Mass Spectrometry Core facility and Mr. Lo Wenzheng.

X-33

Comparative analysis of components of Atractylodes Macrocephala (白術) at 0°C extraction based on Liquid Chromatography-Mass Spectrometry (LC-MS) Multiple Reaction Monitoring (MRM)
基於液相色譜 - 質譜（LC-MS）多反應監測（MRM）在 0°C 提取下白術物成分比較分析

Chiz Yi Lin, Ling Nian Wen, Megan Tan Wan Yee,
Phoebe Ng, Tay Jing Ni, Dong Xueming

School of Biological Science, Nanyang Technological University

Abstract:

Introduction: Atractylodes macrocephala Koidz（ 白 術 ）is a medicinal herb commonly used in Traditional Chinese Medicine, known for strengthening the spleen, treating illnesses related to the gastro-intestinal system and benefiting the qi.

Objective: To characterize and compare 3 active components of interest (Atractylodes I, II, III) between two brands of Atractylodes Macrocephala Koidz at 0℃ extraction via Reverse Phase-High Performance Liquid Chromatography with Mass Spectrometry (RP-HPLC-MS).

Method: Based on a 1:10 ratio for sample to solvent, powdered Atractylodes samples were mixed with 3 different solvents of varying polarities, (Methanol, Acetone, Ethyl Acetate) to extract the active components. The powdered plant mixed with solvent was first sonicated at 0 ℃ , then filtered and dried at 30℃ using SpeedVac, before being put through solid phase extraction (SPE) to wash out impurities. Sep-Pak tC18 6cc Vac Cartridge (1 g Sorbent per Cartridge) was used with 95% acetonitrile as the mobile phase. The elutes were then dried prior to RP-HPLC-MS. LC-MS/MS with Multiple Reaction Monitoring was used to observe the transition of precursor ions to product ions with m/z 231.13 to 185.1 for Atractylodes I, m/z 233.32 to 187 for Atractylodes II, and m/z 249.32 to 231 for Atractylodes III. To ensure reliability and reproducibility, the experiment was performed as a triplicate with affixed durations and measurements.

Preliminary Results: Based on our preliminary results comparing between the two brands using methanol, Brand S shows more promising results with better yields and chemical makeup as opposed to Brand K. Additionally, methanol proves to be a better extracting solvent in comparison to acetone and ethyl acetate.

Our LC-MRM-MS analysis results shows that all 3 compounds were detected, with Atractylode II being the most abundant, followed by Atractylode I, and Atractylode III with the least. To support our conclusion, Brand S also shows to have a higher concentration of the aforementioned 3 components in contrast to Brand K.

Brand S carries Atractylode II and III that demonstrates a strong intensity that is thrice and twice respectively, than those of brand K.

Conclusion: As TCM grows more prominent locally, growing competition flock to join the market and supply to clinics. Brand K is a relatively new supplier registered with Singapore Accounting

and Corporate Regulatory Authority (ACRA) since 2019, as opposed to Brand S who has registered and established themselves since 2006.

As such, quality comparison using methods such as LC-MS can provide valuable insight to help clinics in choosing the most appropriate supplier. Our findings consistently demonstrate patterns suggesting Brand S is of better quality with higher concentrations of active compounds, thus making it more suitable to be utilized within clinical practice for distribution to patients.

Acknowledgement:

We would like to express our deepest appreciation and gratitude to Associate Professor Linda Zhong and Asst Professor Dong Xueming from School of Biological Sciences (SBS), Nanyang Technological University (NTU), Singapore. We also would like to thank Ms. Meng Wei from SBS Mass Spectrometry Core facility and Mr. Lo Wenzheng.

