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

11-12/8/2022

Organiser

MCMTA
現代化中醫藥國際協會

Collaborating Organisations

HKTDC 香港貿發局

香港中文大學 THE CHINESE UNIVERSITY OF HONG KONG

CityU Knowledge Transfer Office 香港城市大學 City University of Hong Kong

香港浸會大學 HONG KONG BAPTIST UNIVERSITY

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

International Conference of the Modernization of Chinese Medicine & Health Products (ICMCM) 2022

國際現代化中醫藥及健康產品會議 2022

Welcome Message

On behalf of the Modernized Chinese Medicine International Association (MCMIA), I wish you a warm welcome to this year's International Conference of the Modernization of Chinese Medicine & Health Products (ICMCM).

For the first time, this important event is being organised with funding support from the Professional Services Advancement Support Scheme (PASS) of the Commerce and Economic Development Bureau of the Hong Kong Special Administrative Region (HKSAR) Government. I would like to thank PASS for providing the grant for this international conference that has been held in Hong Kong for 20 consecutive years with the aim of promoting international exchange and cooperation in the field of traditional Chinese medicine (TCM).

Thanks must also go to the Hong Kong Trade Development Council and all other collaborating organisations, including 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, and the Chinese Medicine Experimental Pharmacology Association of the China Association of Chinese Medicine. The close cooperation and strong support of these organisations over the years is greatly appreciated.

The theme of this year's ICMCM is "Traditional Chinese Medicine based New Drug Discovery and Clinical Studies", focusing on research achievements in the integration of Chinese and Western medicine and successful case sharing. Last year's conference was joined by nearly 800 TCM practitioners and this year's ICMCM continues to be held in a hybrid physical-online format, enabling more people from home and abroad to participate without geographical restrictions. In addition to the main conference, the International Postgraduate Symposium on Chinese Medicine is scheduled during the conference. This year, more than 100 research papers have been received with students from local universities, the Shanghai University of Traditional Chinese Medicine and Beijing University of Chinese Medicine taking part.

For the past two years, the COVID-19 pandemic has presented the world with unprecedented challenges. TCM was heavily involved in the areas of epidemic prevention, treatment and rehabilitation and played an important role in the treatment system. We hope the HKSAR Government will continue to expand the popularity and application of TCM in Hong Kong and help to promote its long-term development in the city. Building on Hong Kong's unique position and complementing the nation's Development Plan for TCM as part of the 14th Five-Year Plan, our Association will work to actively strengthen Hong Kong's role under the blueprint set out in the "Construction Plan for the Chinese Medicine Highlands in the Guangdong-Hong Kong-Macao Greater Bay Area" and continue to promote the integration of Hong Kong's TCM enterprises as part of the overall national development.

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)，歡迎各位出席今年「國際現代化中醫藥及健康產品會議」(ICMCM)。

今屆會議首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，以支援這個在香港連續舉辦了 20 年的中醫藥國際會議，加強中醫藥的國際交流和合作。本人謹借此機會向 PASS 的撥款致謝。

同時，感謝香港貿易發展局以及所有合作機構，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及中華中醫藥學會中藥實驗藥理分會，多年來與我們攜手合作及鼎力支持。

今年 ICMCM 的議題為「中藥創新藥物研發及臨床研究」，集中討論中西結合研究的成果及分享成功個案。去年會議共有接近 800 位業界代表參加，今年會議繼續以實體及網上形式舉行，務求讓更多國內外中醫藥業內人士不受地域限制，參加此項年度國際會議。另外，於會議第二天舉行的「國際研究生中醫藥研討會」，今年共收到超過 100 篇研究論文，參與的大學除本地大學外，也有上海中醫藥大學及北京中醫藥大學。

新型冠狀病毒 (COVID-19) 疫情在過去兩年多為我們帶來了前所未有的挑戰。期間，中醫藥深度參與疫情的預防、治療及復康，在治療體系中發揮了重要作用。未來，期望香港特區政府繼續擴大中醫藥在香港的普及與應用，從而推動本地中醫藥的長遠發展。藉著香港的獨特優勢，配合國家「十四五中醫藥發展規劃」，積極加強香港在「粵港澳大灣區中醫藥高地建設方案」藍圖下的角色，推動香港中醫藥企業融入國家發展大局。

現代化中醫藥國際協會

會長

魯展雨

Welcome Message

A very warm welcome to the 2022 International Conference of the Modernization of Chinese Medicine and Health Products (ICMCM), a premier event organised by the Modernized Chinese Medicine International Association together with the Hong Kong Trade Development Council and eight scientific research institutions. The aim of this two-day event is to provide a forum for traditional Chinese medicine (TCM) industry practitioners to gather and keep abreast of the latest developments in Chinese medicine and related health products.

This year's ICMCM, which continues to be a hybrid event held in both physical and online formats, is themed "Traditional Chinese Medicine based New Drug Discovery and Clinical Studies". The talks are delivered by an array of heavyweight scholars and experts from renowned medical schools and research centres in Australia, Austria, Mainland China, Germany, Hong Kong, Japan and the United States.

The speakers cover a broad range of topics, detailing their research in using Chinese medicine to treat depression, tumours, diabetic kidney disease and COVID-19, and revealing the findings of clinical studies on the application of TCM in areas such as antiviral drug development and phytomedicines. Other speakers share their success stories in using Chinese medicine in adjuvant therapy for cancer, the treatment of gastrointestinal diseases, the commercialisation of anti-ageing ingredients and more. Meanwhile, the 18th edition of the International Postgraduate Symposium on Chinese Medicine is held in a physical format on the second day of the conference, providing a dedicated platform through which postgraduate students committed to the TCM industry can present their latest research papers.

I believe we will all have much to learn and take away from this year's ICMCM and I wish you an inspiring and 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聯同香港貿發局，以及八大科研機構攜手籌辦的「國際現代化中醫藥及健康產品會議」。這個為期兩天的活動，讓中醫藥業者聚首一堂、掌握中醫藥及保健產品的最新發展。

今年會議以「中藥創新藥物研發及臨床研究」為主題，繼續以實體及網上模式同步舉行，邀請到來自澳洲、奧地利、中國內地、德國、香港、日本及美國著名醫藥學院及研究中心的重量級學者及專家參加，分享真知灼見。

多位講者於會議上發表研究成果，包括利用中醫藥抗抑鬱、腫瘤、糖尿病、腎病與新型冠狀病毒(COVID-19)，以及展示抗病毒藥物與草藥應用等的臨床研究。另有講者會分享利用中藥輔助癌症治療、醫治腸胃病等成功個案以及抗衰老原料的開發及產業化。而「第 18 屆國際研究生中醫藥研討會」則於會議第二天以實體模式舉行，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。

「國際現代化中醫藥及健康產品會議」內容豐富，我祝願各位在會議中獲益良多。

香港貿易發展局總裁

方舜文

International Conference of the Modernization of Chinese Medicine & Health Products (ICMCM) 2022
國際現代化中醫藥及健康產品會議 2022

Traditional Chinese Medicine Based New Drug Discovery and Clinical Studies
中藥創新藥物研發及臨床研究

Date & Time 日期及時間	: 11 / 8 / 2022 (Thursday 星期四)	9:30am – 5:45pm
	12 / 8 / 2022 (Friday 星期五)	9:30am – 5pm
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 (Attendants are welcomed to participate the Conference in either format 歡迎參會人士以親身或網上形式出席)	
CME Points 註冊中醫進修學分	: 11/8: AM & PM Sessions 早上及下午講座	Total 共 6 points 學分
	12/8: AM Session 早上講座時間	Total 共 3 points 學分
	**12/8 PM 下午 : No CME credits will be granted for Postgraduate symposium session* *研究生研討會環節不設學分*	
Languages 語言	: English and Putonghua 英語及普通話 (With simultaneous interpretation service 設即時傳譯服務)	
Website 網站	: http://www.hktdc.com/icmcm	

11 / 8 / 2022 (Thursday 星期四)

9:30 - 10:00 **ICMCM Opening Ceremony**
(Registration starts at 9am)

Session 1: Keynote Speech
第一節 : 主題演講

Moderators 主持人 :

- Professor Lin Zixiu, Professor and Director,
  School of Chinese Medicine, Chinese University of Hong Kong
  香港中文大學中醫藥學院院長及教授 林志秀教授 (Hong Kong 香港)

- Professor 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 (Hong Kong 香港)

Remarks 註 :
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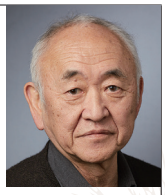
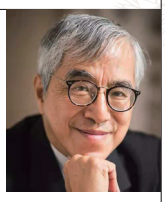
10:15 - 10:55	**未來醫學 融貫中西 : WE Medicine** **Case Study: YIV-906** Prof Yung-Chi Cheng, Henry Bronson Professor of Pharmacology and Medicine, Yale University 美國耶魯大學醫學院藥理學系講座教授鄭永齊教授	
10:55 - 11:35	**從中醫藥尋找抗新冠藥物創新轉化的源泉** Professor Zifeng Yang, Associate Dean, The First Affiliated Hospital of Guangzhou Medical University, Guangzhou Institute of Respiratory Health 廣州醫科大學附屬第一醫院廣州呼吸健康研究院副院長 楊子峰教授	
11:35 - 12:15	**The basic and clinical research of anti-depressive effect of Lycium Bararum Glycopeptides** **枸杞糖肽抗抑鬱的基礎研究和臨床實驗** Professor Kwok-Fai So, Jinan University, Guangdong-HongKong-Macau Institute of CNS Regeneration 暨南大學 粵港澳中樞神經再生研究院 蘇國輝教授	
12:15 - 13:30	**Lunch Break** 午膳時間	
	Session 2: From CM clinical studies to new CM products **第二節：從中醫臨床到中藥新藥**	
	Moderators 主持人 : - Professor Xu Hong Xi, Honorary Dean, Shanghai University of Traditional Chinese Medicine 上海中醫藥大學中藥學院名譽院長 徐宏喜教授 - Professor 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	
13:30 - 14:00	**COVID-19 and Chinese Herbal Medicine – from clinical research to practical use** Professor Ka Kit Hui, UCLA Department of Medicine	
14:00 - 14:30	**The impact of individual gut microbiota on activity of Chinese herbal medicine** Professor Rudolf Bauer, Institute of Pharmaceutical Sciences, University of Graz, Graz, Austria	

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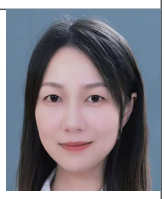
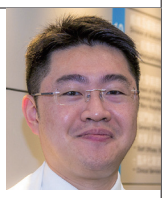
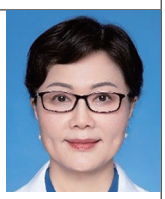
14:30 - 15:00	**Phytomedicine application in clinical practice** Professor Thomas Efferth, Johannes Gutenberg University, Institute of Pharmaceutical and Biomedical Sciences, Mainz, Germany	
15:00 - 15:30	**Chemical characterization of Prunella vulgaris Glycoconjugates and its anti-HSV Activities** **夏枯草多糖複合物的化學表徵及抗皰疹病毒的活性研究** Dr Li Yang, Shanghai University of Traditional Chinese Medicine 上海中醫藥大學中藥學院 李洋博士	
15:30 - 15:45	**Tea Break** 茶聚	
	Session 3: R&D on Chinese Medicines 第三節：最新中藥科研成果	
	Moderators 主持人： - Professor 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 (Hong Kong 香港) - Mr Edward Yau, Vice President & Chief Executive, Modernized Chinese Medicine International Association 現代化中醫藥國際協會副會長兼理事長 邱福榮先生 (Hong Kong 香港)	
15:45 - 16:15	**Basic and clinical research on the development of new anti-cancer drug elemene liposome based on the theory of "molecular compatibility" of integrated traditional Chinese and western medicine** 中西醫結合“分子配伍”理論研發抗癌新藥欖香烯脂質體的基礎與臨床研究 杭州師範大學醫學院整合藥學院院長 謝恬教授	
16:15 - 16:45	**Effectiveness and mechanism of Liu-wei-di-huang-wan (Rehammnia-6)-based treatment for diabetic kidney disease** **六味地黃丸治療糖尿病腎病的療效及機理** Dr Chan Kam Wa, Department of Medicine, School of Clinical Medicine, the University of Hong Kong 香港大學臨床醫學院 陳錦華博士	
16:45 - 17:15	**A RCT of application of Zishen Yutai Pill in IVF-ET** **滋腎育胎丸在 IVF-ET 中應用的隨機對照臨床研究** Professor Yang Dongzi, Sun Yat-Sen Memorial Hospital, Sun Yat-Sen University 中山大學孫逸仙紀念醫院 楊冬梓教授	

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17:15 - 17:45	**Development of a novel standardised herbal intervention for the treatment of vascular dementia** Professor Dennis Chang, Director, NICM Health Research Institute, Western Sydney University, NSW, Australia	
	End of Day 1 Conference 第一天會議結束	

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12 / 8 / 2022 (Friday 星期五)

9:00 - 9:30 **Registration 登記**

Session 4: Product Commercialization & Successful Cases Sharing
第四節：產品商業化及成功個案分享

Moderators 主持人：

- Mr Harry Yeung, Founding Council Member, Modernised Chinese Medicine International Association
  現代化中醫藥國際協會創會董事 楊國晉先生 (Hong Kong 香港)

- 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 (Hong Kong 香港)

09:30 - 10:00 **GI research with Chinese herbal medicine, from clinical research to new drug discovery**
中醫藥治療胃腸道疾病 - 從臨床研究到新藥研發
Professor Bian Zhao Xiang, Associate Vice-President (Chinese Medicine Development), Hong Kong Baptist University
香港浸會大學協理副校長 (中醫藥發展) 卞兆祥教授

10:00 - 10:30 **Randomized, double-blind, and placebo-controlled clinical trials on rare Chinese medicinal materials: Red Ginseng and Ejiao**
名貴中藥紅參及阿膠的隨機、雙盲臨床研究
Professor Li Zhang, Shanghai University of Traditional Chinese Medicine
上海中醫藥大學 張莉教授

10:30 - 11:00 **Adjuvant therapy of Coriolus versicolor extracts for cancer**
雲芝提取物的癌症輔助治療
Dr Xiaoyu JI, R&D project coordinator, Purapharm Corporation Ltd
培力 (香港) 健康產品有限公司研發項目統籌主任 季曉宇博士

11:00 - 11:30 **Dendrobium Candidum and the Promotion and Development of Traditional Chinese Medicine Culture**
鐵皮石斛與弘揚發展中醫藥文化
Mr Chen Lizuan, Director,
Zhejiang Tianhuang Medicinal Plant Pharmaceutical Co., Ltd
浙江天皇藥業有限公司董事長 陳立鑽先生

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11:30 - 12:00	**Successful commercialization of an anti-aging ingredient based on advanced research: Latest advancement of SIRTMAX® (Kaempferia parviflora extract) in SIRT1 activation and clinical study** **以高端科技為基礎抗衰老原料的成功開發以及產業化 : SIRTMAX® (Kaempferia parviflora extract) 的 SIRT1 活性化研究和臨床研究的最新進展** Dr Jin Tatsuzaki, President & CEO, TOKIWA Phytocamical Co., LTD 株式會社常磐植物化學研究所社長 & CEO 立崎 仁博士	
12:00 - 12:30	**Memorial lecture in memory of Dr. Albert Wong, Founding President of MCMIA** **現代化中醫藥國際協會創會會長黃伯偉博士紀念演講 - 中醫藥國際化進展** Professor Xu Hong Xi, Distinguished Professor, Shanghai University of Traditional Chinese Medicine 上海中醫藥大學中藥學院首席教授 徐宏喜教授	
12:30 - 14:00	**Lunch Break** 午膳時間	
Session 5: The 18th International Postgraduate Symposium on Chinese Medicine **第五節 : 第 18 屆國際研究生中醫藥研討會** • Co-ordinator 統籌單位 : The University of Hong Kong 香港大學		
	Moderators 主持人 : - Dr Rong Jianhui, Associate Professor, School of Chinese Medicine, The University of Hong Kong 香港大學中醫學院副教授 榮建輝博士 (Hong Kong 香港)	
14:00 - 16:45	**The 18th International Postgraduate Symposium on Chinese Medicine** **第 18 屆國際研究生中醫藥研討會**	
16:45 - 17:00	**Closing Remarks 閉幕總結** Mr Harry Yeung, Founding Council Member, Modernised Chinese Medicine International Association 現代化中醫藥國際協會創會董事 楊國晉先生 (Hong Kong 香港)	
End of Day 2 Conference 第二天會議結束		

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ICMCM 2022 Organizing Committee 籌委會

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

Mr Arthur Yeung, Modernized Chinese Medicine International Association
現代化中醫藥國際協會 楊定華先生

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

Co-conference Chairmen 會議聯席主席

Professor Lin Zhi Xiu, Director, School of Chinese Medicine, The Chinese University of Hong Kong
香港中文大學中醫學院院長 林志秀教授

Professor Feng Yi Bin, 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

Conference Organizing Committee 會議籌備委員會

Professor Vivian Taam Wong, JP, Modernized Chinese Medicine International Association
現代化中醫藥國際協會 黃譚智媛教授太平紳士

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

Professor Xu Hong Xi, Shanghai University of Traditional Chinese Medicine
上海中醫藥大學 徐宏喜教授

Professor Zhang Hongjie, Hong Kong Baptist University
香港浸會大學 張宏杰教授

Professor Karl Tsim, Hong Kong University of Science and Technology
香港科技大學 詹華強教授

Professor 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
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Organiser

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Session 1
第一節

Keynote Speech
主題演講

未來醫學 融貫中西 : WE Medicine
Case Study: YIV-906

Prof Yung-Chi Cheng, Henry Bronson Professor of Pharmacology and Medicine,
Yale University USA
美國耶魯大學醫學院藥理學系講座教授鄭永齊教授

ABSTRACT 摘要

（只提供英文版本）

Aging-related diseases are complex and heterogeneous. A systems biology paradigm that utilizes polychemical mixtures acting on multiple targets may lead to new breakthroughs towards preventing and treating complicated diseases.

To advance experience-based traditional medicines (such as TCM) to become evidence-based medicines may be helpful, key issues to be addressed, include: 1) high-quality and consistent preparation of drug product, 2) well-designed clinical trials 3) mechanisms of action knowledge.

The development of the systems biology cancer drug YIV-906 is an example of how a botanical drug could be developed – using mechanism-based quality control and conducting rigorous clinical studies.

With collaboration and the convergence of the knowledge and best practices of Western and Eastern medicines, the future of medicine could be WE Medicine.

Speaker's Biography 講者簡介

（只提供英文版本）

EDUCATION:

Institution	Subject & Degree	Year
Tunghai University, Taiwan	Chemistry	
Republic of China	B.S.	1966
Brown University	Biochemical Pharmacology	
Providence, RI	Ph.D.	1972

POSTDOCTORAL TRAINING:

6/72 8/72 Research Associate, Section of Biochemical Pharmacology, Brown University, Providence, Rhode Island with Dr. R.E. Parks.

9/72 6/73 Postdoctoral Research Staff, Pharmacology Department, School of Medicine, Yale University, New Haven, Connecticut with Dr. W.H. Prusoff.

POSITIONS HELD:

7/90-2011 Program Director, Developmental Therapeutics/Chemotherapy, Yale Comprehensive Cancer Center, New Haven, CT.

7/89 Present Henry Bronson Professor of Pharmacology, Yale University School of Medicine, New Haven, CT.

6/89 Present Professor of Pharmacology and Internal Medicine, Yale University School of Medicine, New Haven, CT.

7/79 6/89 Head, Drug Development Program, Lineberger Cancer Research Center, University of North Caroli¬na, School of Medicine, Chapel Hill, NC.

4/79 6/89 Professor, Departments of Pharmacology and Medicine, University of North Carolina, School of Medicine, Chapel Hill, NC.

2/87 12/87 Special Chair, Institute of Biomedical Science, Academia Sinica, Taipei, Taiwan, Republic of China.

9/77 4/79 Cancer Research Scientist V, Department of Experimental Therapeutics, Roswell Park Memorial Institute, Buffalo, NY.

6/77 4/79 Associate Professor, Department of Pharmacology, Roswell Park Division of the Graduate School, State University of New York, Buffalo, NY.

6/76 9/77 Associate Cancer Research Scientist, Department of Experimental Therapeutics, Roswell Park Memorial Institute, Buffalo, NY.

9/74 6/77 Assistant Professor, Department of Pharmacology, Roswell Park Division of the Graduate School, State University of New York, Buffalo, NY.

9/74 6/76 Senior Cancer Research Scientist, Department of Experimental Therapeutics, Roswell Park Memorial Institute, Buffalo, NY.

7/73 7/74 Research Associate (equivalent to Research Assistant Professor), Department of Pharmacology, Yale University School of Medicine, New Haven, CT.