V-01

ZhengQiPian preparation against COVID-19 infection by anti-inflammatory and antiviral effects
中藥復方正氣片通過抗炎和抗病毒的作用對抗新冠肺炎感染

Yu Zhao[1], Pei Zhang[1], Jiange Zhang[1]

[1] *The Research Center of Chiral Drugs, Innovation Research Institute of Traditional Chinese Medicine (IRI), Shanghai University of Traditional Chinese Medicine, Shanghai, 201203, China*

Abstract:

The coronavirus disease 2019 (COVID-19) virus continues to mutate and the epidemic occurs repeatedly[1]. Although patients appear asymptomatic or have mild symptoms, some mutations make it easier for the virus to transmit or develop resistance to vaccines[2]. Traditional Chinese medicine (TCM) has unique advantages in the battle against COVID-19 infection, and its efficacy has been recognized[3]. ZhengQiPian (ZQP) is a preparation of Huoxiang Zhengqi prescription recommended by the treatment of COVID-19 infection in Shanghai[4]. ZQP is composed of *pogostemon cablin oil* (Guanghuoxiang, GHX), *radix aucklandiae*, *atractylodes lancea*, *magnolia officinalis rehd* (Houpo, HP), *pinellia ternate*, *orange peel*, *poria cocos* (Fuling, FL), *perilla leaf oil* (Zisu, ZS), *zingiber officinale roscoe and glycyrrhiza uralensis fisch* (Gancao, GC). It has the effects of dispersing wind and cold, removing dampness and dampness, which is suitable for asymptomatic COVID-19 patients. However, the chemical composition of ZQP is complex, and its efficacy material base still need to be explored.

Here, a combination of computer virtual screening and biological verification method was used to discover the active components in ZQP. The chemical structures of more than 700 active components, RBD-ACE2 complex, main protease (3CL/M^{Pro}), and RNA-depentant RNA polymerase (RdRp) were chosen to conduct virtual screening. Based on the above results, potential components were obtained for subsequent study. And, anti-inflammatory effect of ZQP and potential components was evaluated in LPS-induced inflammation model. Then, the activity of ZQP and potential components against 3CL/M^{Pro} and RdRp was tested. Finally, the active moleculars of antiviral effect were discovered through non-target metabolomics.

We found that the cavity of RBD-ACE2 complex was too narrow to bind the ligand. Lignans in HP and triterpenes in FL could dock into the active site of 3CL/M^{Pro}. And, polysaccharides and flavonoids in GC have potential activities on RdRp. In addition, smaller active molecules in GHX and ZS have potential activities on 3CL/M^{Pro} and RdRp. Biological activity further showed that ZQP has dual effects of anti-inflammatory and antiviral. HP, FL, GHX in ZQP may account for its anti-inflammatory effect, and GHX, HP and ZS in ZQP jointly inhibit the 3CL/Mpro activity, even through all components inhibit the RdRp activity. Moreover, non-target metabolomics and activity study reconfirmed that patchouli alcohol, magnolol, perillene and perillyl alcohol may collectively play a vital role in the antiviral effect of ZQP. In conclusion, ZQP exerts anti-inflammatory and antiviral effects against COVID-19 infection through multi-component and multi mechanisms of action.

Acknowledgement:

This work was supported by grants from Shanghai Frontiers Science Center for Traditional

Chinese Medicine Chemical Biology, Shanghai Science and Technology Development Fund from Central Leading Local Government (YDZX20223100001004), Traditional Chinese and Western Medicine Collaborative Guidance Project of Integrated Hospital from Shanghai Municipal Health Commission/Shanghai Municipal Administration of Traditional Chinese Medicine (ZXXT-202303).

References:

1. Ikbel Hadj Hassine. Covid-19 vaccines and variants of concern: A review. Rev Med Virol 2022;32:e2313.
2. Thilini H. Senevirathne, Demi Wekking, Joseph W.R. Swain, et al. COVID-19: From emerging variants to vaccination. Cytokine & Growth Factor Reviews 2024;76:127-141.
3. Kexin Jia, Yijie Li, Tiegang Liu, et al. New insights for infection mechanism and potential targets of COVID-19: Three Chinese patent medicines and three Chinese medicine formulas as promising therapeutic approaches. Chinese Herbal Medicines 2023;15:157-168.
4. Zhenwei Wang, Kehua Shi, Yunfei Lu, et al. Expert Consensus on TCM Diagnosis and Treatment of COVID-19 Infection in Shanghai (2022) Spring Edition. [DB/OL]. Shanghai: Shanghai University of Traditional Chinese Medicine Affiliated Shuguang Hospital, 2022. https://mp.weixin.qq.com/s/B1Axgv3BE1qOYngdo8hDEw.

V-02

Inhibition of PI3K/Akt signaling pathway is involved in the inhibitory effects of luteolin-plus-scoparone on the hyperproliferation of fibroblast-like synoviocytes

Shi-Jia Zhang[1], Ying-Jie Chen[1,2], Jia-Ying Wu[1,2], Zhi-Ling Yu[1,2*]

[1] *School of Chinese Medicine, Hong Kong Baptist University, China.*

[2] *HKBU Shenzhen Institute of Research and Continuing Education, China.*

** Corresponding author*

Abstract:

Rheumatoid Arthritis (RA) is a systematic autoimmune disease associated with chronic inflammation and synovial hyperplasia. Fibroblast-like synoviocytes (FLS) are characterized with tumor-like properties, such as abnormal proliferation and enhanced migration, and play a pathogenic role in RA[1]. Current RA medications have toxicities and side-effects[2]. Safe and highly effective drugs for treating RA are needed. Multi-target TCM (traditional Chinese medicine)-based herbal drugs are advantageous in treating RA. Our previous studies showed that a TCM formula comprising Lonicerae Japonicae Flos (LJF) and Rosae Multiflorae Fructus (RMF) has anti-RA effects without over toxicity in collagen-induced arthritis (CIA) rats[3]. Luteolin, a flavone, is the main compound of LJF. Scoparone, a coumarin, is one of the main compounds of RMF. Luteolin has been shown to exert anti-RA effects by inhibiting MAPK (ERKs) and PI3K/Akt signaling pathways[4]. Scoparone is able to alleviate inflammation through inhibiting TLR4/NF-κB pathway. Activation of the pathways targeted by the two compounds is known to promote RA development[5,6]. Since luteolin and scoparone target different pathogenic pathways of RA, we speculated that luteolin-plus-scoparone (Lu-plus-Sco for short) has synergistic anti-RA effects.

TNF-α-stimulated RA-FLS were used to evaluate the in vitro effects of Lu-plus-Sco. Synergism of the drug combination was evaluated using coefficient of drug interaction (CDI) values. Cell proliferation assay results showed that luteolin (10 μM) in combination with scoparone (50, 100, 200, 300 μM) treatments synergistically reduced the viability of TNF-α-stimulated RA-FLS (CDI<1). The CDI values of luteolin in combination with scoparone, at the ratio of 1:5, 1:10, 1:20 and 1:30, were 0.77, 0.83, 0.65, 0.73, respectively. At the 1:20 ratio, Lu-plus-Sco exhibited the optimal synergistic effect. Network pharmacology analysis predicted that PI3K/Akt signaling pathway is involved in the anti-RA effects of Lu-plus-Sco. Western blotting results showed that TNF-α stimulation increased the phosphorylation of Akt (Ser473) in RA-FLS, which was suppressed by Lu-plus-Sco.

In summary, we for the first time demonstrated that Lu-plus-Sco exerts synergistic effects in suppressing RA-FLS hyperproliferation, and that inhibition of the PI3K/Akt signaling pathway is involved in the anti-RA effects of Lu-plus-Sco. This study provided pharmacological data necessary for developing Lu-plus-Sco into a novel drug for treating RA.

Acknowledgement:

This work was supported by the Health and Medical Research Fund (grant No.: 20211441).

V-03

Exploration of Xu Xiaoli's *Touching Complaints: Pulse Diagnosis in Early Chinese Medicine*
許小麗《觸覺之訴：早期中國醫學的脈診術》探微

Huimin Ma

Institute of Humanities of Science,Technology and Humanities,Shanghai University of Traditional Chinese Medicine.