PROFESSIONAL SOCIETIES:

American Association for Cancer Research

Member of Sigma XI

American Microbiology Society

American Society of Pharmacology and Experimental Therapeutics

American Society of Biological Chemistry

American Association for the Advancement of Science

American Society for Clinical Pharmacology and Therapeutics

Society of Chinese Bioscientists in America

The Protein Society

EDITORIAL BOARDS:

Associate Editor, Methotrexate Update, Lederle Laboratories	1983 1986
Editorial Board, Virus Genes, Martinus Nijhoff Publishing	1987 Present
Editorial Board, Cancer Communications, Pergamon Press	1989 Present
Associate Editor, Cancer Research, Waverly Press	1990-1995
Associate Editor, Biochemical Pharmacology, Pergamon Press	1990-2003
Advisory Board, J. Biomedical Science, Kerger Press	1995-Present
Advisory Board, Chinese Journal of Pharmacology & Toxicology	1995-Present

HONORS:

American Leukemia Society Scholar	1976-1981
Rhoads Memorial Award, American Association of Cancer Research	1981
Outstanding Alumni Award, Brown University, Providence, RI	1990
Honorary Professor, Beijing Medical University, Beijing, China	1991
Honorary Professor, Union Medical University and CAMS, Beijing, China	1992
Outstanding Award in Bio-Medical Science, SCBA	1992
Academician, Academia Sinica, Republic of China	1994
Outstanding Investigator Award, National Cancer Institute	1987 1997
Honorary Vis Sci, Institute of the Advancement of Chinese Medicine, Hong Kong, Chinese University, Hong Kong	1998
Academician, Connecticut Academy of Science and Engineering	1998
ASPET Award (Am Soc Pharm and Exp Therap)	1999
Honorary Professor, Harbin Medical University, China	1999
National Foundation for Cancer Research Fellow	2000-Present
Distinguished Alumni Award, Tunghai University, Taipei, Taiwan	2001
Honorable Professor, Zhejiang University, Hangzhou, China	2001
Outstanding Achievement Award, Chinese/American Acad Prof Sco	2002
Honorable Professor, School of Medicine, University of Hong Kong	2002
Honorary Professor, Institute of Materia Medica, Chinese Academy of Science	2003
Presidential Award, Society of Chinese Bioscientists in America	2004
BMRC Distinguished Visitor, Singapore	2005
Distinguished Visiting Professor, The University of Hong Kong	2005
Honorary Chair Professor, Chinese Medical University, Taiwan	2007
Honorary Professor, Xiamen University	2008
Honorary Professor Yunan Medical College	2008
Honorary Professor Shanghai Chinese Medicine University	2011
Honorary Professor Heilongjiang University of Chinese Medicine	2011
Cheung on Tak International Award for Outstanding Contributions to Chinese Med	2012
41st Distinguished Achievement Award, Chinese Hospital in San Francisco	2014
Adjunct Chair Professor at Institute of Chinese Med Sciences, University of Macau	2016
Bin-Wen Lin Award, Institute of Clinical Medicine, National Cheng Kung University, Tainan, Taiwan	2016
Outstanding Contribution of Post-Marketing review of Chinese Medicine	2017

Honorary Degree, Università di Cagliari 2017
Chair Professor in the Graduate Institute of
Integrative Medicine China Medical University 2019

RESEARCH INTERESTS:

My interests are in the development of new drugs and the improvement of the use of clinically proven drugs for the treatment of cancer, and herpes virus, human immunodeficiency virus or hepatitis B virus associ¬ated diseases. The types of agents are deoxyribonucleoside analogs, folate analogs and compounds that interfere with DNA and RNA metabolism. Currently we are also interested in the potential uses of Chinese medicines. Therefore, we are studying:

1) The metabolism of nucleosides, oligonucleotides, folates and natural products in cell culture;
2) The properties of human or virus nucleoside, folate and DNA metabolizing enzymes;
3) Gene regulation of these enzymes in cells;
4) The behavior of nucleoside analogs, folate analogs, oligonucleotides and DNA metabolic targeting compounds toward these enzymes and cells;
5) The effects of these compounds on virus specific enzymes and virus replication;
6) The action of promising compounds on tumor growth in vivo;
7) The combined use of these agents with other agents, including collaterally sensitive compounds and Chinese medicines, and scheduling the drug for chemotherapy of cancer and virus induced diseases;
8) The mechanisms of drug toxicity, drug resistance and development of drug resistance;
9) The association of human tumors with herpes virus, hepatitis B and re¬trovirus; and
10) The biochemical behavior and genetic stability of tumor cells taken from patients.
11) The approaches in bringing Chinese Medicine into the mainstream of new medicine in the 21st century.
12) Discovery of anti-HIV, HBV and HCV chemicals with selectivity by targeting viral proteins.

PUBLICATIONS: Over 450 publications in Refereed Journals

DRUGS DISCOVERED

There are four (4) approved drugs currently used in clinic. They were initially discovered in this laboratory. These includes:

- Gancyclovir – For Cytomegalo Viral infection (Global)
- Lamivudine – For Heapatitis B Virus infection (Global)
- Clevudine -- For Hepatitis B Virus infection (Korea, Philippines and Thailand)
- Emtricitabine -- For HIV and HBV (Global)

Three additional chemicals discovered in this lab and one Chinese medicine formula were discovered and are currently at different stages of Clinical Trial for the treatment of cancer as well as HIV and HBV infection.

從中醫藥尋找抗新冠藥物創新轉化的源泉

Prof Zifeng Yang, Associate Dean, The First Affiliated Hospital of Guangzhou Medical University, Guangzhou Institute of Respiratory Health
廣州醫科大學附屬第一醫院廣州呼吸健康研究院副院長　楊子峰教授

ABSTRACT 摘要

（只提供中文版本）

中醫藥抗新冠肺炎的多次臨床應用實踐中，表現出改善臨床病症、降低輕轉重、死亡或複陽的風險等藥效優勢，彰顯了中醫藥對“疫病”的治療前景大有可為，因此仍需堅持傳承精華、守正創新科學研究，充分發揮中西聯合治療應用的價值最大化。

Speaker’s Biography 講者簡介

（只提供中文版本）

楊子峰研究員，國家“萬人計畫”科技創新領軍人才、教育部“長江學者獎勵計畫”特崗教授，現任廣州醫科大學附屬第一醫院 - 廣州呼吸健康研究院副院長、呼吸疾病國家重點實驗室副主任、廣州國家實驗室診斷技術創新研究與轉化中心主任，主要研究領域是中西醫結合防治呼吸道病毒感染。

在 Science、New England、Nature 子刊發表多篇高水準文章。獲國家科技進步獎創新團隊獎、廣東省科技進步特等及一等獎、全國創新爭先獎牌等多項獎勵。主持多項國家級課題。

The basic and clinical research of anti-depressive effect of Lycium Bararum Glycopeptides
枸杞糖肽抗抑鬱的基礎研究和臨床實驗

Prof Kwok-Fai So, Jinan University, Guangdong-HongKong-Macau Institute of CNS Regeneration
暨南大學粵港澳中樞神經再生研究院　蘇國輝教授

ABSTRACT 摘要

Subthreshold depression is a highly prevalent condition in adolescents who are at high risk for developing major depressive disorder. To investigate the clinical efficacy and safety of Lycium barbarum polysaccharide (glycopeptide) (LbGp) for treating subthreshold depression in adolescents, we conducted a randomized, double-blind, placebo-controlled trial (RCT) with 29 adolescents with subthreshold depression recruited at The Fifth Affiliated Hospital of Guangzhou Medical University. The participants were randomly assigned to groups where they received either 300 mg LbGp (n = 15) or a placebo (n = 14) for 6 successive weeks. No side effects related to the intervention were reported in either group. Based on Hamilton Depression Scale (HAMD-24), the LbGp group performed significantly better in cognitive impairment, retardation and hoplessness.

在廣州開展了一項隨機、雙盲臨床實驗，在 15—18 歲青少年當中選擇 29 名閾下抑鬱個體（抑鬱障礙的高危人群），14 人服用安慰劑，15 人服用枸杞糖肽（每日 300 毫克）進行干預，連續 6 周後，進入最終分析，發現枸杞糖肽有效並且沒有副作用。通過抑鬱量表評估療效，接受枸杞糖肽的一組在認知障礙、阻滯、無助感等方面都得到明顯改善。

Speaker's Biography 講者簡介

Professor SO, Kwok-Fai

Director of GHM Institute of CNS Regeneration at Jinan University, Guangzhou, China; Emeritus Professor, Chair of Anatomy in the State Key Laboratory of Brain and Cognitive Sciences in the Faculty of Social Sciences and the Dept of Ophthalmology, The University of Hong Kong; Member of the Chinese Academy of Sciences, Co-Chairman of the Board of Director of the ChinaSCINet, and Editor-in-Chief of Neural Regeneration Research. Received PhD degree from MIT. He is one of the pioneers in the field of axonal regeneration in visual system.

蘇國輝教授

廣州暨南大學 粵港澳中樞神經再生研究院院長；香港大學腦與認知科學國家重點實驗室，社會科學學院，及眼科學系 解剖學講座教授。中科院 院士，中國脊髓損傷研究協作組董事會聯席主席，中國 Neural Regeneration Research 雜誌 總編輯。 1977 年于美國麻省理工大學獲得博士學位．致力研究中樞神經系統軸突保護和再生。

Session 2
第二節

From CM clinical studies to new CM products
從中醫臨床到中新藥

COVID-19 and Chinese Herbal Medicine – from clinical research to practical use

Professor Ka Kit Hui, Director, UCLA Department of Medicine
加州大學洛杉磯分校東西醫學中心主任 許家傑教授

ABSTRACT 摘要

（只提供英文版本）

The COVID-19 pandemic has provided a golden opportunity for the development of Chinese herbal medicine in the biomedically dominant global health care systems. Some insights from clinical research ranging from randomized controlled trial, whole systems research to implementation approach, and practical use will be shared.

Speaker's Biography 講者簡介

（只提供英文版本）

Professor Ka-Kit Hui

Ka-Kit Hui, M.D., F.A.C.P. is the Wallis Annenberg Professor in Integrative East-West Medicine and Founder and Director of the Center for East-West Medicine at the Department of Medicine of the David Geffen School of Medicine at UCLA. Dr. Hui, a Fellow of the American College of Physicians, is an internationally acclaimed educator and researcher and is board-certified in Internal Medicine and Clinical Pharmacology, with an expertise in Geriatrics. He is a recognized authority on Chinese Medicine and integrative medicine, and is bilingual in Chinese and English. Since 1990s, Dr. Hui has served as an advisor to the World Health Organization in different areas. He has also provided consultation to the U.S. Food and Drug Administration, National Institutes of Health, health insurance companies, drug companies and the media, and has held visiting and honorary professorships in various universities throughout the world.

The impact of individual gut microbiota on activity of Chinese herbal medicine

Professor Rudolf Bauer, Institute of Pharmaceutical Sciences,
University of Graz, Graz, Austria

ABSTRACT 摘要

（只提供英文版本）

Despite its origin in China, Chinese herbal medicine (CM) it is now used by various ethnic groups in all continents. Recent studies have demonstrated recurrent associations between specific taxa in the gut microbiota and ethnicity, which, however, may be related to the alpha but not beta diversity of gut microbiota. Gut bacteria are producing signalling molecules that regulate our body functions. Dysbiosis can lead to serious diseases, like inflammation, obesity, asthma, diabetes, and even cancer. Therefore, the individual gut microbiome is of high relevance for the activity of Chinese herbal medicine. Relevant species, which can be influenced by CM, are Faecalibacterium. Prausnitzii, Akkermansia muciniphila and Fusobacterium sp.

Speaker's Biography 講者簡介

（只提供英文版本）

Rudolf Bauer studied pharmacy and got his PhD at University of Munich, Germany. After being Associate Professor at University of Düsseldorf, Germany, he became full professor of pharmacognosy at University of Graz, Austria in 2002, where he also headed the Institute of Pharmaceutical Sciences from 2004 – 2020. Since 2007 he is director of the TCM Research Center Graz (Medicinal Plant Research). He acted as the founding president of GP-TCM Research Association (中醫藥規範研究學會) during 2012-2014. Currently, he is chairman of the TCM expert group of the European Pharmacopoeia Commission. He has published more than 400 scientific papers (h-index 55) and has edited several books. Besides several other international awards, he received the honorary doctorates of the universities of Helsinki/Finland and Szeged/Hungary, and the Government Friendship Award of the Peoples Republic of China.

Phytomedicine application in clinical practice

Prof Thomas Efferth, Johannes Gutenberg University, Institute of Pharmaceutical and Biomedical Sciences, Mainz, Germany

ABSTRACT 摘要

（只提供英文版本）

An inspection of the worldwide leading four journals publishing papers on randomized clinical trials (Lancet, N Engl J Med, JAMA, Br Med J) shows that during the past decades only very few randomized clinical trials on herbal medicine have been published in these journals. Most of them reported negative outcomes, occasionally provoking published statements expressing considerable reluctance or even warnings against herbal medicine in general. As clinical trials on herbal medicine appear in numerous other scientific journals as well, meta-analyses reviewing randomized clinical trials may give a more objective view of their clinical efficacy. Unfortunately, a majority of published meta-analyses on herbal medicine conclude that although sometimes hundreds of clinical trials have been performed on an herbal preparation to treat a certain disease, most of them have a too weak quality to allow clear conclusions. Even focusing on the smaller number of randomized clinical trials with acceptable quality frequently leads only to inconclusive or contrary results. This situation poses a tremendous dilemma to herbal medicine in general, and solutions are urgently required.

It is usually agreed among the herbal medicine community that the quality of clinical trials has to be improved by better trial designs, larger sample sizes, standardized herbal extracts, etc., especially since good examples of successful randomized clinical trials on herbal medicines indeed exist. It has been discussed that clinical trials have to be adapted to the specific requirements characteristic of herbal medicine and that the standard procedures for randomized clinical trials with synthetic drugs from western medicine may only insufficiently fit characteristic situations for applying herbal medicine. Herbal medicine is frequently applied in a highly individualized manner and specific designs related to personalized therapies may be more appropriate (e.g., so-called basket trials). Multi-center trials with a leading study center setting up optimally designed clinical trials and large patient numbers may be appropriate to come to more convincing results. Furthermore, the concomitant determination of clinical and laboratory biomarkers may facilitate reliable treatment monitoring and the prediction of treatment outcomes. The selection of individualized herbal treatments based on a combination of molecular diagnostics and TCM-based syndrome diagnostics may allow to treat the right patient with the right drug. Network pharmacology and “omics” profiling of patient samples are frequently discussed for their potential as predictive markers for treatment response and prognostic markers for patient survival. Despite a lot of efforts in this area, robust clinical validation still needs to be provided. There is still a long and windy road in front of us for convincing evidence-based clinical herbal medicine, but it is well worth walking that track for the sake of all patients worldwide.

Speaker's Biography 講者簡介

（只提供英文版本）

Thomas Efferth

Professor Dr. Prof. h. c. mult. Thomas Efferth is chair of the Department of Pharmaceutical Biology, Institute of Pharmaceutical and Biomedical Sciences, Johannes Gutenberg University, Mainz, Germany. He is a biologist by training (Technical University of Darmstadt, Germany). Doctoral thesis: German Cancer Research Center (DKFZ), Heidelberg, Germany (1990).

He headed a research group for Pharmaceutical Biology at DKFZ (2005-2009) and was an adjunct professor (apl.) at the University of Heidelberg (2007-2009). In 2009, he took over the Chair of Pharmaceutical Biology (full professorship). Since 2021, he is the director of the Institute of Pharmaceutical and Biomedical Sciences. Furthermore, he is an honorary professor at several universities (Northeast Forestry University Harbin, Zhejiang Chinese Medical University Hangzhou, Zhejiang University of Science and Technology Hangzhou, Chinese University Hong Kong, Baptist University Hong Kong, Vellore Institute of Technology) and visiting professor ("professional visitor") at the McLean Hospital, Harvard Medical School, Boston, USA.

Selected Awards: Prize of the Southwest German Association for Medicine (1991), Willmar-Schwabe-Award of the German Society for Medicinal Plant Research (2006), citizen medal of the City of Heidelberg, Germany (2008), CESAR Award for Translational Oncology (2011), Qihuang International Award of the Chinese Association of Chinese Medicine (2017). Since 2018, he is a full member of the World Academy of Sciences.

Thomas Efferth published 750+ PubMed-listed papers (Hirsch-factor: 95; citation rate: 48,000; acc. to Google Scholar) and a textbook on 'Molecular Pharmacology and Toxicology' (Springer Publisher; 2006). He holds 8 patents. The scientific results were communicated in 320+ oral presentations/invited lectures and 250+ poster presentations at international conferences.

He is editor-in-chief of "Phytomedicine" and "Phytomedicine Plus" as well as associate editor of several other scientific journals and a member of several scientific advisory boards (e.g., German Pharmaceutical Society, Hong Kong Research Grant Council, etc.). Eighteen of his former lab members were promoted to leading academic positions (1 president, 2 full, 5 associate, 10 assistant professors).

Efferth's research focus is on:

1. Systems biology and molecular pharmacology of natural and synthetic compounds against drug-resistant tumors and infectious diseases (basic research)
2. Predictive and prognostic markers for personalized medicine (translational research)
   For more details see: http://www.pharmazie.uni-mainz.de/Ak-Efferth/index.php

Chemical characterization of Prunella vulgaris Glycoconjugates and its anti-HSV Activities 夏枯草多糖複合物的化學表徵及抗皰疹病毒的活性研究

Dr Li Yang, Shanghai University of Traditional Chinese Medicine
上海中醫藥大學中藥學院 李洋博士

ABSTRACT 摘要

（只提供英文版本）

Background: P. vulgaris is a perennial plant belonging to the Labiatae family and is widely distributed in Asia and Europe, and previous studies have found that the water extract (PVW) of P. vulgaris exerted anti-HSV activities.

Methods: P. vulgaris was extracted with water and then graded by alcohol precipitation to prepare precipitates with different alcohol precipitation concentrations. The CC50 and EC50 values were determined to obtain the best alcohol precipitation (PVE30) for safety and anti-HSV activity. PVE30 was purified by salting out method. Savage method and molecular cut-off dialysis method were used to obtain PVG with better anti-HSV activity. Structural characterization of PVG was carried out by HPLC, FT-IR, UV-Vis, NMR, and UPLC-QTOF-MS/MS.

Results: We found that PVG was a type of polyphenolic-protein-polysaccharide conjugate, which was composed of dibenzylbutyrolactone lignan units, and rich in galacturonic acid, glutamic acid, and aspartic acid, with an average molecular weight of around 40 kDa. Meanwhile, PVG exerted remarkable and stable inhibitory effects on acyclovir (ACV) resistant HSV strains, and its efficacy was even better than that of the positive control drug ACV and anti-HSV activity was 3 times stronger than that of PVW.

Conclusion: The present study discovered that PVG, a type of PPPs isolated from P.vulgaris, significantly and stably suppressed both HSV standard strains and three ACV-resistant strains.

Speaker's Biography 講者簡介

（只提供中文版本）

李洋，助理研究員，2018 年畢業于上海中醫藥大學，獲中藥學理學博士學位，任上海市藥學會青年委員。主要從事天然產物抗腫瘤作用機制研究、中藥抗皰疹病毒藥效評價等工作。

Session 3
第三節

R&D on Chinese Medicines
最新中藥科研成果

Basic and clinical research on the development of new anti-cancer drug elemene liposome based on the theory of "molecular compatibility" of integrated traditional Chinese and western medicine
中西醫結合“分子配伍”理論研發抗癌新藥欖香烯脂質體的基礎與臨床研究

杭州師範大學醫學院整合藥學院院長 謝恬教授

ABSTRACT 摘要

After years of clinical practice and research experience, Professor Xie Tian innovatively proposed the "Molecular Compatibility Theory" of Integrative Medicine, and under the guidance of the "Molecular Compatibility" theory of Integrative Chinese and Western Medicine, Professor Xie Tian successfully developed the anticancer active ingredient elemene. Developed as a series of new anticancer drugs for liposomes. Elemene liposome is an anti-cancer Chinese medicine with independent intellectual property rights in my country. It has obtained invention patents in China, the United States and the European Union, creating a precedent for small molecule sesquiterpenes in traditional Chinese medicine to treat cancer.

經過多年的臨床實踐和研究經驗總結，謝恬教授創新提出了中西醫結合“分子配伍理論”，並在中西醫結合“分子配伍”理論指導下，謝恬教授將抗癌活性成分欖香烯成功研發為脂質體系列抗癌新藥。欖香烯脂質體是我國具有自主智慧財產權的抗癌中藥，獲中國、美國和歐盟發明專利，開創了中藥小分子倍半萜烯類化合物治療癌症的先河。

Speaker’s Biography 講者簡介

Prof. Tian Xie is currently a professor and the Dean at the School of Pharmacy at Hangzhou Normal University, the Dean of the Institute of Integrative Oncology, the Director of the Center for Integrative Cancer Prevention and Treatment of Traditional Chinese and Western Medicine, the Zhejiang Provincial Key Laboratory of Elemene Anticancer Drug Research, the Zhejiang Provincial Engineering Research Center for the Development and Utilization of Chinese Medicine Resources, and Director of Zhejiang Traditional Chinese Medicine Industry Collaborative Innovation Center.

He is the recipient of two State Scientific and Technological Progress Awards, two Ministry of Education Outstanding Scientific Research Achievement Awards, China Invention Patent Gold Award, China Invention Patent Excellence Award, “Wu Jieping” Medical Award, “He Liang

He Li” Science and Technology Innovation Award, Hangzhou City Special Contribution Award for Scientific and Technological Innovation. He has led more than 20 national, provincial and municipal scientific research projects, including key projects of China's National Natural Science Foundation, the National Science and Technology Project for Modernization of Traditional Chinese Medicine, and the National Science and Technology Project for Major New Drug Creation.

He has been in research and teaching focusing on integrative oncology, modern Traditional Chinese Medicine (TCM) and natural medicine development, liposome nano-formulation, green chemistry and other medical teaching and research for nearly 40 years. He innovatively proposed the “molecular compatibility” theory of integrated Traditional Chinese and Western medicine to treat cancer and successfully developed new molecularly compatible anti-cancer drugs such as elemene liposomes (elemene emulsion injection and elemene oral emulsion).

He holds more than 40 invention patents around the globe. He has published over 160 papers in prestigious peer-reviewed scientific journals including PNAS, Chem Soc Rev, Adv. Mater, Angew Chem Int Ed, Nat. Commun., ACS Nano, Sci Transl Med, and 17 monographs, textbooks, and translations.

謝恬，二級教授，博導。國務院特殊津貼專家、國家岐黃學者、浙江省特級專家。現任杭州師範大學藥學院和整合腫瘤學研究院院長、省重點實驗室、省工程研究中心及 2011 協同創新中心主任，藥學國家一流本科專業及國家重點學科治未病與健康管理學科帶頭人。

從事中藥天然藥物研發、中西醫結合、脂質體納米製劑等科教研近四十餘年。培養研究生 100 余名，包括 3 名國家優青和傑青，在 PNAS、Adv.Mater、Angew Chem Int Ed、Sci Transl Med 等期刊發表論文 160 多篇，出版專著 17 部。獲中國、歐美發明專利 40 余項，創新提出“分子配伍”理論治療癌症及研發新藥，研發成功抗癌新藥欖香烯脂質體等新藥十多個。主持完成國家自然科學基金重點項目、國家重大新藥創制等課題二十多項。以第一完成人榮獲國家科技進步二等獎 2 項、教育部高校優秀科研成果一等獎 2 項、中國發明專利金獎、吳階平醫藥創新獎、何梁何利科技獎等。成果轉化後近三年新增銷售額 100 多億元，帶動 2 萬多戶山區農民種植溫郁金、萬壽菊、鐵皮石斛、霍山石斛等脱貧致富。

Effectiveness and mechanism of Liu-wei-di-huang-wan (Rehammnia-6)-based treatment for diabetic kidney disease
六味地黃丸治療糖尿病腎病的療效及機理

Dr Chan Kam Wa, Department of Medicine, School of Clinical Medicine,
the University of Hong Kong
香港大學臨床醫學院 陳錦華博士

ABSTRACT 摘要

（只提供英文版本）

Diabetic kidney disease (DKD) is the leading cause of kidney failure globally. The kidney function decline results in dialysis, transplantation, and mortality. In our randomized multi-center pragmatic clinical trial (SCHEMATIC, NCT02488252), we randomized 148 DKD patients with macroalbuminuria to receive an add-on protocolized Rehmannia-6- (also known as Liu-wei-di-huang-wen) based Chinese medicine (CM) treatment program or standard care alone. After 48 weeks, the decline of estimated glomerular filtration rate (a measure of kidney function) and risk of hypoglycemia (a common and concerning adverse event) was significantly less with add-on CM. Further biochemical analysis showed that the TNF signalling (inflammation) pathway was associated with the treatment effect and the insulin resistance was lowered with CM treatment. These results indicate that 48 weeks of add-on Rehmannia-6-based CM treatment independently leads to significantly better preservation of kidney function and could be a useful strategy in the multidisciplinary management of DKD.

Speaker's Biography 講者簡介

（只提供英文版本）

Chris' practice and research focus on the evidence-based integrative management of various diseases with mixed method. He is the designer and coordinator of BIOPSY, RECORD, SECOND, SYSTEM (cohorts), SCHEMATIC and READY (clinical trials). His recent research shows that the use of add-on Chinese medicine reduces kidney function deterioration in diabetic kidney disease, and was associated with significant mortality reduction in COVID-19. Chris is currently a Post-doctoral Fellow at HKU, and a subcommittee member of the Chinese Medicine Development Committee and the Chinese Medicine Hospital Project Office. He received training from HK Baptist University,

Guangzhou University of Chinese Medicine, London School of Hygiene & Tropical Medicine and HKU, having served for Tung Wah Group of Hospitals, Hospital Authority, WHO, KPMG Advisory previously.

A RCT of application of Zishen Yutai Pill in IVF-ET
滋腎育胎丸在 IVF-ET 中應用的隨機對照臨床研究

Professor Yang Dongzi, Sun Yat-Sen Memorial Hospital, Sun Yat-Sen University
中山大學孫逸仙紀念醫院 楊冬梓教授

ABSTRACT 摘要

（只提供英文版本）

In recent years, traditional Chinese medicine (TCM) therapies are frequently used by women undergoing IVF. Data from a prospective cohort study in the United States showed that 17% of couples used TCM therapies for infertility. Another cross-sectional study found that 46% of Irish patients undergoing IVF used TCM, with 38% having taken TCM in the 3 months before presenting for infertility treatment. Previous studies suggest a possible benefit from TCM in improving IVF outcomes.

However, the efficacy and safety of the TCM have not been demonstrated in any multicenter randomized controlled trial (RCT) among patients with infertility undergoing IVF or intracytoplasmic sperm injection (ICSI). The understanding and widely use of TCMs was limited by the effect size, and lack of information on the active compounds within the formula and how the concentration of these would be controlled for across batches. These limitations have hampered development of recommendations for clinical practice and highlighted the need for a well-designed randomized controlled trial (RCT) to address the issue.

The Zishen Yutai Pill is one of the famous TCM Pills which was used in infertility for a long time. We conducted a double-blind, multicenter, placebo-controlled, randomized trial to investigate whether administration of the Zishen Yutai Pill would increase the live birth rates among women undergoing IVF or ICSI.

This double-blind, multicenter RCT was conducted at 19 IVF centers encompassing all China regions. The protocol was approved by the Ethics Review Committee of each study center. All participants provided written informed consent to participate in this study. Registration was made on April 13, 2014 (Chictr.org.cn, Chictr-TRC-14004494). The participants were randomized 1:1 to receive double-blind and single-dummy monotherapy with placebo or the Zishen Yutai Pill.

In this randomized, double-blind, controlled clinical trial , 2,265 women undergoing IVF or ICSI were recruited between April 2014 and June 2017. Follow-up was complete in June 2018. The administration of the Zishen Yutai Pill compared with placebo around the time of ovarian stimulation and ET resulted in increased live birth rates. This RCT showed higher implantation, biochemical and clinical pregnancy rates in fresh ART cycles. We found no significant differences in

the rates of pregnancy-related or neonatal complications between groups.

The main strength of this study is that it is a randomized, double-blind, multicenter clinical trial with a large sample size, including fertility units across the China mainland to explore the efficacy and safety of the Zishen Yutai Pill during ART. In addition, the trial had long follow-up duration, enabling the collection of live birth information and neonatal outcomes. The treatment protocol was based on best practice and was developed through consensus from expert clinicians. Blinding was intact in both groups during the whole study.

In summary, we found that the Zishen Yutai Pill improved the live birth rate after fresh embryo IVF cycles. There were no significant differences in the rates of maternal, fetal and neonatal complications between the ZYP and placebo groups. The mechanism by which the Zishen Yutai Pill functions to improve outcomes warrants further study.

Speaker's Biography 講者簡介

（只提供英文版本）

Yang Dongzi, MD. Ph.D.

Professor, Chief physician, Former Director of Dept. Gynecology and Obstetrics, Reproductive Medical (ART) Center

Sun Yat-Sen Memorial Hospital,

Sun Yat-Sen University, Guangzhou, China

Graduated in Sun Yat-Sen University of Medical Sciences and obtained her M.D in 1982, thereafter granted her Ph.D. in 1990. She had advanced training and fellowships of reproductive medicine in Hong Kong University (1997) and Emory University, USA (2000-2001). Dr. Yang has been dedicating to the clinical, research and teaching in the fields of Reproductive medicine and Gynecological endocrinology since 1982. She has published over 300 papers, in which over 100 papers in peer-reviewed international journals. She has also edited 5 professional books and contributed 20 professional book chapters and medical textbook for master students.

She is now vice-President of Chinese Reproductive Medicine Association of CMDA, Deputy-editor in chief of Chinese Journal of Obstetrics and Gynecology, Vice- Chairperson, Gynecological Endocrinology group of Gynecology and Obstetrics Society of Chinese Medical Association, Vice-President of Guangdong Province female Medical Doctor Association, Reviewer for numerous journals etc.

Development of a Novel, Standardised Herbal Formulation for the Treatment of Vascular Dementia

Dennis Chang, NICM Health Research Institute, Western Sydney University, NSW, Australia

ABSTRACT 摘要

(只提供英文版本)

Vascular dementia (VaD) is the second most common cause of dementia. Currently there are no approved pharmaceutical medicines for VaD. We have been working with Xiyuan Hospital, China Academy of Chinese Medical Sciences to develop a novel herbal formulation, Sailuotong (SLT) for VaD. Conventional pharmaceutical and analytical chemistry techniques were used to optimise and standardise the herbal extracts. The dosage regimen and mechanisms of action were determined in a series of preclinical studies. Phase I and II clinical trials were conducted to determine tolerability, clinical dose, efficacy and safety of SLT. In this presentation, the development process of SLT and the results of the research will be briefly discussed.

Speaker's Biography 講者簡介

(只提供英文版本)

Professor Dennis Chang is the Director of NICM Health Research Institute at Western Sydney University. Professor Chang is recognised internationally as a leading researcher in pharmacological and clinical studies of herbal medicine used for neurodegenerative disease, cardiovascular disease and metabolic syndrome. He has >100 peer-reviewed journal publications and attracted >A$7M research funding support from various funding agencies, governments and industry. Professor Chang has also led the Institute's international engagement program, building and sustaining relationships and long-term partnerships with many prestigious universities, research organisations and pharmaceutical/herbal medicine industry around the world.

Session 4
第四節

Product Commercialization & Successful Cases Sharing
產品商業化及成功個案分享

GI research with Chinese herbal medicine, from clinical research to new drug discovery
中醫藥治療胃腸道疾病 - 從臨床研究到新藥研發

Professor Bian Zhao Xiang, Associate Vice-President (Chinese Medicine Development), Hong Kong Baptist University
香港浸會大學協理副校長 (中醫藥發展) 卞兆祥教授

ABSTRACT 摘要

Chinese herbal medicine has been widely used for the gastrointestinal diseases, including but not limited to functional diseases, such as functional constipation, dyspepsia, irritable bowel syndrome and organic diseases such as ulcerative colitis (UC) and colon cancers. These methods provide a support to the existing management strategy.

The questions are commonly faced by the Chinese medicine practitioners and researchers are whether the Chinese herbal medicine is effective and safe for the diseases, and if yes, how the Chinese herbal medicine takes effects. Also, another common question is whether the effects in one single patient could be repeated in a group of patients with same syndrome. To answer these questions, there is a need to go through the clinical trial following evidence-based medicine approach, from trial protocol design, registration, implementation, to reporting and data transparency to assess the efficacy and safety. During these trials, it is crucial too to follow the Chinese medicine theories during the trial process, from design to implementation. Treatment based on syndrome differentiation and holism should be followed too. These will facilitate the promotion of Chinese medicine to the public. Based on the efficacy assessment, the mechanism behind could thoroughly investigated. Further, these research can help to develop such Chinese Medicine formula into a new drug including botanical drug thus benefit more patients.

眾多慢性下胃腸道疾病中，潰瘍性結腸炎 (UC) 和腸易激綜合症 (IBS) 在香港的發病率均有明顯上升趨勢。前者發病率於近三十年內增加 17 倍，後者則佔總人口 6.6%。研究指出 UC 與誘發大腸癌有莫大關係。而 IBS 的潛藏風險雖比 UC 低，但同樣嚴重影響患者生活質素。唯兩者發病成因未明，治療上有一定困難。

中醫認為 UC 和 IBS 的發病是由於肝、脾、腎之間不調所導致。只要在病發的活動期和緩解期作出針對性治療則可根治病患。例如在 UC 的活動期，會使用清熱解毒之中藥。在緩解期則使用補益脾腎之中藥。又例如對 IBS 會採用中藥複方以緩解 IBS 所產生的腹痛腹瀉或便秘。

在有效中醫藥複方的基礎上，按現代科學的藥物研製方案系統性地發展出適合當代使用之新藥。此類新藥亦會根據循證醫學的反饋，加以優化。從而，希望更多病患能受惠於現代中醫藥。使得中醫藥服務發展於現代醫學中再進一步。

Speaker's Biography 講者簡介

(只提供英文版本)

Prof. Bian Zhaoxiang had been educated in Nanjing University of Traditional Chinese Medicine (TCM), Beijing University of Traditional Chinese Medicine and Pharmacology, and Guangzhou University of TCM, and was conferred a PhD degree (Integrated Chinese and Western Medicine) in 1994. After graduation, Prof. Bian engaged in clinical and basic research in digestive diseases. The research focuses on the development and recurrence of irritable bowel syndrome (IBS), inflammatory bowel disease (IBD), and colorectal cancer. Currently, Prof. Bian serves as Director of Clinical Division, School of Chinese Medicine, and Associate Vice-President (Chinese Medicine Development) of HKBU.

Randomized, double-blind, and placebo-controlled clinical trials on rare Chinese medicinal materials: Red Ginseng and Ejiao
名貴中藥紅參及阿膠的隨機、雙盲臨床研究

Professor Li Zhang, Shanghai University of Traditional Chinese Medicine
上海中醫藥大學 張莉教授

ABSTRACT 摘要

Red ginseng and Asini Corii Colla (Ejiao) both are commonly used rare Chinese medicinal materials. Red ginseng has been commonly used in clinical practice to fight fatigue and improve immunity, while Ejiao is mostly used in patients with blood deficiency and gynecological diseases. Although these kinds of medicinal materials have been used for a long time, there have been no systematic clinical studies until now. In our previous study, we evaluated the clinical efficacy and safety of red ginseng and Ejiao using the randomized, double-blind, placebo-controlled clinical trials. The results showed that red ginseng could improve fatigue-related symptoms in patients with deficiency syndrome. Ejiao could significantly alleviate the blood deficiency syndromes, as well as improve the quality of life in these people. The safety evaluation showed that there was no significant change in the fire-heat symptoms score or other safety parameters. Our experiments provide the scientific and theoretical basis for the clinical application of rare Chinese medicinal materials.

紅參與阿膠均為常用名貴中藥材，紅參在臨床上常用於抗疲勞及提高人體免疫力，阿膠則多運用于血虛患者及婦科疾病。雖然該類藥材具有悠久的用藥歷史，但尚未有系統的臨床研究。前期我們採用隨機、雙盲、安慰劑對照的臨床試驗，對紅參及阿膠的臨床藥效及安全性進行評價。結果結果表明，紅參可以改善虛症患者疲勞相關的症狀，阿膠能顯著改善血虛證患者的症狀、提高血虛患者的生活品質。安全性評價顯示，紅參及阿膠均未見明顯不良反應及上火現象。我們的試驗為傳統名貴藥材的臨床運用提供了科學依據及理論基礎，同時也為更好地使用該類藥材提供了指導。

Speaker's Biography 講者簡介

Zhang Li, associate professor of Shanghai University of Traditional Chinese Medicine, master supervisor, Ph.D. of The Hong Kong University of Science and Technology, member of Shanghai Pharmacological Society, director of the Professional Committee of Chinese Medicine Antiviral Research of World Federation of Chinese Medicine Societies. Dr. Zhang has published more than 50 SCI papers in journals such as Cancer Letters. She has got the General and Youth Programs of the National Natural Science Foundation of China, and the Young Teacher Training Program of the Shanghai Municipal Education Commission. Dr. Zhang has successively won the Shanxi Provincial Science and Technology Progress Award, the Science and Technology Award of the China Association of Chinese Medicine.

張莉，上海中醫藥大學副教授，碩士生導師，香港科技大學博士，上海市藥理學會會員，世界中醫藥學會聯合會中醫藥抗病毒研究專業委員會理事。在 Cancer Letters 等期刊發表 SCI 論文 50 餘篇。主持國家自然科學基金面上專案及青年專案，上海市教育委員會青年教師培養專案。先後榮獲山西省科學技術進步獎、中華中醫藥學會科學技術獎，上海中醫藥大學杏林學者等稱號。

Adjuvant therapy of Coriolus versicolor extracts for cancer
雲芝提取物的癌症輔助治療

Dr Xiaoyu JI, R&D project coordinator, Purapharm Corporation Ltd
培力 (香港) 健康產品有限公司研發項目統籌主任 季曉宇博士

ABSTRACT 摘要

Coriolus versicolor is a medicinal mushroom widely prescribed for the prophylaxis and treatment of cancer in Asia and worldwide. The current presentation highlights the latest progress that adjuvant therapy of Coriolus versicolor extracts for cancer. The following scopes will be covered in the talk:

- Adjuvant therapy with preclinically and clinically proven to enhance immunity and alleviate side effects of several cancer therapies
- Ingredients: polysaccharide Peptides (PSPs), polysaccharide Krestin (PSK),
- Orally active: Absorbable Peptidoglycan (APG)
- Preclinical and clinical evidence on immunologic stimulation by Coriolus versicolor extract
- Preclinical and clinical evidence on a safe combination treatment of Coriolus versicolor extracts and chemotherapy drug
- Comparison of traditional and new methods for APG extraction
- ntroduction to Coriolus versicolor products from leading brand name pharmaceutical companies

雲芝是多孔菌科植物雲芝的子實體或菌絲體，在亞洲和世界範圍內被廣泛用於預防和治療癌症。 本次演講重點介紹了雲芝提取物輔助治療癌症的最新進展。 演講將涵蓋以下範圍：

- 臨床前和臨床證明的輔助治療可增強免疫力並減輕多種癌症治療的副作用
- 成分：多醣肽 (PSP)、雲芝素 (PSK)
- 口服活性：可吸收肽聚醣 (APG)
- 雲芝提取物免疫刺激的臨床前和臨床證據
- 雲芝提取物和化療藥物安全聯合治療的臨床前和臨床證據
- APG 提取的傳統方法和新方法的比較
- 領先品牌製藥公司的雲芝產品介紹

Speaker's Biography 講者簡介

Dr. JI, Xiaoyu, R&D officer from PuraPharm International (H.K.) Ltd, currently focusing on pre-clinical safety and efficacy evaluation of Purapharm's products, resource evaluation of mushroom herbs, and their intensive processing. Before joining Purapharm, Dr. JI graduated from the Chinese University of Hong Kong (CUHK) with a Ph.D. in Pharmacy. She obtained her Bachelor's degree in Chinese Materia Medica from the Beijing University of Chinese Medicine (BUCM). Dr. JI has undertaken the research work of the Medical and Health Research Fund (HMRF), and published several articles in the field of quality evaluation of Chinese herbs, herb-drug interactions, and No-Observed-Adverse-Effect-Levels of toxic herbs on peer review journals. Dr. JI aims to bring high-quality modern Chinese Medicine products to consumers, providing Purapharm's users with safe medication guidance and promising efficacy. The above is the core value of Purapharm which we have pursued for decades.

季曉宇博士，培力控股有限公司研究人員。目前專注於集團產品的前臨床安全性及有效性評價、靈芝雲芝種質資源評估及精深加工。季曉宇博士畢業於香港中文大學，獲得藥劑學院藥劑學哲學博士學位。本科畢業於北京中醫藥大學，獲得中藥學理學學士學位。曾承擔醫療衛生研究基金的研究工作，於中藥質量評價、中藥體內不良反應評價、中西藥合用的安全性評價領域或頂級學術期刊雜誌發表文章數篇。她堅持以臨床需求為導向，通過嚴謹科學的實驗設計，將高品質的現代中藥產品帶給消費者，力求讓培力用戶得到安全的用藥指導、有效的服用體驗。這是培力品牌的核心價值觀和數十年來孜孜追求的發展願景。

Dendrobium Candidum and the Promotion and Development of Traditional Chinese Medicine Culture
鐵皮石斛與弘揚發展中醫藥文化

Mr Chen Lizuan, Director, Zhejiang Tianhuang Medicinal Plant Pharmaceutical Co.,Ltd
浙江天皇藥業有限公司董事長 陳立鑽先生

ABSTRACT 摘要

The Dendrobium Candidum is a medicinal plant native to Tiantai, Zhejiang. Long given the wondrous name - and accompanying repute - of "life-saving fairy sap", the plant can be used to detoxify, fortify, and reinvigorate the human body. The plant's efficacy as medicine has been documented in as far back as ancient texts, and it is fittingly known to have been presented as tribute to royalty.