Abstract:

European sinologist Elisabeth Hsu is a professor of anthropology at the University of Oxford and one of the famous scholars who studies ancient Chinese medicine. Her work *Pulse Diagnosis in Early Chinese Medicine: The Telling Touch* presents a different understanding of Chinese medicine. This article introduces the basic structure and content of *Pulse Diagnosis in Early Chinese Medicine: The Telling Touch*. The content of this book is mainly the English translation and analysis of Chunyu Yi's biography in Volume 105 of "Historical Records". On this basis, this article attributes Chunyu Yi's role in the biography into three categories: first, an invisible role in politics; second, his medical records were the object of Sima Qian's criticism of aristocratic morality; third, he was an expert in pulse diagnosis. Innovative physician. This multi-dimensional analysis of historical figures can provide reference for the study of medical social history.

Acknowledgement:

This symposium is supported by MCMIA. And herein we also want to thank our organization colleagues from The Chinese University of Hong Kong, The University of Hong Kong, The Hong Kong University of Science and Technology, Hong Kong Baptist University, The Hong Kong Polytechnic University, City University of Hong Kong, The University of Macau and Shanghai University of Traditional Chinese Medicine and Nanyang Technological University for their hard work and those who gave us great supports in the organization of this symposium.

References:

1. Li G, et al. 7th International Postgraduate Symposium on Chinese Medicine. *Chinese Medicine*, 2011. 8(11), 100-12.
2. Li G, *et al. Traditional Chinese Medicine, the seventh edition*, 2011. 100-12.

V-04

Anti-mesangial proliferative glomerulonephritis effects of the Chinese medicine formula Da-Yu-Gong Decoction
中藥複方大禹功湯的抗系膜增生性腎炎作用

S CHEN[1], ZL YU1*

[1] *School of Chinese Medicine, Hong Kong Baptist University, Hong kong*

** Corresponding author.*

Abstract:

Mesangial proliferative glomerulonephritis (MsPGN), the most common pathological type of primary glomerular disease, is characterized by diffuse glomerular mesangial cell proliferation, inflammatory response, and varying degrees of mesangial matrix expansion, which often leads to end-stage renal disease. Despite a combined treatment with glucocorticoids, immunosuppressants, antiplatelet agents, and antilipidemic drugs is effective in treating MsPGN, the treatment duration is long and the efficacy is poor. In the book Modern Practical Chinese Medicines, an herbal formula Da-Yu-Gong Decoction (DYGD) consisting of Rhei Radix et Rhizoma (dried roots and rhizomes of Rheum palmatum L.) and Rosae Multiflorae Fructus (dried fruits of Rosa multiflora Thunb.) is documented for treating nephritis. To our knowledge, there is no pharmacological basis for this clinical application of DYGD. This study aimed to investigate the anti-MsPGN effects and mechanisms of an extract of DYGD.

Griess assay results showed that among different DYGD extracts, the ethyl acetate extract (hereafter refer to as DYGDE) had the most potent effect in inhibiting nitric oxide (NO) release from RAW264.7 cells. MTT assays showed that DYGDE had a dose-dependent inhibitory effect on PDGF-BB-stimulated proliferation of human HRMC glomerular mesangial cells and rat HBZY-1glomerular mesangial cells. RT-qPCR results showed that DYGDE was capable of inhibiting the up-regulation of cyclin D2, collagen-1, and α-SMA in PDGF-BB-stimulated HRMC or HBZY-1 cells. Analyses of GSE93798 and GSE14795 datasets from Gene Expression Omnibus (GEO) coupled with network pharmacology analysis revealed that C-type lectin receptor signaling pathway and the Leukocyte transendothelial migration pathway were potentially involved in the anti-MsPGN effects of the formula, which warrant further investigations. Our findings are expected to provide pharmacological justifications for the use of DYGD in treating MsPGN.

Acknowledgement:

This work was supported by the GRF:12100221; Science and Technology Innovation Committee of Shenzhen: JCYJ20200109150719846.