In 1986, I began to study the cultivation of Dendrobium Candidum, with an eye to keeping the process of its propagation as akin to wild as possible. With a deep understanding of this medicinal plant's baseline traits and properties – and the utmost respect to nature's sacred ways - scientific theory was applied to nurture and optimize the natural ingredient into a truly high-quality product for therapeutic use that will do much to benefit people's health in general.

In 2004, I led my team to commence research and study in the subject of "Dendrobium Officinale Granules in the Treatment of Chronic Atrophic Gastritis". Our work and findings were given special recognition in China, earning it the honor of being a '2016 national and major advancement in the technology of pharmaceutical innovation'. At present, 660 phase III double-blind clinical trials have been carried out in 32 tertiary hospitals across China, with the resulting data now being at the stage of collation and reconstitution. If our goal is achieved, we will have made critical strides in solving the worldwide problem of atrophic gastritis.

In 1998, our company's Dendrobium Candidum products were registered and sold in Thailand. In 2018, it was successfully registered in Hong Kong, and, to date, it is the only Zhejiang-produced Dendrobium Candidum Chinese medicinal product to have done so.

Traditional Chinese medicine culture is the accumulation of wisdom of the Chinese people for thousands of years. It is important for the Chinese to promote traditional Chinese medicine culture and to develop industry in line with the knowledge. To discover, restore, organize and compile the widely dispersed early records of Chinese medicine and its secret recipes requires dedication and concerted effort on the part of all of us Chinese medicine practitioners. I am willing to provide to experts in the field and in the industry valuable texts on traditional medicine in my possession gratis in the hopes that they will discover, explore, and articulate further insight into them. I would also be willing to collaborate with academic institutions in traditional Chinese medicine of excellence inside and outside of mainland China to form and establish a hospital entirely informed by Chinese medicinal knowledge and practice, with an open invitation to all people with wisdom

to share for participation.

Traditional Chinese medicine culture is an important part of Chinese culture as a whole. It is philosophy to live by; its elucidating treatises on the maintenance of human physical and mental health comprise its greatest asset and appeal. Traditional Chinese medicine culture can surely transcend all national, religious, political and class borders to be accepted by people of all countries. It is the most effective carriage for the development of the Chinese nation and the facilitation of cultural exchanges with other nation states.

鐵皮石斛是浙江天台的道地藥材，具有滋陰清熱、益胃生津、護肝明目、潤肺補腎等功效，自古有“救命仙草”之美譽，在歷代藥書中都被列為藥材中的上品，也被歷代皇家列為貢品。

1986 年我開始研究鐵皮石斛的仿野生種植，以敬畏天地、遵循自然為原則，在科學的理論下按照藥材的習性來進行栽培及加工利用，為民眾健康提供真正有品質、有療效的產品。

2004 年我帶領我的團隊開始進行“鐵皮楓斗顆粒治療慢性萎縮性胃炎”的課題研究，該研究被列為中國 [2016 年 ~ 國家新藥創新重大科技專項]，目前在全國 32 家三甲醫院經已做完 660 例三期臨床雙盲試驗，已進入資料整理復合階段，如能達到預期目標，這將破解萎縮性胃炎的世界性難題。

1998 年我公司鐵皮石斛產品在泰國獲得藥品注冊銷售，2018 年通過了香港藥品注冊，是目前唯一在香港注冊成功的浙產中藥，也是目前唯一在香港成功注冊的鐵皮石斛中成藥。

中醫藥文化是幾千年來中華民族的智慧積纍，弘揚中醫藥文化，發展中醫藥事業是身為中國人的一項重要使命，發掘、搶救、整理散落在民間的古醫書、古秘方，組織力量搶救修復研讀中醫藥典籍是需要我們作中醫藥人的共同努力。我願意無償將自己收藏的一批古醫書、古藥書提供給業界有識之士探索研究，也願意與國內外一流的中醫藥院校合作，創辦傳統的純中醫醫院，誠邀國內外有識之士參與。

中醫藥文化是中華優秀傳統文化的重要組成部分，是治人哲學，它對人體身心健康所闡述的自然理論和方法是中醫藥的魅力所在，它必能超越國家、宗教、政黨、階級而為各國民衆所接受，它是中華民族發展和與各國進行文化交流的最有效載體。

Speaker’s Biography 講者簡介

Chen Lizuan, the Pioneer of Dendrobium industry in China, is the President of Zhejiang Tianhuang Pharmaceutical Co. Ltd., Director of the Tiantai County Institute of Medicine Research, and the Honorary Chairman of Dendrobium Professional Committee, China Association of Traditional Chinese Medicine.

Dendrobium officinale is categorized as a rare and endangered species under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and is also considered as an endangered and rare treasure in Traditional Chinese Medicine. In 1993, after eight years of dedicated exploration and research with countless attempts and failures, Mr. Chen finally overcame the hurdles posed by domestication of wild Dendrobium officinale and became the first

person in China who succeeded in the research of artificial cultivation of Dendrobium officinale, as well as the first person in the world to successfully perform large-scale transplantation of Dendrobium officinale test-tube seedlings by utilizing biotechnology. Such achievement was hailed by Guangming Daily as “Unlocking the Goldbach's Conjecture in Pharmacology”. For more than 30 years, Mr. Chen has made outstanding contributions to the sustainability and availability of endangered medicinal plants, including the establishment of a large-scale cultivation base that was bio-engineered to imitate the native growing environment of Dendrobium, and the creation of a “whole industry chain” model that transformed the traditional agriculture industry.

陳立鑽，中國石斛行業創始人，浙江天皇藥業有限公司董事長，天台縣藥物研究所所長，中國中藥協會石斛專業委員會名譽主任委員。

[鐵皮石斛] 被《國際貿易公約組織》列 瀕危動植物種類，也是中國中藥寶庫中的瀕危珍稀品種。1993 年陳立鑽先生經過八年艱苦的探索及研究，經歷上千次的失敗與堅持，終於攻克了鐵皮石斛野生馴化難關，成為了中國研究人工栽培鐵皮石斛取得成功的第一人，也成為了采用生物技術將鐵皮石斛試管苗大面積移植成功的世界第一人，此舉被《光明日報》譽為“解開藥學界的哥德巴赫猜想”。三十多年來，陳立鑽先生運用生物工程通過技朮進步，建立了大規模仿野生栽培基地，創建了“全產業鏈”模式對傳統農業進行了改良，為瀕危藥材的可持續性及可利用性做出了突出的貢獻。

Successful commercialization of an anti-aging ingredient based on advanced research: Latest advancement of SIRTMAX® (Kaempferia parviflora extract) in SIRT1 activation and clinical study
以高端科技為基礎抗衰老原料的成功開發以及產業化：SIRTMAX® (Kaempferia parviflora extract) 的 SIRT1 活性化研究和臨床研究的最新進展

Dr Jin Tatsuzaki, President & CEO, TOKIWA Phytocamical Co., LTD
株式會社常磐植物化學研究所社長 & CEO 立崎 仁博士

ABSTRACT 摘要

（只提供英文版本）

SIRTMAX® is a Kaempferia parviflora extract with potent anti-aging effect via SIRT1 activation. Through cutting-edge research, the standardizing component of SIRTMAX®, 3,5,7,3',4'-pentamethoxyflavone (PURESIRTMAX®) was the first compound confirmed to directly activates SIRT1 and is six-time stronger than resveratrol.1) The efficacy of SIRTMAX® also is proven by clinical trials, where it increases SIRT1 mRNA and improves several aging-related parameters. Interestingly, SIRTMAX® also works synergistically with NMN, insinuating a promising future development. Superseding NMN and resveratrol, SIRTMAX® is fast becoming the new anti-aging ingredient. Commercialized worldwide and well-received in USA, the success of SIRTMAX® is undoubtfully benefited from the abundant scientific evidences.

Speaker's Biography 講者簡介

（只提供英文版本）

Jin TATSUZAKI
President & CEO of Tokiwa Phytochemical Co., Ltd.

WORK EXPERIENCE
2007 to Present Tokiwa Phytochemical Co., Ltd.
2013-Present President & CEO
2010 President
2009 Executive Director

2008 Director

2006 to 2007 Kanebo Cosmetics Inc.

EDUCATION & RESEARCH EXPERIENCE

2019 Doctor of Philosophy (Pharmaceutical Sciences)
Chiba University, Japan
Faculty of Pharmaceutical Sciences

2005 Master of Science (Pharmaceutical Sciences)
The University of North Carolina at Chapel Hill, USA
Graduate School of Pharmacy / Natural Products Research Laboratories

2002 Bachelor of Science
Gakushuin University, Japan
Department of Chemistry, Faculty of Science

AFFILIATIONS

- The Director of Japan Kampo Medicines Manufacturers Association
- The Executive Director of Tokyo Crude Drugs Association
- The Director of Japan Bulk Pharmaceutical Manufacturers Association
- The Director of The Japanese Institute for Health Food Standards (JIHFS)
- The Director of Japan Blueberry Association

現代化中醫藥國際協會創會會長黃伯偉博士紀念演講 - 中醫藥國際化進展

上海中醫藥大學中藥學院首席教授 徐宏喜教授

ABSTRACT 摘要

講者將通過對近 100 個國家和地區的實地考察和調研、參加中醫藥國際學術會議交流、參與中醫藥國際合作研究項目、組織國際中醫藥大學聯盟、推動成立海外國際中醫藥中心、培養國際留學生等不同形式，見證和分享中醫藥國際化的進展和成果，客觀分析中醫藥國際化的困難和瓶頸問題，討論中藥成為國際藥物的條件和關鍵，對中醫藥國際化未來發展提出建議和策略。

Speaker's Biography 講者簡介

徐宏喜 , 上海中醫藥大學首席教授、中藥學院名譽院長。國家中組部特聘教授，上海市首批特聘專家，兼任國務院學位委員會中藥學學科評議組秘書長、教育部中藥學類專業教指委委員、國家藥典委員、中華中醫藥學會中藥實驗藥理學分會主任委員、已發表 SCI 論文 370 多篇，被引數 1.69 萬多次，H= 指數為 69，入選斯坦福大學和愛思維爾出版集團共同發佈的“終身科學影響力排行榜”、“全球 2% 頂尖科學家榜單”、“全球頂尖前 10 萬科學家排名”榜單。並於 2014 年起連續 8 年入選“中國高被引學者”榜。

Date:

Date:

The 18th International Postgraduates Symposium on Chinese Medicine (IPSCM)
第十八屆國際研究生中醫藥研討會

(Onsite & Online Symposium)

會議手冊
Programme Book

August 12, 2022

Hong Kong Convention & Exhibition Center
香港會議展覽中心

The 18th International Postgraduate Symposium on Chinese Medicine
第十八屆國際研究生中醫藥研討會

TABLE OF CONTENT

WELCOME MESSAGE P2

ORGANZING COMMITTEE P3

ACKNOWLEDGEMENTS P4

PROGRAMME P5

ORAL/ABSTRACT INDEX P6

ABSTRACTS P15

ABSTRACTS OF ORAL PRESENTATION
ABSTRACTS OF POSTER PRESENTATION

Welcome Message

Dear participants,

On behalf of the Organizing Committee of the 2022 International Postgraduate Symposium on Chinese Medicine (IPSCM), I would like to extend my warmest welcome to all the attendees of this event.

This year marks the 18th 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 one hundred young scientists and friends from Hong Kong, Macau and Mainland China to join the event this year. In addition, more than 90 abstracts, including 10 oral and more than 80 poster presentation 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 18th IPSCM is composed of representatives from six universities in Hong Kong, University of Macau, Beijing University of Chinese Medicine and Shanghai University of Traditional Chinese Medicine. We are thankful for their time and efforts in the tremendous organizing work.

Finally, we would like to express our greatest gratitude to the Modernized Chinese Medicine International Association (MCMIA), and the Hong Kong Trade Development Council (HKTDC). Without their support, the organization of this meeting would not be possible. I wish the 18th IPSCM a great success and hope all of you enjoy the day!

Yours truly,

Prof. Feng Yibin

Convener, Academic advisory Board of the 18th IPSCM;

Professor, School of Chinese Medicine,

The University of Hong Kong

ORGANIZING COMMITTEE

The University of Hong Kong
Prof. FENG Yibin (Convenor), School of Chinese Medicine
Dr. RONG Jianhui, School of Chinese Medicine
Ms. SUN Yilu (Chairperson)
Ms. XU xiaoyu (Vice-Chairperson)

The Chinese University of Hong Kong
Prof. LIN Zhixiu, School of Chinese Medicine
Ms. ZHU Jiaqian
Ms. YAO Shanshan

Hong Kong Baptist University
Prof. Zhang Hongjie, School of Chinese Medicine
Ms. DU Yinxiao
Ms. LAU Tsz Ying

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Mr. YUEN Ka Wing, Gary
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Dr. SETO Sai Wang, Department of Applied Biology and Chemical Technology
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Mr. Abdul Waris

University of Macau
Prof. WANG Yitao, Institute of Chinese Medical Sciences
Ms. Gao Jie
Mr. Shi Ruipeng

Shanghai University of Traditional Chinese Medicine
Prof. XU Kevin, School of Pharmacy
Ms. LIU Mengfan
Mr. DAI Rongchen

Beijing University of Chinese Medicine
Ms. GUO Pengchuan
Ms. MI Xinyu

ACKNOWLEDGEMENTS

The Organizing Committee of the 18th International Postgraduate Symposium on Chinese Medicine is grateful for the generous support of the following institutions and company who made this symposium become possible (in no particular order):

The University of Hong Kong
School of Chinese Medicine

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

University of Macau
Institute of Chinese Medical Sciences

Shanghai University of Traditional Chinese Medicine
School of Pharmacy

Beijing University of Chinese Medicine
The school of Chinese Materia Medica

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 。

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PROGRAMME

Date: 12-08-2022 Time: 14:00-17:00 Venue: Room N101B/ZOOM

Time	Event
12:30-14:00	**Registration**
14:00-14:10	**Opening Ceremony**
14:10 - 14:23	**O-01 Miliusane and Analogues Targeting Autophagy Pathway to Suppress Cell Growth of Colorectal Cancer** *DU Yin-Xiao, Hong Kong Baptist University*
14:23 - 14:36	**O-02 Si-Jun-Zi-Tang in combination with temozolomide produces synergistic anti-melanoma effects via inhibiting MGMT and ATR/Chk1 pathways** *LI Sze Man Amy, Hong Kong Baptist University*
14:36 - 14:49	**O-03 Targeting hepatocellular carcinoma by HL23, a novel HDAC inhibitor derived from Fangchinolin that regulates TXNIP-mediated potassium deprivation and enhances sorafenib efficacy** *LU Yuanjun, The University of Hong Kong*
14:49 - 15:02	**O-04 In-silico drug toxicity and interaction prediction for plant complexes based on virtual screening and text mining** *ZHANG Feng, The University of Hong Kong*
15:02 - 15:15	**O-05 Covalent Inhibition of Pyruvate Kinase M2 Reprograms Metabolic and Inflammatory Pathways in Hepatic Macrophages Against Non-alcoholic Fatty Liver Disease** *FAN Ni, The University of Hong Kong*
15:15 - 15:45	**Break & poster presentation**
15:45 - 15:58	**O-06 Maple leaf extracts with rapidly reactive oxygen species-degradable activity for inhibiting cardiomyocytes death following myocardial ischemia-reperfusion injury** *PU Aoyang, City University of Hong Kong*
15:58 - 16:11	**O-07 The extracts of stem wood deriving from Dracaena cochinchinensis, a Traditional Thai herbal medicine, inhibits formation of fibrillary A β and promotes survival and differentiation of cultures neuronal cells** *OSPONDPANT Dusadee, The Hong Kong University of Science and Technology*
16:11 - 16:24	**O-08 In Vitro and In Vivo Investigations of The Anti-Metastatic Effect of Natural Compound PGG in Colorectal Cancer** *YANG Huihai, The Chinese University of Hong Kong*
16:24 - 16:37	**O-09 Pterostilbene prevents prostate cancer recurrence by inducing quiescent prostate cancer cell apoptosis via MnSOD upregulation** *LIU Mengyao, Shanghai University of Traditional Chinese Medicine*
16:37 - 16:50	**O-10 Evidence and potential mechanism of action of Lithospermum and Its Active Components for Psoriasis** *WANG Jiao, 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	**DU Yin-Xiao** *Hong Kong Baptist University*	**Miliusane and Analogues Targeting Autophagy Pathway to Suppress Cell Growth of Colorectal Cancer**
O-02	**LI Sze Man Amy** *Hong Kong Baptist University*	**Si-Jun-Zi-Tang in combination with temozolomide produces synergistic anti-melanoma effects via inhibiting MGMT and ATR/Chk1 pathways**
O-03	**LU Yuanjun** *The University of Hong Kong*	**Targeting hepatocellular carcinoma by HL23, a novel HDAC inhibitor derived from Fangchinolin that regulates TXNIP-mediated potassium deprivation and enhances sorafenib efficacy**
O-04	**ZHANG Feng** *The University of Hong Kong*	**In-silico drug toxicity and interaction prediction for plant complexes based on virtual screening and text mining**
O-05	**FAN Ni** *The University of Hong Kong*	**Covalent Inhibition of Pyruvate Kinase M2 Reprograms Metabolic and Inflammatory Pathways in Hepatic Macrophages Against Non-alcoholic Fatty Liver Disease**
O-06	**PU Aoyang** *City University of Hong Kong*	**Maple leaf extracts with rapidly reactive oxygen species-degradable activity for inhibiting cardiomyocytes death following myocardial ischemia-reperfusion injury**
O-07	**OSPONDPANT Dusadee** *The Hong Kong University of Science and Technology*	**The extracts of stem wood deriving from Dracaena cochinchinensis, a Traditional Thai herbal medicine, inhibits formation of fibrillary A β and promotes survival and differentiation of cultures neuronal cells**
O-08	**YANG Huihai** *The Chinese University of Hong Kong*	**In Vitro and In Vivo Investigations of The Anti-Metastatic Effect of Natural Compound PGG in Colorectal Cancer**
O-09	**LIU Mengfan** *Shanghai University of Traditional Chinese Medicine*	**Pterostilbene prevents prostate cancer recurrence by inducing quiescent prostate cancer cell apoptosis via MnSOD upregulation**
O-10	**WANG Jiao** *Shanghai University of Traditional Chinese Medicine*	**Evidence and potential mechanism of action of Lithospermum and Its Active Components for Psoriasis**

ABSTRACTS INDEX

Code	Presenter	Title
B-01	**ABDULLAH Al Mamun** *Hong Kong Baptist University*	**Evaluation of Arylnaphthalene Lignan Compounds as Potential Anticancer and Antiviral Agents through the Mechanism of Action Studies**
B-02	**BAO Jiamin** *Shanghai University of Traditional Chinese Medicine*	**Notoginsenoside R1, a discovered VEGF-C promoting natural compound candidate for the treatment of acquired lymphedema**
B-03	**CHAN Yau-Tuen** *The University of Hong Kong*	**Anti-tumor Effects of melatonin in Pancreatic Adenocarcinoma via Tumor-Associated Neutrophils Infiltration and Neutrophil Extracellular Traps Formation**
B-04	**CHEN Lu** *Beijing University of Chinese Medicine*	**Acupuncture Ameliorates Depressive Behaviors by Modulating the Expression of Hippocampal Iba-1 and HMGB1 in Rats Exposed to Chronic Restraint Stress**
B-05	**CHEN Guoming** *The University of Hong Kong*	**Systematic Pharmacological Approach to Uncovering the Potential Mechanism of Yinzhihuang Decoction for Jaundice Treatment**
B-06	**CHEN Yingjie** *Hong Kong Baptist University*	***Musa nana* flower suppresses osteoclastogenesis and inhibits NF-κB and MAPK pathways**
B-07	**CHENG Hok-Chi Edwin** *The Hong Kong University of Science and Technology*	**Anti-bacterial effect of traditional Chinese medicine prepared in nano drug delivery system: potential application in aquaculture feedings**
B-08	**FAN Xiaoyun** *Hong Kong Baptist University*	**Anti-Atopic Dermatitis Effects of Egg Yolk Oil**
B-09	**GAO Xiong** *The Hong Kong University of Science and Technology*	**Luteolin and its analogs exert neurotrophic functions in neuronal cells via mitochondrial hormesis**
B-10	**GOU Leilei** *The Chinese University of Hong Kong*	**In Vitro And In Vivo Anti-Metastatic Effects of Eriocalyxin B In Breast Cancer**
B-11	**GUO Xuanming** *Hong Kong Baptist University*	**Investigating the anti-obesity effect of artesunate and its therapeutic potential in the treatment of obesity**
B-12	**HU Yali** *The Chinese University of Hong Kong*	**Exploration of Bioactivities of Polycyclic Polyprenylated Acylphloroglucinols from Hypericum Ascyron in Human Colon Cancer Cells**

Code	Presenter	Title
B-13	**HUANG Qionghui** *The Chinese University of Hong Kong*	**Anti-Colorectal Cancer Effects of Brusatol: Studies on *in Vitro* and *in Vivo* Experimental Models of Colorectal Cancer**
B-14	**HUANG Yanfeng** *The Chinese University of Hong Kong*	**The therapeutic effects of quercetin on motoneuron death after spinal root avulsion in rats**
B-15	**JIANG Xue** *Shanghai University of Traditional Chinese Medicine*	**Safranal prevents prostate cancer recurrence by blocking re-activation of quiescent cancer cells *via* downregulation of S-phase kinase associated protein 2**
B-16	**KWOK Tsun Ka** *The Hong Kong Polytechnic University*	**Investigation of the anti-microbial properties of Lantana camara L. extracts**
B-17	**LAI Wing Sze** *The Hong Kong University of Science and Technology*	**Edible bird's nests-derived peptides alleviate atopic dermatitis-like symptoms through anti-inflammation**
B-18	**LAM Chu Shing** *Hong Kong Baptist University*	**Evaluation of a naturally occurring phenanthraquinone and its synthetic derivatives in the treatment of pancreatic fibrosis**
B-19	**LI Cunya** *Shanghai University of Traditional Chinese Medicine*	**Progress on immune mechanism of traditional Chinese medicine regulating gut microbiota and its metabolites in the occurrence and development of liver cancer**
B-20	**LI Feifei** *Shanghai University of Traditional Chinese Medicine*	**Xian-ling-lian-xia-fang enhanced the effect of trastuzumab against HER-2 positive breast cancer by improving the effect of NK cell-mediated ADCC**
B-21	**LI Peiting** *The Chinese University of Hong Kon*	**The Immuno-modulatory Activities of Pentaherbs Formula on Ovalbumin-Induced Allergic Rhinitis Mice via the Activation of Th1 & Treg cells and Inhibition of Th2 & Th17 cells**
B-22	**LI Yuan** *Shanghai University of Traditional Chinese Medicine*	**Study on the anti-melanoma mechanism of a new compound Wikstdaphnein A from Wikstroemia chamaedaphne**
B-23	**LIANG Zhengming** *Hong Kong Baptist University*	**Synthesis of Unique Amino Acids as Building Blocks for Bioactive Molecules**
B-24	**LIU Yuting** *Shanghai University of Traditional Chinese Medicine*	**Analysis of tongue flora in patients with chronic gastritis caused by dampness and turbidity**
B-25	**LV Zhiying** *Shanghai University of Traditional Chinese Medicine*	**Pretreatment at Zusanli (ST36) by Electroacupuncture Inhibits Systemic Inflammation and T Lymphopenia in Septic Mice**

Code	Presenter	Title
B-26	**MA Yue** *Shanghai University of Traditional Chinese Medicine*	**Study on the Mechanism of Feiyan Ning Granule Regulating Autophagy Against Invasion and Metastasis of lung cancer**
B-27	**MENG Wanting** *Shanghai University of Traditional Chinese Medicine*	**Modified Taohong Siwu Decoction improves the cardiac function after myocardial ischemia/ reperfusion in rats by promoting endogenous stem cell mobilization and regulating metabolites**
B-28	**OUYANG Xiali** *Beijing University of Chinese Medicine*	**Moxibustion may delay the aging process of Wistar rats by regulating intestinal microbiota**
B-29	**QIAO Lirui** *Shanghai University of Traditional Chinese Medicine*	**Exploring the potential mechanism of "*xiaozhongfang*" for limb lymphedema based on network pharmacology prediction**
B-30	**QUE Zujun** *Shanghai University of Traditional Chinese Medicine*	**Oblongifolin C prevents the clustering of circulating tumor cells by down regulating Src/ FN1 pathway to prevent lung cancer metastasis**
B-31	**SI Tianyu** *Shanghai University of Traditional Chinese Medicine*	**On the Treatment of Central Nervous System Leukemia from the Perspective of "Deficiency, Toxin, Phlegm and Blood Stasis"**
B-32	**SUN Kexiang** *Shanghai University of Traditional Chinese Medicine*	**Anti-Tumor Effects of Chinese herbal Medicine Compounds and its nano-formulations by Regulating Immune System in Microenvironment**
B-33	**TANG Guoyi** *The University of Hong Kong*	**Study on the mechanism of composite N5 in preventing and treating hyperuricemia nephropathy**
B-34	**TONG Yuting** *Shanghai University of Traditional Chinese Medicine*	**Rosmarinic acid exerts anti-neuroinflammatory effects by inhibiting microglial activation through the regulation of Complement 3/ Complement 3a receptor signaling**
B-35	**WANG Li** *Hong Kong Baptist University*	**Pharmacology effects and molecular mechanisms of luteolin in overcoming vemurafenib resistance in melanoma**
B-36	**WANG Xiaoqi** *Hong Kong Baptist University*	**Parthenolide overcomes vemurafenib resistance in melanoma**
B-37	**WEI Lei** *Shanghai University of Traditional Chinese Medicine*	**RNA Sequencing Analysis Reveals the Potential Therapeutic Mechanisms of Huzhang Tongfeng Granule in MSU-Induced Acute Gouty Arthritis Mouse Model**
B-38	**WN Nik Nabil** *Shanghai University of Traditional Chinese Medicine*	**Research Advances in Quiescent Cancer Cells: Molecular Mechanisms And Therapeutic Agents**

Code	Presenter	Title
B-39	**WONG Lut Yi** *Hong Kong Baptist University*	**Deoxyelephantopin overcomes sorafenib resistance in hepatocellular carcinoma and inhibits Akt signalling**
B-40	**WU Jiahui** *The Hong Kong University of Science and Technology*	**The water extract of aloe prevents fluoxetine-induced multiple-drug resistance of E. coli by reversing ROS formation and membrane permeability**
B-41	**WU Jiaying** *Hong Kong Baptist University*	**Chrysoeriol ameliorates collagen-induced arthritis in mice and inhibits STAT3 signaling**
B-42	**WU Meiling** *The University of Hong Kong*	**Rehmannioside D attenuates pathogenesis of multiple sclerosis through inhibiting peroxynitrite induced IL2R nitration**
B-43	**WU Ying** *Hong Kong Baptist University*	**Ginsenoside Rg1 Ameliorates Atopic Dermatitis in a Mouse Model**
B-44	**XIA Chenxi** *The Hong Kong University of Science and Technology*	**Flavonoids from Seabuckthorn (Hippophae rhamnoides L.) protect neurons from β -amyloid-induced apoptosis and oxidation damage**
B-45	**XU Qingqing** *The Chinese University of Hong Kong*	**Patchouli Alcohol Ameliorates the Learning and Memory Impairments in an Animal Model of Alzheimer's Disease via Modulating SIRT1**
B-46	**XU Zhaohui** *Shanghai University of Traditional Chinese Medicine*	**Mechanism of Cistanches Herba in Treatment of Parkinson's Disease Based on Network Pharmacology and Molecular Docking**
B-47	**YANG Dan** *Shanghai University of Traditional Chinese Medicine*	**Network Pharmacology-based analysis of Ju Ying Emulsifiable Paste in the treatment of acne**
B-48	**YU Sulan** *The University of Hong Kong*	**Acteoside promotes B cell-derived IL-10 production and ameliorates autoimmunity**
B-49	**YUAN Hongkai** *Shanghai University of Traditional Chinese Medicine*	**The Effects of a Transgelin-2 Agonist Administered at Different Times in a Mouse Model of Airway Hyperresponsiveness**
B-50	**ZHANG Hoi Lam** *The Hong Kong University of Science and Technology*	**Screening traditional Chinese medicine in promoting fish growth by using growth hormone-IGF1 signaling in HEK293T cells**
B-51	**ZHANG Zhan** *Shanghai University of Traditional Chinese Medicine*	**Identification of the potential mechanisms of Huzhang Tongfeng Granules against acute gouty arthritis through network pharmacology and *in vivo* analysis**
B-52	**ZHAO Lihan** *Hong Kong Baptist University*	**The effects of PIK75, a p110 α and DNA-PK dual inhibitor, on triple negative breast cancer treatment**

Code	Presenter	Title
B-53	**ZHONG Mei** *The Chinese University of Hong Kong*	**Exploration of the Neuroprotective effects and mechanism of Tianma Gouteng Pair on Alzheimer's Disease through TgCRND8 mouse and network pharmacology**
C-01	**CHEN Yaoxinμ** *Shanghai University of Traditional Chinese Medicine*	**Effects of Acupuncture Combined with Donepezil Hydrochloride on Mild to Moderate Alzheimer's Disease and Related Plasma Biomarkers: An Exploratory Randomized Clinical Trial**
C-02	**DONG Lu** *Shanghai University of Traditional Chinese Medicine*	**Effect of Helicobacter pylori infection in the stomach on microorganisms in tongue coating of patients with chronic gastritis**
C-03	**DU Min** *Shanghai University of Traditional Chinese Medicine*	**Clinical effect of Tiaoxin decoction on coronary heart disease patients with anxiety/depression: A randomized controlled clinical trial**
C-04	**HE Yiyun** *Shanghai University of Traditional Chinese Medicine*	**Clinical Efficacy of Si-Jun-Zi-Tang and Regulation of Gut Microbiota in Postoperative Lung Cancer Patients**
C-05	**LUO Bin** *Shanghai University of Traditional Chinese Medicine*	**Establishment of A Nomogram-Based Prognostic Model (LASSO-COX Regression) for Predicting Progression-Free Survival of Primary Non-Small Cell Lung Cancer Patients Treated with Adjuvant Chinese Herbal Medicines Therapy: A Retrospective Study of Case Series**
C-06	**XIE Fangfang** *Shanghai University of Traditional Chinese Medicine*	**Effects of the Prolong Life With Nine Turn Method qigong on brain functional changes in patients with chronic fatigue syndrome in terms of fatigue and quality of life**
C-07	**XIU Wenhao** *Shanghai University of Traditional Chinese Medicine*	**Supplementation With Xuanfei Pingchuan Prescription Can Reduced Experimental Mice Bronchial Inflammation And Restored Microbial Balance**
H-01	**DAI Rongchen** *Shanghai University of Traditional Chinese Medicine*	**Oliganthin H: a novel compound exhibiting potent effect of eradicating both active and dormant prostate cancer cells**
H-02	**YUEN Ka Wing** *The Hong Kong University of Science and Technology*	**Tectoridin stimulates the activity of human dermal papilla cells and promotes hair Shaft elongation in mouse vibrissae hair follicle culture**
H-03	**ZHANG Ying** *Shanghai University of Traditional Chinese Medicine*	**Modular pharmacology-based approach to identify hub genes and kernel pathways of taodan granules treated psoriasis**

Code	Presenter	Title
Q-01	**LIU Guoxiu** *Beijing University of Chinese Medicine*	**Sequential grade evaluation method exploration of TCM decoction pieces based on "network prediction → grading quantization → efficacy validation"**
Q-02	**WU Wenjie** *Hong Kong Baptist University*	**Peptide Markers for Authentication of Houzao by LC -MS/MS**
Q-03	**ZHANG Yilu** *Shanghai University of Traditional Chinese Medicine*	**A multicenter, randomized, controlled, double-blind clinical study on the effect of "qi-blood biochemistry" staged treatment on symptom clusters associated with postoperative adjuvant chemotherapy lung cancer patients**
P-01	**XIE Jing** *Kunming Institute of Botany, Chinese Academy of Science*	**Discovery of new cholestane glycosides from *Ypsilandra thibetica***
P-02	**ZHAO Chenliang** *Hong Kong Baptist University*	**Design and synthesis of novel diterpene analogues based on the ent-kaurene scaffolds discovered from Isodon plants as anticancer agents**
P-03	**XIE Wenjian** *Hong Kong Baptist University*	**Novel meroterpenoids as anticancer agents identified from the medicinal plant Miliusa sinensis**
X-01	**DING Zhiyuan** *Shanghai University of Traditional Chinese Medicine*	**Preparation and in vitro evaluation of total flavones of Epimedium nanosuspensions**
X-02	**FU Yugang** *Shanghai University of Traditional Chinese Medicine*	**System Theory and Modernization of Chinese Medicine: A Retrospect and Prospect**
X-03	**HU Yinqin** *Shanghai University of Traditional Chinese Medicine*	**Composition Principle of Prescriptions for Stroke in book Sheng Ji Zong Lu: Based on Traditional Chinese Medicine Inheritance Computing System**
X-04	**JIA Meng** *Shanghai University of Traditional Chinese Medicine*	**Screening of Medications for Transformation of Idiopathic Membranous Nephropathy to End-stage Renal Disease Using Renal Tissue Whole-Genome Sequencing**
X-05	**LI Jiangcheng** *Shanghai University of Traditional Chinese Medicine*	**Integration of Bulk and Single-Cell RNA-Seq Data to Construct a Prognostic Model of Membrane Tension Related Genes for Colon Cancer**
X-06	**LI Shiying** *Shanghai University of Traditional Chinese Medicine*	**Study on the mechanism of saffron to synergistically improve the efficacy of immunotherapy for lung cancer**

Code	Presenter	Title
X-07	**SUN Yilu** *The University of Hong Kong*	**Network pharmacology analysis reveals the active compounds and the potential mechanisms underlying the antidepressant effects of herbal formulation Banxia-Houpo-Tang**
X-08	**XIA Yumo** *Shanghai University of Traditional Chinese Medicine*	**Effects of Percutaneous Coronary Intervention on Tongue Color Manifestation in Patients with Coronary Heart Disease Based on HSV Color Space**
X-09	**XU Lili** *Shanghai University of Traditional Chinese Medicine*	**Efficacy of Chinese Herbal Medicine for Cardiotoxicity Caused by Anthracycline Drugs on Breast Cancer: A Systematic Review and Meta-analysis of Randomized Controlled Trials**
X-10	**YANG Yunyi** *Shanghai University of Traditional Chinese Medicine*	**Advances in Chinese medicine for the treatment of type 2 diabetes mellitus through intestinal flora regulation medicine**
X-11	**ZHANG Mengchu** *Shanghai University of Traditional Chinese Medicine*	**Research on Pulse Wave Recognition in Patients with Essential Hypertension Target Organ Damage Based on Deep Forest Algorithm**
X-12	**ZHAO Xue** *Shanghai University of Traditional Chinese Medicine*	**Selection and application of clinical efficacy evaluation indexes of traditional Chinese medicine**
X-13	**ZHENG Shiyu** *Shanghai University of Traditional Chinese Medicine*	**Preliminary analysis of clinical application of moxibustion therapy in digestive system diseases based on the General Record of Shengji Zonglu**
V-01	**HAN Ruixuan** *Hong Kong Baptist University*	**Anti-colorectal cancer effects of the Chinese medicine formula Huai-Hua-San**
V-02	**SHANG Jinfeng** *Beijing University of Chinese Medicine*	**Systems pharmacology, proteomics and in vivo studies identification of mechanisms of cerebral ischemia injury amelioration by Huanglian Jiedu Decoction**

(B) Biological Activities and Mechanism Study

(C) Clinical Trial

(H) Herbal Resources

(Q) Quality Control

(P) Phytochemistry

(X) Others

(V) Visit

ORAL PRESENTATION ABSTRACTS

O-01

MMiliusane and Analogues Targeting Autophagy Pathway to Suppress Cell Growth of Colorectal Cancer
野獨活烷及其類似物通過作用於標靶自噬通路抑制結腸癌細胞生長

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Abstract:

The incidence of colorectal cancer (CRC) has been increased sharply during the last decades due to the stepping up of elderly population and unhealthy dietary habits [1]. Autophagy is thought to play both tumor-promoting and tumor-inhibiting roles in cancer; increasing evidence indicated that inhibition of autophagy is beneficial to tumor therapy [2]. Thus, our investigation has demonstrated that regulating autophagy has a pivotal role in regulating the initiation and metastasis of colorectal cancer.

Miliusanes are a cluster of anticancer lead compounds identified from Miliusa plants. One of them, miliusol, was found to potently inhibit the 60 cancer cell lines tested in the National Cancer Institute (NCI) of the US [3]. Its antitumor potency was also demonstrated in our previous in vitro and in vivo studies [3, 4]. In the present investigation, we carried further in vitro and in vivo studies to explore the autophagy mediated anticancer effects of miliusanes.

According to our animal data, the administration of miliusol achieves a significant antitumor effect in an ectopia CRC model in both single-agent and combination with PD-L1 antibody treatments. Miliusol and one of its analogs were found to be able to inhibit autophagy by increasing p62 and LC3 I/II levels in time- and dosage-dependent manners. These results suggested that miliusol and analogue could act as a novel autophagy inhibitors to exert antitumor effects.

Tumor cells presented with less HLA-A [a major histocompatibility complex (MHC) antigen specific to humans] than normal cells can cause the miss of immune cell recognition, which may lead to immune evasion and eventually metastasis of cancer cells in the bodies. Our immune staining assay and western blotting experiments confirmed that miliusol and analogue could rescue the expression of surface antigen HLA-A through inhibiting autophagy, which would promote cells surface antigen present to CD8+ T cell and activate immune response correctly. Our vivo experiments further revealed that the miliusane compounds could restore the decreased HLA-A level in animal CRC models.

In conclusion, autophagy is a potential target for CRC drug development and a pivotal regulator for cellular protein homeostasis. In this study, we have demonstrated that miliusol and analogues can be potential lead molecules to inhibit colorectal cancer cell growth by targeting autophagy and preventing immune evasion. Therefore, combination with immunotherapy and autophagy inhibition might be beneficial for the curative outcome of CRC

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O-02

Si-Jun-Zi-Tang in combination with temozolomide produces synergistic anti-melanoma effects via inhibiting MGMT and ATR/Chk1 pathways
四君子湯與替莫唑胺聯用通過抑制 MGMT 及 ATR/Chk1 通路產生協同抗黑色素瘤作用

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Abstract:

TMalignant melanoma is one of the deadliest cancers in the world. Temozolomide (TMZ) is a commonly used therapeutic drug in treating melanoma. However, it has severe toxicities (1). Si-Jun-Zi-Tang (SJZT) is a traditional Chinese medicine formula which tonifies "Qi" in human body. When combined with chemotherapeutic drugs, SJZT can enhance their efficacy (2). Whether SJZT enhances TMZ's anti-melanoma effects is a question to be answered. In this study, we investigated the anti-melanoma effects and mechanisms of SJZT in combination with TMZ (SJZT-plus-TMZ). SJZT extract was prepared by reflux-extraction using 95% ethanol. CCK8 assay results showed that SJZT synergizes the cytotoxicity of TMZ in A375 and A2058 melanoma cells, and SJZT-plus-TMZ exerts less cytotoxicity in normal HaCaT keratinocyte cells than in melanoma cells. Cell cycle analyses revealed that SJZT-plus-TMZ induces S phase arrest in melanoma cells. Annexin V/PI apoptosis assay results showed that SJZT synergizes TMZ in inducing A375 cell apoptosis. SJZT-plus-TMZ was found to have synergistic effects in inhibiting A375 cell migration in wound healing assays. Comet assays and immunoblotting analyses demonstrated that SJZT enhances TMZ's effects in inducing DNA damage. In the B16 melanoma-bearing C57BL/6 mouse model, SJZT synergizes TMZ in inhibiting melanoma growth. Additionally, we found that SJZT reduces liver toxicity of TMZ, as indicated by lowered serum levels of ALT and AST. Network pharmacology predicted that MGMT and Chk1 are the key proteins responsible for the synergistic anti-melanoma effects of SJZT-plus-TMZ. It was reported that inhibition of MGMT or ATR/Chk1 signaling sensitizes melanoma cells to TMZ (3,4). Our immunoblotting results demonstrated that SJZT-plus-TMZ lowers protein levels of MGMT, phospho-ATR (Ser428), total Chk1, phospho-Chk1 (Ser 296, Ser 317, Ser 345) and phospho-cdc25c (Ser 216) in A375 cells. RT-qPCR results revealed that SJZT-plus-TMZ lowers the mRNA level of Chk1 but not MGMT. Immunoblotting results showed that SJZT-plus-TMZ accelerates MGMT proteasomal degradation. In summary, our results indicate that SJZT synergizes the anti-melanoma effects and lowers the liver toxicity of TMZ, and inhibition of the ATR/Chk1 pathway and acceleration of proteasomal degradation of MGMT are involved in the synergistic effects of the combination. Findings of this study suggest that SJZT-plus-TMZ can be developed into a highly effective anti-melanoma agent with low toxicity.

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O-03

Targeting hepatocellular carcinoma by HL23, a novel HDAC inhibitor derived from Fangchinolin that regulates TXNIP-mediated potassium deprivation and enhances sorafenib efficacy

防己諾林鹼的衍生物 HL23 作為新型組蛋白乙酰化抑製劑通過靶向硫氧還蛋白相互作用蛋白（TXNIP）活化的鉀離子剝奪抑制肝細胞瘤並提高索拉非尼藥效的機制研究

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Abstract:

Hepatocellular carcinoma (HCC) is the most common type of primary liver cancer with increasing incidence and mortality according to the latest report of GLOBOCAN 2020. HCC developed from hepatocytes subjected to the accumulation of aberrant cellular functions driven by genomic and epigenomic alterations[1]. Histone acetylation is one of epigenetic modifications that requires dynamic actions of histone acetyl transferases and histone deacetylases (HDACs) to open or close the chromatin structure by adding or removing the acetyl moiety to the residues of histones, respectively[2]. In HCC, hyperactivated HDACs are frequently observed that lead to abnormally suppressed gene expressions[3-8]. The highly involvement of HDACs in HCC and currently documented anti-cancer effects of HDAC inhibitors (HDACis) have drawn great attention of researchers to explore promising pharmacological agents to restore HDACs functions. However, there is no available HDACi for the therapy of human HCC.