V-05

Ginsenoside Rg3 in combination with artesunate overcomes sorafenib resistance in hepatocellular carcinoma models
人參皂苷 3 聯用青蒿琥酯在肝細胞癌模型上克服索拉非尼耐藥

YU Xiaofei[1], WANG Xiaoqi[1], HAN Ruixuan[1], BAI Jingxuan[1], FU Xiuqiong[1]*, YU Zhiling[1]*

[1] *Center for Cancer and Inflammation Research, School of Chinese Medicine, Hong Kong Baptist University, Hong Kong, China.*

Abstract:

Hepatocellular carcinoma (HCC), the most common type of primary liver cancer, is the sixth most common cancer worldwide1. HCC is also the third leading cause of cancer deaths in the world2. Sorafenib, a multi-target tyrosine kinase inhibitor, can slow down the progression of HCC by inhibiting tyrosine kinases, which are essential for the proliferation of cancer cells. Unfortunately, the clinical effectiveness of sorafenib is often limited due to the development of drug resistance. Ginsenoside Rg3 (Rg3), a main bioactive triterpenoid saponin of red ginseng, is the active ingredient of the anti-cancer adjuvant drug "Shenyi Capsule". Studies have indicated that Rg3 is able to overcome multi-drug resistance in cancer cells, and it can also synergize anti-HCC effects of sorafenib3. Artesunate (ART), an approved antimalarial drug, is a derivative of artemisinin, a sesquiterpene lactone found in the Chinese medicinal herb Artemisia annua. Pharmacological studies demonstrated that ART and sorafenib synergistically inhibit HCC tumor growth in mice4. It has been found that co-administration of Rg3 and ART can inhibit tumor growth in an S180 sarcoma mouse model5, but whether Rg3 and ART synergistically overcome sorafenib resistance in HCC is unknown. This study aimed to investigate the pharmacology effects and molecular mechanisms of Rg3-plus-ART in overcoming sorafenib resistance in HCC.

CCK8 assay results showed that Rg3-plus-ART exerted synergistic effects in reducing the viability of sorafenib-resistant HCC cells in time- and dose- dependent manners. Flow cytometric analyses indicated that Rg3-plus-ART induced apoptosis and S-phase cell cycle arrest in sorafenib-resistant HCC cells. Transwell assays demonstrated that Rg3-plus-ART could suppress the migratory and invasive abilities of sorafenib-resistant HCC cells.

In summary, Rg3-plus-ART synergistically overcomes sorafenib resistance in HCC cells. This study indicates that Rg3-plus-ART, discovered by drug repurposing, has the potential to be developed into an adjuvant drug for treating sorafenib-resistant HCC.

Acknowledgement:

This work was supported by the grant HMRF19200791.

References:

1. 1. Qi F, Li J, Qi Z, et al. Comprehensive Metabolic Profiling and Genome-wide Analysis Reveal Therapeutic Modalities for Hepatocellular Carcinoma. Research (Wash D C). 2023;6:0036.

2. Llovet JM, Montal R, Sia D, Finn RS. Molecular therapies and precision medicine for hepatocellular carcinoma. *Nat Rev Clin Oncol.* 2018;15(10):599-616.

3. Lu M, Fei Z, Zhang G. Synergistic anticancer activity of 20(S)-Ginsenoside Rg3 and Sorafenib in hepatocellular carcinoma by modulating PTEN/Akt signaling pathway. *Biomed Pharmacother*. 2018;97:1282-1288.

4. Jing W, Shuo L, Yingru X, et al. Artesunate promotes sensitivity to sorafenib in hepatocellular carcinoma. *Biochem Biophys Res Commun*. 2019;519(1):41-45.

5. X. Li, C. Junping, S. Huiping, L. Xia, Study on the Anti-Tumor Activity of Ginsenoside Rg3 Combined with Artesunate, China Jounral of Chinese Medicine. 28 (2013) 6–7.