In this study, we identified HL23 as a novel HDACi, one of chemical derivatives of fangchinoline from Chinese herbal medicine Stephaniae tetrandrine S. Moore with superior anti-HCC effects compared with FDA-approved HDACi Vorinostat (SAHA) for the treatment of cutaneous T-cell lymphoma[9]. HL23 was proved to suppress both in-vitro and in-vivo HCC progression via inducing catastrophic apoptosis and inhibiting metastasis. The genome-wide transcriptomic analysis revealed that TXNIP was the most upregulated gene in the orthotopic HCC tumors administrated with HL23. The enhanced TXNIP could activate the expression of potassium efflux-related proteins and lead to intracellular potassium deprivation. The regulatory mechanism of HL23 on TXNIP transcription was confirmed by in silico and cellular assays that the acetylation at the TXNIP promoter was enhanced by HL23 and particularly through inhibition on the HDAC1 activity. To evaluate the clinical significance of TXNIP and HDAC1, we correlated their gene expressions with outcomes of HCC patients downloaded from publicly assessable database and suggested that combined TXNIP and HDAC1 expression could be a prospective indicator to predict survival outcome of patients with HCC. The combination treatment with HL23 and sorafenib could enhance the anti-cancer effects of sorafenib in HCC. Our findings highlighted the importance of TXNIP as one of target of HDACi in

anti-HCC activity and suggested HL23 as a promising HDACi candidate for HCC management.

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O-04

In-silico drug toxicity and interaction prediction for plant complexes based on virtual screening and text mining
基於虛擬篩選和計算機輔助文本挖掘對植物混合藥物毒性及相互作用的預測研究

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Abstract:

Potential drug toxicities and drug interactions of redundant compounds of plant complexes may cause unexpected clinical responses or even severe adverse events. On the other hand, super-additivity of drug interactions between natural products and synthetic drugs may be utilized to eliminate the side effects of drugs. Although without enough datasets for prediction models training, based on the SwissSimilarity and PubChem platforms, for the first time, a feasible workflow of prediction of both toxicity and drug interaction of plant complexes was built in this study. The optimal similarity score threshold for natural compound toxicity prediction of this system is 0.561. About four representative herbal medicines, from the PubChem database, 31 different sections of toxicity information such as “Acute Effects”, “NIOSH Toxicity Data”, “Interactions”, “Hepatotoxicity”, “Carcinogenicity”, “Symptoms”, and “Human Toxicity Values” sections have been retrieved, with 23 active compounds predicted to exert various potential toxicities, and 19 different aspects involved in potential drug interactions. There are 16 active compounds predicted to play synergistic effects on cancer progression inhibition, radiotherapy, and chemotherapy. The synergistic effects of Spatholobus suberectus Dunn and docetaxel in the management of triple-negative breast cancer were proved by the combination index assay, synergy score detection assay, and xenograft model.

Keywords: parthenolide, melanoma, vemurafenib resistant, Hsp90 signaling, GPX4

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O-05

Covalent Inhibition of Pyruvate Kinase M2 Reprograms Metabolic and Inflammatory Pathways in Hepatic Macrophages Against Non-alcoholic Fatty Liver Disease
共價抑制丙酮酸激酶 M2 在代謝重編程調控巨噬細胞極化及其在非酒精性脂肪肝疾病中的作用

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Abstract:

Warburg effect of aerobic glycolysis in hepatic M1 macrophages is a major cause for metabolic dysfunction and inflammatory stress in non-alcoholic fatty liver disease (NAFLD)[1-2]. Plant-derived triterpene celastrol markedly inhibited macrophage M1 polarization and adipocyte hypertrophy in obesity[3]. The present study was designed to identify the celastrol-bound proteins which reprogrammed metabolic and inflammatory pathways in M1 macrophages. Pyruvate kinase M2 (PKM2) was determined to be a major celastrol-bound protein. Peptide mapping revealed that celastrol bound to the residue Cys^{31} while covalent conjugation altered the spatial conformation and inhibited the enzyme activity of PKM2. Mechanistic studies showed that celastrol reduced the expression of glycolytic enzymes (e.g., GLUT1, HK2, LDHA, PKM2) and related signaling proteins (e.g., Akt, HIF-1α, mTOR), shifted aerobic glycolysis to mitochondrial oxidative phosphorylation and skewed macrophage polarization from inflammatory M1 type to anti-inflammatory M2 type. Animal experiments indicated that celastrol promoted weight loss, reduced serum cholesterol level, lipid accumulation and hepatic fibrosis in the mouse model of NAFLD. Collectively, the present study demonstrated that celastrol might alleviate lipid accumulation, inflammation and fibrosis in the liver via covalent modification of PKM2.

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O-06

Maple leaf extracts with rapidly reactive oxygen species-degradable activity for inhibiting cardiomyocytes death following myocardial ischemia-reperfusion injury
可快速降解活性氧的楓葉提取物用於抑制心肌缺血再灌注損傷後的心肌細胞死亡

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Abstract:

Reactive oxygen species (ROS) following myocardial ischemia-reperfusion (MI/R) injury trigger oxidative stress and lead to consequent cardiomyocyte death. Extracts from maple tree leaf (Acer tataricum subsp. Ginnala), which called Ku-jin tea in China, have recently been reported for their promising antioxidative activities through chemical analysis and cellular examination. 1-3 However, the protective effect of maple leaf extracts against MI/R injury has not been explored yet.

In current study, we investigated that both co- and pre-administration of fractioned extracts can alleviate cellular death and myocardial injury by rapidly inhibiting ROS generation within 30min. Cell viability assays demonstrated significantly improved cellular survival of H9C2 cells and neonatal rat cardiomyocytes (NRCMs) by either 30min co- or 1hr pre-treatment of selected extracts (DCM and EA) with H2O2. As a long-term effect, extracts also inhibited Erastin- and RSL 3-induced ferroptosis after 24hr, which further validated the protection during MI/R. We next determined that intracellular and mitochondrial ROS levels were significantly declined after extracts administration by comparing Dichlorodihydrofluorescein (DCF) signals. In an established rat MI/R model, the intravenous injection of DCM and EA extracts revealed lower cardiac fibrosis area.

To chemically identify the active constituent of maple leaf extracts, mass spectrometry was employed and determined Ginnalin A(GA) as the main component. Remarkably, without cell involvement, maple leaf extracts can directly consume H2O2 and therefore reduce total ROS levels. DPPH and antioxidative capacity assays further validated the potent ROS-degradable activities of maple leaf extracts.

These findings suggest that, except traditional preconditions, co-administration with maple leaf extracts can maintain cardiomyocyte survival during MI/R injury by shortly inhibiting extracellular and intracellular ROS generation. Rapid cytoprotective effects and ROS-degradable activities from maple leaf extracts provide a timely protection for patients undergoing acute I/R injury, which closely meets the clinical demand.

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O-07

The extracts of stem wood deriving from Dracaena cochinchinensis, a Traditional Thai herbal medicine, inhibits formation of fibrillary Aβ and promotes survival and differentiation of cultures neuronal cells

源自泰國傳統草藥 Dracaena cochinchinensis 的莖木提取物可抑制 β - 澱粉樣蛋白的形成並促進培養神經元細胞的存活和分化

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Abstract:

Inhibiting Aβ aggregation and preventing its neurotoxicity have been given attention for the therapeutic strategies of Alzheimer's disease (AD) [1]. Medicinal plants are the potential source of bioactive compounds. Dracaena cochinchinensis (Lour.) S.C.Chen, a Thai folk medicine named "Chan-daeng", belongs to the family of Asparagaceae, which traditionally has been used as antipyretics, pain relief and anti-inflammation [2]. The current study is aiming to investigate the pharmacological activities of ethanol and water extracts of D. cochinchinensis stem wood in blocking Aβ fibril formation, preventing and protecting Aβ-mediated cell toxicity, and stimulating neuronal differentiation in cultured PC12 cells. The extracts of D. cochinchinensis stem wood prevented Aβ aggregation and its toxicity in the cultures. Additionally, the extracts of D. cochinchinensis greatly defended against the Aβ fibril-mediated cell death in dose-dependent manners. The herbal extracts showed synergy with low dose of nerve growth factor (NGF; 1.5 ng/mL) in stimulating the protein expressions of neurofilaments, i.e., NF68, NF160 and NF200. These results suggested that D. cochinchinensis extracts have activities in preventing and protecting Aβ fibril-mediated toxicity, as well as in promoting neurite outgrowth of cultured PC12 cells.

Acknowledgement:

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O-08

In Vitro and In Vivo Investigations of The Anti-Metastatic Effect of Natural Compound PGG in Colorectal Cancer
天然化合物 PGG 在大腸癌中抗轉移作用的體外和體內研究

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Abstract:

Despite significant advances in the diagnosis and treatment of colorectal cancer (CRC), metastatic colorectal cancer still poses serious threat to CRC patients[1]. Chemotherapy is one of the main treatments for metastatic CRC, however chemotherapeutics usually exhibit side effects, such as hair loss, vomiting, hepatic and renal toxicities. Therefore, there is still a need to search for safe and effective agents for inhibiting metastatic CRC and prolonging survival rate.

The natural compound PGG (1,2,3,4,6-penta-O-galloyl-β-D-glucose) is a gallotannin found in medicinal plants such as Phyllanthus emblica. PGG has been reported to possess anti-diabetic, anti-inflammatory and anti-tumor activities[2]. Previous study has shown that PGG exhibited cytotoxicity in CRC cells[3]. Nonetheless, the anti-metastatic activity of PGG is yet to be explored. Therefore, the aim of the present study is to investigate the in vitro and in vivo anti-metastatic potential of PGG in CRC.

For in vitro studies on PGG, MTT, BrdU, colony formation, scratch, and transwell assays were performed in human colon cancer cells HCT116 and murine colon tumor cells colon 26-M01. The effects of PGG on metastasis-related proteins expression were evaluated by western blot. For in vivo studies on PGG, an orthotopic colon 26-M01 tumor-bearing Balb/c mice model was established. Mice were treated with vehicle control, PGG (5, 10 or 15 mg/kg daily) or chemotherapeutics (50 mg/kg 5-fluorouracil and 6 mg/kg oxaliplatin once a week) as positive control for 17 days. In addition, another animal model using nude mice injected with HCT116 cells at tail vein were given vehicle, PGG (10 or 15 mg/kg daily), or chemotherapeutics (once a week) for 31 days. At the end of treatment, mice were sacrificed and livers and lungs were collected for the evaluation of metastasis. The modulatory effects of PGG on tumor microenvironment were also evaluated in colon 26-M01 tumor-bearing mice.

Results showed that PGG exhibited selective cytotoxic effects on HCT116 and colon 26-M01 cells in time- and dose-dependent manners. Besides, PGG exhibited not only anti-proliferative and colony formation inhibitory effects, but also inhibition on cell motility, and migration in both HCT116 and colon 26-M01 cells via modulating proteins expression of cathepsin B, FAK, cofilin, and epithelial-to-mesenchymal transition (EMT) related proteins, such as N-cadherin, E-cadherin, snail, MMPs, etc.

In addition, PGG (10 or 15 mg/kg) could significantly inhibit liver and lung metastasis in both Balb/c and nude mice models.

In conclusion, this is the first report on the anti-metastatic effects of PGG in colon cancer preclinical models, in which the underlying modulation of cathepsin B/ FAK/ cofilin pathways and EMT process by PGG was elucidated. Our study suggests the potential of PGG to be developed as an anti-metastatic agent for CRC.

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O-09

Pterostilbene prevents prostate cancer recurrence by inducing quiescent prostate cancer cell apoptosis via MnSOD upregulation

紫檀芪通過上調 MnSOD 誘導靜止期前列腺癌細胞雕亡抑製癌癥復發

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Abstract:

Quiescent cancer cells (QCCs) reversibly reside in the G0 phase and exhibit limited sensitivity to chemotherapeutic drugs. There is growing recognition that the presence and repopulation of QCCs are responsible for cancer progression and recurrence. Therefore, it is important to understand the mechanism that enables quiescence and develop pharmacological strategies to eliminate QCCs. In this study, proteomics and microarray analysis showed that both mRNA and protein levels of manganese superoxide dismutase (MnSOD) are aberrantly overexpressed in quiescent human prostate cancer cells compared to the proliferating state. Silencing MnSOD with Dox-inducible shRNA accelerated the cell cycle re-entry of quiescent prostate cancer cells. By contrast, MnSOD overexpression induced apoptosis and depolarized mitochondrial membrane potential during the transition from quiescence to proliferation. Forced MnSOD overexpression suppressed the tumorigenic ability of quiescent prostate cancer cell xenografts and significantly improved mice survival. We further found that Pterostilbene (PTE), naturally derived from Pterocarpus marsupium heartwood, efficiently inhibited quiescent prostate cancer cell proliferation and enhanced the expression of MnSOD. PTE activated the cleavage of apoptosis-associated proteins, including PARP, caspase-3, and caspase-9. Moreover, PTE-induced apoptosis was diminished in MnSOD depletion quiescent cancer cells. Administration of PTE reduced the growth of quiescent prostate cancer cell xenografts in vivo. Furthermore, PTE-treated tumor tissues exhibited an increase in MnSOD and cleaved-caspase-3 protein levels and the percentage of positive TUNEL cells. In conclusion, our findings not only highlighted the regulatory role of MnSOD in the survival of quiescent prostate cancer cells, but also discovered a lead compound targeting MnSOD for preventing prostate cancer progression and recurrence.

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O-10

Evidence and potential mechanism of action of Lithospermum and Its Active Components for Psoriasis

中藥紫草及其活性成分治療牛皮癬的證據和潛在的作用機理

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Abstract:

Background: Chinese herbal medicine is effective in the treatment of psoriasis and can significantly reduce skin inflammation and psoriatic lesions, with few side effects. shikonin (SHI) and β, β-dimethylacryloyl alkannin (DMA), the main effective components of Lithospermum, have strong anti-inflammatory effects. The aim of this systematic review was to evaluate the efficacy and safety of Lithospermum and its main active components and elucidate the potential mechanisms of their action in psoriasis treatment.

Methods: PubMed, Embase, Cochrane Central Register of Controlled Trials, China National Knowledge Infrastructure, Chinese Scientific Journals Database, the Wan Fang Database, and Chinese Biomedicine databases were systematically searched for articles published between January 1, 1970 and February 31, 2021. We included clinical and preclinical studies that examined the effects of Lithospermum and its active components on psoriasis. All data were analyzed using the RevMan 5.3 software. The Cochrane risk-of-bias tool and SYRCLE's risk-of-bias tool were used to assess the quality of all studies.

Results: 11 clinical trials (1024 participants) and 23 preclinical studies were assessed in this study. Meta-analysis showed that, when treating psoriasis patients, the herbal decoction (Lithospermum as the monarch drug) can significantly improve psoriatic dermatitis, which can significantly reduce the psoriasis area and severity index (PASI) score (mean difference [MD]=-2.00, 95% confidence interval [CI] [-3.19, -0.80], P=0.001; I^2=85%). The incidence rates of diarrhea (risk ratio =0.21, 95% [CI] [0.06, 0.81], P=0.02) were higher in the Lithospermum group than in the control group, while other adverse events were not significantly different between the two groups (p>0.05). We evaluated the PASI score of mice on day 7, and found that SHI or DMA also alleviated psoriatic lesions (MD=-3.36, 95% CI [-4.67, -2.05], P<0.00001, I^2=94%). Furthermore, the epidermal thickness decreased more after SHI or DMA treatment compared to the control group (MD=-34.42, 95%CI [-41.25, -27.59], P<0.00001, I^2=93%). Based on the preclinical studies, we also summarized and

mapped the mechanisms of SHI and DMA in the treatment of psoriasis.

Conclusion: Available findings demonstrated that Lithospermum combined with other conventional treatments is useful in treating psoriasis, and preclinical evidence has shown that the active components of Lithospermum exhibit a potential anti-inflammatory effect, promote keratinocyte apoptosis, inhibit keratinocyte proliferation and angiogenesis, and block the cell cycle. In summary, our findings suggest that Lithospermum and its active components can be used to treat psoriasis.

Keywords: psoriasis; Lithospermum; shikonin (SHI) ; β, β-dimethylacryloyl alkannin (DMA) ; systematic review; meta-analysis

Acknowledgement:

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POSTER PRESENTATION ABSTRACTS

B-01

Evaluation of Arylnaphthalene Lignan Compounds as Potential Anticancer and Antiviral Agents through the Mechanism of Action Studies

通過作用機制研究評估芳基萘木脂素化合物作為潛在的抗癌和抗病毒劑

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Abstract:

Nowadays, cancers and viral infections remain serious worldwide human health issues. Many drugs have already been approved to treat cancers and viral diseases, but there are few "cure" drugs, and none of them are without adverse effects. Discovering novel and safe drugs to treat these diseases from natural sources is thus desired.

We examined our aryl naphthalene lignans (ANL) compound library for their cancer cell killing activities of in A375 and IGR1 melanoma cell lines and human normal skin HaCaT cell as well as their antiviral activities (e.g. H5N1 and SARS-CoV-2) using our "One-Stone-Two-Birds" protocol.[1,2] The cell cycle arrest was analyzed by using flow cytometry analysis. Western blot analysis was performed to find out the mechanistic pathway of C27P2, a novel semi-synthetic drug derived from a naturally occurring ANL. Time-of-addition (TOA) assays were carried out in order to identify the target stages of the ANL compounds on the viral replication. Some of the ANLs displayed potent cancer cell killing activities, and some were demonstrated with potent antiviral activities.

In the aspect of anticancer activity, C27P2 displayed cytotoxic activity with the IC50 value of 7.10 and 11.2 nM in A375 and IGR1 cell lines, respectively, which is close to standard drug paclitaxel. Furthermore, C27P2 exhibited much lower cytotoxicity with an IC50 value of 720.35 nM in HaCaT normal cell line. β-Galactosidase activity assay indicated the senescence induction that is associated with the anticancer activity of C27P2. Mechanistic study showed down-regulation of p16, CDK4, and E2F1 while up-regulation of senescent markers p21 and p27. Flow cytometry analysis demonstrated significant induction of cell cycle arrest at S-phase after treatment with C27P2. In addition, C27P2 induced S-phase cell cycle arrest by decreasing the expression of CDK2 and Cyclin A2 whereas increasing the expression of p21 and p27 protein markers. Investigation of the effect of C27P2 on PI3K-AKT pathway exhibited significant down-regulation of p-PI3K, p-AKT, mTOR, and cyclin D1 in A375 and IGR1 cell lines.

In the aspect of antiviral activity, 53 ANL compounds have been evaluated using "One-Stone-Two-Birds" pseudoviral infection assay. As a result, ZM-473, ZM-538 and ZM-495 demonstrated strong antiviral activities against HIV-luc/VSV and HIV-luc/AIV pseudoviruses with the EC50 values ranging from 6.51-60 nM and also exhibited the high selectivity index (SI) ratio. Theoretically, the greater the SI ratio, the more efficient and safer a drug would treat a specified viral infection in

vivo. Furthermore, the TOA results indicated that both ZM-473 and ZM-538 at a dose of 500 nM inhibited the HIV and AIV reverse transcription process that followed the zidovudine pattern and at this concentration.

Overall, this study explored the potential of safe and novel ANL lead compounds as anticancer and antiviral drugs and provided the foundation for further research.

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B-02

Notoginsenoside R1, a discovered VEGF-C promoting natural compound candidate for the treatment of acquired lymphedema
三七皂苷 R1，一種促進 VEGF-C 用於治療獲得性淋巴水腫的天然化合物

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Abstract:

Background: Acquired lymphedema is a global health problem that lacks pharmacologic therapy at present[1]. Lymphangiogenesis promoted by vascular endothelial growth factor C (VEGF-C) is a promising potential therapeutic option for lymphedema[2, 3]. Notoginsenoside R1 (R1) is an important compound from Panax notoginseng, which can promote lymphangiogenesis by stimulating the expression of VEGF-C in lymphatic endothelial cells (LECs)[4]. Here, we attempted to explore the effect of NG-R1 on lymphedema and the mechanisms.

Methods: In vivo, 8-10 weeks old female C57BL/6J mice and Prox1-Cre^{ERT2} and both target alleles floxed by Flt$^{flox/flox}$, with tamoxifen for 7 days to conditionally knockout the VEGFR-3 gene in LECs, were surgically induced acquired lymphedema at tail. After the second week after surgery, the mice were administered orally with R1 (20mg/kg) or saline once a day for 4 weeks. The circumference of tail was measured. The lymphatic structure and drainage function at tail were examined by near-infrared indocyanine green (NIR-ICG). The expression of VEGF-C and lymphangiogenesis at the surgery site were examined by immunohistochemical and immunofluorescence staining. In vitro, LECs were treated with NG-R1, plus/minus VEGFR-3 inhibitor (MAZ51) or plus/minus VEGF-C siRNA. The function of LECs was showed by wound healing and tube formation assays, and the expression level of VEGF-C was measured by q-PCR and western blot. In addition, RNA-seq analysis was performed to explore the signal transduction mechanism.

Results: In vivo, R1 reduced tail swelling, restored lymphatic function (increased lymphatic pulse and clearance), as well as promoted the generation of lymphatic vessels and the expression of VEGF-C at the surgical position, and these improvements were not evident in VEGFR3^{LECKO} mice. In vitro, R1 promoted LECs migration, tube formation and VEGF-C protein and mRNA expression, which can be blocked by MAZ51 and VEGF-C siRNA. RNA-seq results indicated that R1 mainly stimulated cAMP/PKA signaling pathway. R1 stimulates VEGF-C transcription by promoting the phosphorylation of PKA protein and increasing the binding of CREB protein to these CRE sites. In addition, PKA phosphorylation inhibitor (H89) could block R1 effect on VEGF-C protein expression.

Conclusion: R1, a natural small molecular compound, is a novel activator promoting the VEGF-C expression to stimulate tube formation and migration of LECs through cAMP/PKA/CREB

signaling pathway. It restores lymphangiogenensis and lymphatic drainage function to alleviate lymphedema in the acquired lymphedema mouse model. R1 has the potential to be a novel oral drug for the treatment of patients with acquired lymphedema.

Key Words: Notoginsenoside R1, lymphedema, VEGF-C, cAMP/PKA/CREB

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B-03

Anti-tumor Effects of melatonin in Pancreatic Adenocarcinoma via Tumor-Associated Neutrophils Infiltration and Neutrophil Extracellular Traps Formation

褪黑激素通過腫瘤相關中性粒細胞浸潤和胞外誘捕網形成對胰腺癌的抗腫瘤作用

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Abstract:

The immune "cold" tumor microenvironment (TME) is contributing to the poor prognosis of pancreatic adenocarcinoma (PAAD). The role of tumor-associated neutrophils (TANs) in tumor immunity has been controversial. In this study, the association of pancreatic melatonin level and patients' survival is revealed, while the role of melatonin in TANs regulation is investigated.

In pre-clinical PAAD mice models, we showed that melatonin suppressed tumor growth by increasing the infiltration of TANs into the TME. This influx was demonstrated to be induced by Chemokine (C-X-C motif) ligand 2 (CXCL2) expression by tumor cells under the treatment of melatonin. The tumor inhibition was presented only with direct contact of neutrophils and tumor cells, and neutrophil extracellular traps (NETs) were further suggested to be responsible for the tumor-killing mechanism. The infiltrated TANs also exhibited anti-tumor N1-like properties, which were enumerated in various phenotypic characteristics. Proteomics analysis suggested enrichment of fatty acid oxidation pathways in melatonin-treated PAAD tumors. Fatty acid oxidation provides the energy for the NETs formation. Finally, the association between melatonin-related NETosis and overall survival was examined in human PAAD specimens. A strong relationship was observed between melatonin-associated CXCL2-induced NETosis and longer overall survival in the patients.

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B-04

Acupuncture Ameliorates Depressive Behaviors by Modulating the Expression of Hippocampal Iba-1 and HMGB1 in Rats Exposed to Chronic Restraint Stress
針刺通過調節 CRS 大鼠海馬 Iba-1 和 HMGB1 表達改善抑鬱樣行為機制研究

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Abstract:

The antidepressant mechanism of acupuncture has not been fully elucidated recently. Thus, the objective of the present study is to investigate the antidepressant mechanism of acupuncture of modulating the neuroinflammation induced by high mobility group box-1 (HMGB1) in rats subjected to chronic restraint stress (CRS). Forty-four male Sprague Dawley rats were randomly divided into control, model, escitalopram, and acupuncture group. Except for rats in the control group, all rats were exposed to CRS for 21 days continuously. Rats in the escitalopram group were subjected to a suspension of escitalopram and saline. One hour before CRS procedures, acupuncture was performed at Baihui (GV20) and Yintang (GV29) for rats in the acupuncture group, 20 minutes per day for 21 days. All rats in each group were conducted to detect the body weight, sucrose preference test at 0, 7, 14, 21 days to evaluate the depression-like behaviors. The expression of microglial activation and HMGB1 in the hippocampus was detected by immunofluorescence. The expression of hippocampal interleukin-10 (IL-10) was detected by western blot. And the content of serum tumor necrosis factor-α (TNF-α) was detected by the enzyme-linked immunosorbent assay method. CRS-exposed rats showed obviously decreased body weight and sucrose preference when compared with the control group, which was reversed by acupuncture. The results have also shown that acupuncture ameliorated the CRS-induced activation of microglia and HMGB1 in the hippocampus CA1 region. Furthermore, acupuncture reduced the stress-induced upregulation of TNF-α in serum. Collectively, the current study highlights the role of acupuncture in alleviating depressive behavior associated with stress-induced neuroinflammation mediated by HMGB1 in the CRS model of depression.

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B-05

Systematic Pharmacological Approach to Uncovering the Potential Mechanism of Yinzhihuang Decoction for Jaundice Treatment
從系統藥理學角度揭示茵梔黃湯治療黃疸的潛在機制

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Abstract:

Objective: Yinzhihuang decoction (YZHD) has been utilized to treat jaundice effectively for ages as a Chinese herbal formula. However, its concrete mechanism of action remains further elaboration. This research aims to reveal potential mechanism of YZHD to provide reference for ulterior application of the formula.

Method: In our study, YZHD was comprehensively analyzed by systematic pharmacological methods, involving component and target prediction, protein-protein interaction analysis, network visualization analysis, GO and KEGG analysis, etc. Molecular docking was employed to verify the binding activity of the targets and compounds predicted by network pharmacology.

Results: We derived 87 active ingredients and 249 targets of YZHD. After interacting with 1677 jaundice-related genes, 204 targets of YZHD active compounds closely associated with jaundice were screened by PPI analysis. The GO enrichment revealed that the main aspects of YZHD involved include cellular components, molecular functions and biological processes such as cytoplasm, cell membrane, protein binding, DNA binding, transcription of the RNA polymerase II promoter, transcriptional positive regulation of transcription, etc. Pathway enrichment demonstrated that YZHD mainly involves PI3K-Akt, Toll-like receptors, TNF signalling pathway, etc. An "active ingredient-key target-signalling pathway" network was constructed to illustrate and predict how YZHD alleviates jaundice. Molecular docking displayed that five central genes had strong binding ability to 10 compounds.

Conclusion: YZHD functions through its active compounds at the appropriate targets and interacts with signalling pathways to form a complex network for the treatment of jaundice. The validated literature suggested that the potential mechanisms of YZHD in therapy may cover two aspects: inhibition of hepatocellular carcinoma cells or increasing the number of hepatocytes; as well as improving the function of metabolic enzymes and transporters in hepatocytes.

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B-06

Musa nana flower suppresses osteoclastogenesis and inhibits NF-κB and MAPK pathways
香蕉花抑制破骨 胞生成並抑制 NF-κB 和 MAPK 信號通路

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Abstract:

Banana flowers (*Musa* spp., Musaceae) are consumed as a vegetable and traditionally used for managing several health problems[1, 2] including joint pain, a symptom of bone loss. Osteoclasts are key effector cells responsible for bone loss. Some flavonoids in banana flowers, such as quercetin and quercitrin, have been shown to be able to inhibit osteoclastogenesis[3-5]. Suppressing NF-κB (nuclear factor-κB) and MAPK (mitogen-activated protein kinases) signaling pathways can inhibit osteoclastogenesis[6, 7], thereby inhibiting osteoclast-mediated bone loss and maintaining bone health. Whether banana flowers can inhibit osteoclast formation is unknown. In this study, we prepared the ethyl acetate fraction (FFE-EA) of an ethanolic extract of fresh flowers of *Musa nana* Lour., and identified 76 polyphenol compounds in the extract using UPLC-MS/MS analyses. Also, we determined if FFE-EA inhibits osteoclastogenesis, and if inhibition of NF-κB and MAPK pathways is involved in the effect. In RANKL (receptor activator of NF-κB ligand)-stimulated RAW264.7 macrophages, FFE-EA inhibited osteoclastogenesis and osteoclastic bone resorption. Mechanistic studies revealed that FFE-EA suppressed the phosphorylation/activation of IκB-α (Ser32), p65 (Ser536), p38 (Thr180/Tyr182), JNK (c-JUN N-terminal kinase, Thr183/Tyr185) and ERK (extracellular signal-regulated kinase, Thr202/Tyr204), decreased the nuclear localization of p65, NFATc1 (nuclear factor of activated T-cells cytoplasmic 1) and c-Fos, and lowered mRNA levels of osteoclast marker/function-related genes *TRAF6* (tumor necrosis factor receptor-associated factor 6), *TRAP* (tartrate-resistant acid phosphatase), *CTSK* (cathepsin k), *OSCAR* (osteoclast-associated Ig-like receptor) and *MMP-9* (matrix metalloproteinase-9). In summary, FFE-EA inhibits RANKL-induced osteoclastic differentiation of RAW264.7 macrophages. Inhibition of NF-κB and MAPK pathways is involved in the effects of FFE-EA. Findings of this study provide pharmacological justifications for the use of banana flowers in managing joint pain, and suggest that FFE-EA can be developed into a nutraceutical that benefits bone health.

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B-07

Anti-bacterial effect of traditional Chinese medicine prepared in nano drug delivery system: potential application in aquaculture feedings
利用中藥組方及納米化中藥作抗菌水產飼料添加劑的潛在應用

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Abstract:

Infectious diseases are common in fish aquaculture. They are responsible for huge economic loss around the world. Aquaculture operators are employing antibiotics to treat and to prevent bacterial infections in cultured fish. The long-term application of antibiotics has damaged the environment and threatened public health. Traditional Chinese medicine (TCM) can be considered as a safer alternative to replace antibiotics in aquaculture, and therefore which could be used to prevent infectious diseases, caused by marine bacteria. Four common pathogenic bacteria in aquaculture (*Aeromonas hydrophila*, *Edwardsiella tarda*, *Vibrio alginolyticus*, and *Vibrio harveyi*) were employed in Start of Growth Time (SGT) screening platform to determine the bacterial inhibition effect of TCM extracts. Here, we developed a feeding additive using aqueous extract of Scutellaria baicalensis to inhibit the growth of pathogenic bacteria. The growth performance was improved in the culture of tilapia. In addition, nano drug delivery system (NDDS) was used to improve the efficacy of the feeding additive. The herbal extract with particle size of 500 nm to 1,000 nm were synthesized by nano-precipitation method using ethanol as solvent and water as anti-solvent. By using the nano herbal extract as feeding additive, antibacterial effect was improved. These nano herbal extracts could increase the potential of TCM in replacing antibiotics in the feedings of aquaculture industry.

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B-08

Anti-Atopic Dermatitis Effects of Egg Yolk Oil
蛋黃油的抗特應性皮炎作用研究

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Abstract:

Atopic dermatitis (AD) is a chronic inflammatory and allergic skin disease that affects up to about 30% of children and 10% of adults globally. Inflammation, skin barrier dysfunction and pruritus are the main characteristics of AD. Despite the use of biological drugs such as glucocorticosteroids and calcineurin inhibitors, AD remains refractory and frequently recurs1. Egg yolk oil (EYO), extracted by heating chicken egg yolk, is commonly used in many traditional Chinese medicine prescriptions for treating AD in China. However, the pharmacological mechanisms of EYO in AD treatment are not fully understood.

The aims of this study were to identify the anti-AD components of EYO, determine whether EYO exerts anti-AD effects in cell and mouse models, and investigate the anti-AD mechanisms of EYO.

UPLC-ESI-QTOF-MS/MS and GC-MS were employed to identify components in EYO. A MC903-induced AD mouse model and a TNF-α/IFN-ϒ-stimulated HaCaT keratinocyte cell model were used to evaluate the anti-AD effects of EYO in vivo and in vitro, respectively. RNA-seq analysis of TNF-α/IFN-ϒ-stimulated HaCaT cells, as well as reverse transcription quantitative polymerase chain reaction (RT-qPCR) were conducted to investigate the anti-AD mechanisms of EYO.

UPLC-ESI-QTOF-MS/MS results showed that 1-oleoyl-2-hydroxy-sn-glycero-3-phosphocholine, palmitoylethanolamide and n-oleoylethanolamine were the main phospholipids in EYO. GC-MS results showed that palmitic acid, oleic acid and stearic acid were the main fatty acids in EYO. Animal studies showed that 25% EYO ameliorated MC903-induced AD mouse ear edema. EYO at 0.05% (v/v) significantly increased viability of TNF-α/IFN-ϒ-stimulated HaCaT cells. Flow cytometry results revealed that EYO suppressed TNF-α/IFN-ϒ-induced HaCaT cell apoptosis. RNA-seq identified 150 DEGs (differentially expressed genes), of which 73 genes were upregulated and 77 genes were downregulated. The neutrophil extracellular trap formation pathway was the most enriched pathway in the Kyoto Encyclopedia of Genes and Genome (KEGG) analysis. Two EYO downregulated genes (CLEC7A and CR1L) were confirmed by RT-qPCR.

In the present study, we for the first time found that EYO ameliorates MC903-induced ear edema in mice, increases cell viability and suppresses apoptosis in TNF-α/IFN-ϒ-stimulated HaCaT cells, and that downregulation of CLEC7A and CR1L genes potentially contributes to EYO’s anti-AD effects. Also, we found that phospholipids and fatty acids are potential anti-AD components of EYO. These findings provide pharmacological justifications for the clinical application of EYO in treating AD, and lay the foundation for further research on anti-AD compound identification and mechanism evaluation of EYO.

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B-09

Luteolin and its analogs exert neurotrophic functions in neuronal cells via mitochondrial hormesis
木犀草素及其類似物通過線粒體毒性興奮效應產生神經營養功能

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Abstract:

Luteolin and its related flavonoids are showing trophic and protective effects1 ; while they are simultaneously serving as cytotoxins in various cancer research. Even though both sides of the study are carried out in the same cell model. Here, we aimed to explain this somewhat “contradictory” phenomenon in neuronal cells with hormesis theory referring to the cells respond contrarily to stimuli with different drug doses. In rat pheochromocytoma PC12 cells, luteolin, or its flavonoid analogs, apigenin and chrysin, could depolarize the mitochondrial membrane potential (MMP) in a dose-dependently manner, which mimicked the action of carbonyl cyanide 4- (trifluoromethoxy) phenylhydrazone (FCCP), a mitochondrial uncoupler.

Mitochondrial depolarization caused by high concentration of luteolin, at 50 μM, was intense and sustained, subsequently leading to cell death and embodying the role of luteolin as a mitochondrial stressor. In contrast, luteolin in low concentration showed trophic activity in increasing cell viability, and which exerted MMP loss in mild and reversible manner. This MMP disturbance could be associated with the trophic or protective effects of flavonoids. Luteolin and its analogs, as well as FCCP and other common uncouplers, were able to induce the activation of cAMP response element (CRE) and antioxidant response element (ARE) in cultured PC12 cells. Accompanied with the induced mitochondrial stress, luteolin triggered autophagy and mitophagy, as determined by a construct expressing mCherry-GFP-LC3B tandem protein, as well as by the co-localization of LysoTracker and MitoTrakcer staining. The application of autophagy inhibitors could substantially block the luteolin-induced neurotrophic activities, and could sensitize the cells to be less resistant to the cytotoxicity of luteolin, which indicated that autophagy/mitophagy process may be a key regulator in deciding the cell fate. Besides, the cell permeability of the flavonoids may affect their exerted neurotrophic functions. The flavonoids with methoxyl groups (OCH3) exhibited better ability in transiently decreasing MMP, while flavonoid glucosides were weaker in mitochondrial depolarization as well as in the stimulation of CRE and ARE, as compared with the corresponding aglycones. This study providedmechanistic explanations for the origin of the general neuro-beneficial effects of luteolin and other flavonoids, which serve as mitohormetic pharmacological inducers in stimulating the cells to be more robust and adapt to the threats.

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B-10

In Vitro And In Vivo Anti-Metastatic Effects of Eriocalyxin B In Breast Cancer
毛萼乙素對乳腺癌轉移抑制作用的體內外研究

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Abstract:

Metastasis comprises a series of complex steps, contributing mainly to breast cancer mortality. Circulating cancer cells originating from primary tumor site disseminate through bloodstream, then extravasate to distant organs and colonize in secondary organs including lung, liver, brain and bone. Thus, novel anti-metastasis drugs are urgently needed. Eriocalyxin B (Eri B), a compound with ent-kaurane scaffold exhibited strong anti-cancer activity as previously reported.1-2 Our previous study has proven the angiogenesis function of Eri B in mouse 4T1 breast cancer model.3 In the present study, in vitro and in vivo investigations of the effects of Eri B on breast cancer metastasis were performed.

Human breast cancer cells MDA-MB-231 and MDA-MB-361 were used in our study. The effects of Eri B on cell proliferation, motility and migration were evaluated using BrdU incorporation, scratch wound and transwell assays, respectively. The adhesion of MDA-MB-231 cells on extracellular matrix (ECM) proteins was examined using ECM adhesion assay. In addition, the underlying mechanism of Eri B on breast cancer cells metastasis was investigated using western blot. The in vivo anti-metastatic activities of Eri B were determined in mice intravenously injected with MDA-MB-231 cells. The metastatic levels in lung and liver were compared in mice treated with Eri B and vehicle control.

Results showed that cell proliferation was inhibited in a dose-dependent manner by Eri B in both breast cancer cell lines, with MDA-MB-231 cells being more sensitive. EriB (0.6 – 1.5 μM) could significantly inhibit cell motility and migration in MDA-MB-231 cells. Besides. Eri B was capable of decreasing MDA-MB-231 cell adhesion to fibronectin, laminin, collagen I and collagen Ⅳ in concentration-dependent manner. Furthermore, Eri B could significantly down-regulate the expression of migration-related proteins including N-cadherin, MMP-2, MMP-9, β-catenin, vimentin in MDA-MB-231 cells. In the mice bearing circulating breast cancer cells, both lung and liver metastasis were significantly suppressed by Eri B treatment at 10 and 15 mg/kg. No significant body weight change was observed in Eri B treatment groups, suggesting that Eri B suppressed breast tumor metastasis without obvious toxicity.

Taken together, Eri B was shown to inhibit breast cancer metastasis both in vivo and in vitro. Our findings further support the development of Eri B as an antimetastatic agent for breast cancer.

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B-11

Investigating the anti-obesity effect of artesunate and its therapeutic potential in the treatment of obesity
探究青蒿琥酯的抗肥胖作用及其治療肥胖症的潛力

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Abstract:

Obesity, a global health challenge, is a major risk factor of multiple life-threatening diseases including diabetes, fatty liver and cancer. There is an ongoing need to identify safe and tolerable therapeutics for the management of obesity1. Here, we show that the treatment of artesunate, an artemisinin derivative approved by the FDA for the treatment of severe malaria, reduced body weight and food intake and improved metabolic profiles in the preclinical models of obesity including mice with overnutrition-induced obesity and cynomolgus monkeys with spontaneous obesity. Artesunate induced weight loss and suppressed food intake in obese mice and monkeys by increasing circulating levels of growth/differentiation factor 15 (GDF15), an appetite-regulatory peptide hormone with a brain-stem-restricted receptor namely GDNF family receptor α-like (GFRAL)2. Mechanistically, artesunate induced the expression of Gdf15 in multiple organs, especially for the liver and the kidney, through increasing the expression of activating transcription factor 4 (ATF4) and C/EBP homologous protein (CHOP), two key mediators of integrated stress response. Blockade of GFRAL activation by either genetic ablation of GFRAL or pharmacological inhibition with a neutralizing antibody against GFRAL completely abrogated the anti-obesity effect of artesunate in mice with high fat diet-induced obesity, suggesting that artesunate controls bodyweight and appetite in a GDF15/GFRAL signaling-dependent manner. These data highlight the therapeutic benefits of artesunate for the treatment of obesity and related comorbidities.

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B-12

Exploration of Bioactivities of Polycyclic Polyprenylated Acylphloroglucinols From Hypericum Ascyron In Human Colon Cancer Cells
黃海棠中 PPAP 類化合物在結腸癌細胞的活性研究

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Abstract:

Plants of *Hypericum* are a rich source of polycyclic polyprenylated acylphloroglucinol (PPAP), a special class of structurally fascinating and synthetically challenging natural products. This kind of compounds exhibit a broad range of biological activities such as antitumor, antimicrobial, and antidepressant activities.1 Our previous studies on *Hypericum* species have led to discovery of a series of PPAPs with diverse architectures and bioactivies.1

Hypericum ascyron, widely distributed in China, is a herbal medicine traditionally used in the treatment of swelling, abscesses, and wounds.2 As part of our systematic search for bioactive natural PPAPs from Hypericum plants, the chemical constituents of *H. ascyron* (collected in Longshan county, Hunan Province, P. R. China) were investigated in the present study.

The dried aerial parts of *H. ascyron* (22.0 kg) were extracted with methanol (MeOH) to give a methanolic extract (564.5 g), which was subjected to column chromatography and successively eluted with chloroform (CHCl3), ethyl acetate and MeOH. Phytochemical study of the CHCl3-eluted portion gave a group of PPAPs featuring a six-membered ring connected to the phloroglucinol core. Basing on the preliminary screening in various cancer cells, the more promising compounds hypascyrins A and E were selected for further evaluation of their bioactivities in colon cancer cells. The cytotoxicity effects of hypascyrins A and E on human colon cancer cells (HCT116, HT29, SW480 and LoVo) were assessed using MTT assay. The effects of hypascyrins A and E on cell cycle distribution and regulatory proteins expressions were also assessed using flow cytometry and western blot, respectively.

Results showed that hypascyrins A and E exhibited strong cytotoxicities against all four human colon cancer cell lines with IC_{50} values in the range of 0.75 – 8.93 μM, but without obvious cytotoxicity to human peripheral blood mononuclear cells, suggesting their selective cytotoxicities. These two compounds were also found to induce cell cycle arrest at G1 phase in HCT116 cells. In particular, hypascyrin E (0.5 M) was shown to significantly suppress the expressions of cell cycle regulatory proteins CDK6 and cyclin D1.

Considering the significant cytotoxicity in HCT116 cells *in vitro*, *in vivo* studies on hypascyrins A and E in colon tumor-bearing mice are warranted for further exploration of their potentials as anti-tumor agents in colon cancer.

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B-13

Anti-Colorectal Cancer Effects of Brusatol: Studies on *in Vitro* and *in Vivo* Experimental Models of Colorectal Cancer
鴉膽子苦醇對結腸癌的作用：結腸癌體內外實驗模型的探究

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Abstract:

Colorectal cancer (CRC) is one of the most commonly diagnosed cancers with high metastasis and lethality. Arrestin domain-containing 4 (ARRDC4) is involved in inhibiting cancer glycolytic phenotypes. Brusatol (BR), a naturally quassinoid isolated from *Bruceae Fructus*, possesses significant anti-cancer effects against various solid tumors. However, the anti-cancer effects of BR against CRC and its mechanisms remain poorly understood. In this study, we aimed to investigate the anti-cancer and anti-metastatic activities of BR against CRC targeting ARRDC4. Our results showed that BR markedly suppressed the cell proliferation and migration *in vitro*, and inhibited tumor growth and tumor metastasis *in vivo*. Microarray analysis demonstrated that BR treatment markedly increased the mRNA level of ARRDC4 in CRC cells. ARRDC4 was significantly repressed in CRC in the clinical samples and GEPIA analysis. Further studies indicated that ARRDC4 overexpression significantly enhanced the inhibitory effects of BR against CRC metastasis, while ARRDC4 knockdown could partially eliminate the inhibitory effects of BR against CRC metastasis through regulating epithelial-mesenchymal transition (EMT) processing. Moreover, BR or ARRDC4 overexpression exerted anti-metastatic activity in CRC via regulating PI3K/Hippo pathway. These results manifested that BR possessed inhibitory effects against CRC metastasis via upregulating ARRDC4 expression through modulating PI3K/Hippo pathway, suggesting that BR is worthy of further development into new therapeutic strategy for CRC.

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B-14

The therapeutic effects of quercetin on motoneuron death after spinal root avulsion in rats
槲皮素對脊髓神經根性撕脫傷後運動神經元凋亡的治療作用

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Abstract:

Brachial plexus avulsion (BPA) physically involves the detachment of spinal nerve roots themselves and the associated spinal cord segment, leading to permanent paralysis of motor function of the upper limb. Root avulsion induces severe pathological changes, including inflammatory reaction, oxidative damage, and finally massive motoneuron apoptosis. Quercetin (QCN), a polyphenolic flavonoid found in abundance in fruit and vegetables, has been reported to possess anti-oxidative, anti-inflammatory and neuroprotective effects in many experimental models of both central nervous system (CNS) and peripheral nervous system (PNS)-related disorders. The purpose of this study was to investigate whether QCN could improve motor function recovery after C5–7 ventral root avulsion and C6 reimplantation in a rat model of BPA.

The right fifth cervical (C5) to C7 ventral roots were avulsed followed by re-implantation of only C6 to establish the spinal root avulsion plus re-implantation model in rats. After surgery, rats were treated with QCN (25, 50 and 100 mg/kg) by gavage for 2 or 8 consecutive weeks. The effects of QCN were assessed using behavior test (Terzis grooming test, TGT) and histological evaluation. The molecular action mechanisms were determined by immunohistochemistry analysis and western blotting.

Our results demonstrated that QCN significantly expedited motor function recovery in the forelimb as shown by the increased Terzis grooming test score, and accelerated motor axon regeneration as evidenced by the ascending number of Fluoro-Ruby-labeled and P75-positive regenerative motoneurons. The raised ChAT-immunopositive and cresyl violet-stained neurons indicated the enhanced survival of motoneurons by QCN administration. Furthermore, QCN treatment markedly alleviated muscle atrophy, restored functional motor endplates in biceps and inhibited the microglial and astroglia activation via modulating Nrf2/HO-1 and neurotrophin/Akt/MAPK signaling pathway.

Taken together, these findings have unequivocally indicated that QCN has promising potential to be further developed into a novel therapeutic for adding reimplantation surgery in the treatment of BPA.

B-15

Safranal prevents prostate cancer recurrence by blocking re-activation of quiescent cancer cells via downregulation of S-phase kinase associated protein 2
西紅花醛通過下調 Skp2 蛋白阻礙靜止期前列腺癌細胞的重新激活和癌症復發

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Abstract:

Re-proliferation of quiescent cancer cells (QCCs) is considered to be the primary contributor to prostate cancer (Pca) recurrence and progression[1]. In this study, we investigated the inhibitory effect of Safranal, a monoterpene aldehyde isolated from Crocus sativus (Saffron), on the re-proliferation of quiescent Pca cells *in vitro* and *in vivo*. Results showed that Safranal efficiently blocked the re-activation of quiescent Pca cells by downregulating the G_0/G_1 cell cycle regulatory proteins CDK2, CDK4, CDK6, phospho-Rb at Ser807/811 and elevating the levels of cyclin-dependent kinase (CDK) inhibitors, p21 and p27. Further investigation on the underlying mechanisms revealed that Safranal suppressed mRNA and protein expression levels of Skp2, possibly through the deregulation of the transcriptional activity of two major transcriptional factors, E2F1 and NF-κB subunits. Moreover, Safranal inhibited AKT phosphorylation at Ser473 and deregulated both canonical and non-canonical NF-κB signaling pathways. Safranal suppressed the tumor growth of quiescent Pca cell xenografts *in vivo*. Furthermore, Safranal-treated tumor tissues exhibited a reduction in Skp2, E2F1, NF-κB p65, p-IκBα (Ser32), c-MYC, p-Rb (Ser807), CDK4, CDK6, CDK2, and elevation of p27 and p21 protein levels. Therefore, our findings demonstrate that Safranal suppresses cell cycle re-entry of quiescent Pca cells *in vitro* and *in vivo* plausibly by repressing the transcriptional activity of two major transcriptional activators of Skp2, namely E2F1 and NF-κB, through a downregulation of AKT phosphorylation and NF-κB signaling pathways, respectively.

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B-16

Investigation of the anti-microbial properties of Lantana camara L. extracts
研究探討馬纓丹水提取物抗微生物能力

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Abstract:

Lantana camara L. is a flowering plant commonly known as wild or red sage and well-known as a traditional treatment for skin problems including itches, ulcers, swellings, rheumatism, atopic dermatitis and infections (1). It is reported that extracts from L. camara have anti-inflammatory and anti-microbial properties (2). However, most of the anti-microbial properties of L. camara were tested as disk diffusion or broth MIC tests, which were unrealistic because these tests omit one important component in living organisms, the immune responses, from the host cells. Here we investigated the effect of L. camara water extracts and host cells against pathogenic bacteria and yeasts. Our preliminary results found that although L. camara showed no inhibitory effect against pathogenic bacteria and yeasts by using conventional broth MIC approach, it does modulate the phagocytotic rate, pathogen survival rate and inflammatory responses when co-incubated with macrophages in infection model. In addition, with no or undetectable cytotoxicity effect of L. camara water extracts, it is expected that L. camara water extracts could be a potential product for assisting host cells to eliminate pathogens.

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B-17

Edible bird's nests-derived peptides alleviate atopic dermatitis-like symptoms through anti-inflammation
燕窩蛋白肽抑制發炎以改善皮膚濕疹症狀

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Abstract:

Edible bird’s nests (EBN, or Yan Wo in Chinese) are the solidified saliva secreted mainly from swiftlet species *Aerodramus fuciphagus* and *Aerodramus maximus*. EBN has long been regarded to nourish and strengthen “Lung” “Yin”, which in turn potentiates skin healthiness. However, the mechanism of EBN, as well as the bioactive ingredients, remain unclear. Herein, a patented extraction and digestion method was applied to maximize the release of bioactive sialic acid, N-acetylneuraminic acid (NANA), and small peptides in EBN. The water extract and the further enzymatic digest of EBN having enriched digested peptides were tested in cultured keratinocyte, HaCaT cell line. The anti-inflammatory effects were determined in TNF-α induced HaCaT cell model. The EBN digest showed better suppression on pro-inflammatory cytokines, e.g. IL-1β, IL-6, TNF-α, Cox-2. The expressions of S100-fused type proteins contributing to skin barrier function in the stratum corneum, e.g. filaggrin and filaggrin-2, were markedly restored in treating of EBN digest despite insult. Iκ-Bα, NF-κB p65, p38 MAPK and JNK phosphorylations, and Nrf2/ARE could be involved in the signaling cascade. Moreover, EBN regulates migration, functional and phenotypic maturation in LPS induced Langerhans cell-like model. The skin anti-dermatitis effect was further verified in DNCB-sensitized C57BL/6 mice model. The EBN digest possessed more significant TNF-α inhibition and FLG restoration. Since the anti-inflammatory effect of EBN digest outweigh that of sialic acid, these lines of evidence therefore suggested the potency of developing the EBN-derived small peptides into skincare products in treating skin dermatitis.

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B-18

Evaluation of a naturally occurring phenanthraquinone and its synthetic derivatives in the treatment of pancreatic fibrosis

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Abstract:

Chronic pancreatitis is a repetitive inflammation of the pancreas with the progressive fibrotic replacement of parenchyma and irreversible scarring causing serious abdominal pain, diarrhea, and weight loss to the patients. Due to the progressive pancreatic fibrosis, patients are prone to develop exocrine pancreatic insufficiency, type 3c diabetes as well as pancreatic cancer. Recent studies suggested that the activation of pancreatic stellate cells (PSCs) is crucial to the pancreatic fibrosis and could be the therapeutic target to treat pancreatic fibrosis. However, there is currently no therapeutic drug to target the activation of PSCs and treat chronic pancreatitis. In the present study, we aim to discover compounds that have anti-fibrotic actions and explore their potential as therapeutic agents against chronic pancreatitis.

Dendrobium (Orchidaceae) plants have been serving as tonics and anti-inflammatory remedies in the traditional Chinese medicinal practice with a long history. Ephemeranthoquinone (EPH), a stilbenoid with polycyclic hydrocarbons arranged to form phenanthrene as its core structure, was isolated from the whole plant D. *hongdie* in our previous study. While utilizing different biochemical and physiological examinations, we demonstrated that EPH effectively suppressed the activation of PSCs. By analyzing the structure of EPH, we synthesized a series of EPH analogues containing different functional groups and evaluated their anti-fibrotic activities. Compounds E25 and B28 were identified as the two most potent compounds among the synthetic derivatives to inhibit extracellular matrix (ECM) deposition and fibrotic gene expression in the western blot and qPCR assays. We further compared their anti-fibrotic effects with EPH and another well-known anti-fibrotic stilbenoid agent, resveratrol (RES) on PSCs. Our results revealed that E25 and EPH showed better inhibitory activities on pancreatic fibrosis than RES at 5 and 10 μM while B28 displayed a similar in vitro activity effect to RES. These results provide a novel insight to develop stilbenoids as drug candidates for the treatment of chronic pancreatitis.

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B-19

Progress on immune mechanism of traditional Chinese medicine regulating gut microbiota and its metabolites in the occurrence and development of liver cancer
中醫藥調節腸道菌群及其代謝產物在肝癌發生髮展中的免疫機制研究進展

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Abstract:

Traditional Chinese Medicine plays an indispensable role in the clinical treatment of tumor, especially in comprehensive adjuvant therapy, it can significantly reduce the adverse reactions caused by radiotherapy, chemotherapy, targeted therapy and immunotherapy, collection of treatment and health in one and strengthening healthy to eliminate pathogens. At the same time, the intestinal microflora and its metabolites are regulated to increase beneficial bacteria and reduce harmful bacteria, repair the intestinal microenvironment, regulate bile acid (BA) metabolism and immune factor expression, exert immune response, and then improve the liver regeneration microenvironment to inhibit the occurrence and development of liver cancer. This review will start with the regulation of intestinal flora by traditional Chinese medicine and explain its immune mechanism in liver cancer.

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B-20

Xian-ling-lian-xia-fang enhanced the effect of trastuzumab against HER-2 positive breast cancer by improving the effect of NK cell-mediated ADCC

仙苓蓮夏方通過提高 NK 細胞介導的 ADCC 效應增強曲妥珠單抗對 HER-2 陽性乳腺癌的抑製作用

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Abstract:

Human epidermal growth factor receptor-2 positive breast cancer (HER-2^+ BC) are characterized by high metastatic potential and poor patient prognosis1. Trastuzumab-targeted therapy significantly improves the disease-free survival (DFS) of patients. However, 30% of patients are insensitive to trastuzumab, which leads to recurrence and metastasis.2 Accumulating evidence has shown that the immune system contributes substantially to the therapeutic efficacy of trastuzumab in HER-2^+ BC. Trastuzumab binds via its immunoglobulin G1 (IgG1) Fc portion to the Fc ϒ receptor on immune effector cells, mainly Fc ϒ RIII (CD16) on natural killer cells (NKs), and elicits the release of cytotoxic factors, a process known as antibody-dependent cell-mediated cytotoxicity (ADCC)3.

Our group formulated Xian-ling-lian-xia-fang (XLLXF) using the theory of "invigorating spleen and kidney, dispersing phlegm, stagnation and detoxification", which was composed of *Codonopsis pilosula Nannf., Poria cocos Wolf., Epimedium brevicornu Maxim., Scutellaria barbata D. Don, Prunella vulgaris L, and Curcuma phaeocaulis Valeton*.

In this study, we proved XLLXF exerted synergistic effect on trastuzumab in the treatment of HER-2^+ BC patients through the clinical study. Meanwhile, we found the efficacy of trastuzumab was positively correlated with infiltration of NKs through bioinformatics analysis. Then, biological experiments were performed to verify whether the synergistic effect of trastuzumab by XLLXF was through the regulation of NKs. In *in vitro* experiments, we selected HER-2 positive cell lines SK-BR-3 and JIMT-1, which are trastuzumab sensitive and resistant cells respectively. CCK8, Flow cytometry, and JC-1 were performed to showed that the combination of XLLXF with trastuzumab could enhance the inhibitory effect on cell proliferation and promote cell apoptosis. In in vivo experiments, we chose the JIMT-1 cells and BABL/c nude mice to construct the trastuzumab-resistant xenograft model. The results indicated that XLLXF enhanced the inhibitory effect of trastuzumab against the tumor growth in trastuzumab-resistant HER-2+ BC xenograft model. Flow cytometry and western blot were performed to found that XLLXF in combination with trastuzumab enhanced the expression of NKs and their activating receptors NKG2D and NKp46 in the spleens and tumor tissues, thereby enhancing the release of CD107a, perforin, and Granzyme B. Finally, RNA-seq also verified that this synergism was associated with "the response process of

the immune system" and "NK cell-mediated cytotoxicity". In conclusion, our study revealed that XLLXF enhanced the effect of trastuzumab against HER-2 positive breast cancer by improving the effect of NK cell-mediated ADCC.

Acknowledgement:

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B-21

The Immuno-modulatory Activities of Pentaherbs Formula on Ovalbumin-Induced Allergic Rhinitis Mice via the Activation of Th1 & Treg cells and Inhibition of Th2 & Th17 cells

Pentaherbs 配方通過激活 Th1 和 Treg 細胞和抑制 Th2 和 Th17 細胞對卵白蛋白誘導的過敏性鼻炎小鼠的免疫調節活性

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Abstract:

The objective of the symposium is to provide a platform for postgraduate students on Chinese Medicine1 to exchange research information, discuss challenges, and enhance closer collaboration, which attracted hundreds of postgraduate students from mainland China, Hong Kong, Macau and Singapore2. This will be a golden opportunity for you to share research findings and experiences. Allergic rhinitis (AR) is a highly prevalent allergic disease induced by immunoglobulin (Ig) E-mediated hypersensitivity reaction at the nasal epithelium against inhaled allergens. Previous studies have demonstrated that Pentaherbs formula (PHF), a modified herbal formula comprising five herbal medicines (Lonicerae Flos, Menthae Herba, Phellodendri Cortex, Moutan Cortex and Atractylodis Rhizoma), could suppress various immune effector cells to exert anti-inflammatory and anti-allergic effects in allergic asthma and atopic dermatitis. The present study aims to further determine the anti-inflammatory activities of PHF in an ovalbumin (OVA)-induced AR BALB/c mouse model. Nasal symptoms such as sneezing and nose rubbing were recorded and the serum total IgE and OVA-specific IgG1, as well as interleukins (IL)-4, IL-5, IL-10, IL-13, chemokines CXCL9, CXCL10 and tumor necrosis factor (TNF)-α concentrations in nasal lavage fluid (NALF) were measured during different treatments. Effects of PHF on the expression of inflammatory mediators in the sinonasal mucosa were quantified using real-time QPCR. PHF was found to suppress allergic symptoms, infiltration of inflammatory cells, and hyperplasia of goblet cells in the nasal epithelium of the OVA-induced AR mice. PHF could reduce OVA-specific IgG1 level in serum, and TNF-α and IL-10 in nasal lavage fluid (NALF), significantly up-regulate the splenic regulatory T (Treg) cells level, increase the Type 1 helper T cells (Th1)/Type 2 helper T cells (Th2) ratio, and reduce the Th17 cells (all $p < 0.05$). PHF could also alleviate in situ inflammation in sinonasal mucosa of OVA-Induced AR mice. In conclusion, oral treatment of PHF showed immuno-modulatory activities in the OVA-induced AR mice by regulating the splenic T cell population to suppress the nasal allergy symptoms and modulating inflammatory mediators, implicating that PHF could be a therapeutic strategy for allergic rhinitis.

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B-22

Study on the anti-melanoma mechanism of a new compound Wikstdaphnein A from Wikstroemia chamaedaphne
黄芫花中新化合物 Wikstdaphnein A 的抗黑色素瘤機制研究

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Abstract:

Wikstroemia chamaedaphne Meissn. is of the genus Wikstroemia (Thymelaeceae)1. Modern pharmacological and clinical studies have demonstrated the anti-fertility, anti-hepatitis B virus, and anti-tumor activities of diterpenoids in W. chamaedaphne. We isolated daphnane-type diterpene Wikstdaphnein A from the ethyl acetate extract of Wikstroemia chamaedaphne2.The IC50 value of Wikstdaphnein A on melanoma cell B16 was 7.4 μM, and it did not damage normal cell HFF-1 at 30 μM.

The morphological changes were observed by AO/PI double staining experiment. With the increase of Wikstdaphnein A concentration, the cell membrane gradually ruptured and the nucleus was in the shape of red beads. The results of flow cytometry were consistent with those of fluorescence microscopy. Cell cycle test showed that the cells were blocked in G0/G1 phase by Wikstdaphnein A. Scratch test showed that Wikstdaphnein A could inhibit the migration of B16 cells.

Based on the above experimental results, Western blotting experiment was used to study the mechanism of action. The results showed that the expression of p-PI3K, p-Akt and p-mTOR decreased, while the expression of total protein remained unchanged, suggesting that Wikstdaphnein A may inhibit B16 cells proliferation through PI3K/Akt/mTOR pathway.

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B-23

Synthesis of Unique Amino Acids as Building Blocks for Bioactive Molecules
作為生物活性分子建築模組特殊氨基酸的合成

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Abstract:

Peptide-based drugs have been an important part in the FDA-approved therapeutics1,2, and unique amino acids can play a significant role as important building blocks in drug discovery. Amino acids, being the fundamental components of peptides and proteins, naturally occur in plants and unique amino acids are often found in plant peptides3.

In our research to discover anticancer lead molecules, we identified potent anticancer cyclopeptides including MVA from the medicinal plant Maytenus variabilis (Loes.) C. Y. Cheng. MVA is a novel cyclic heptapeptides containing two unique amino acids, which are identified as D- and L-dimethylcyclopropyl-glycines (DMCPAs). MVA displayed prominent anticancer activity both in in vitro and in vivo studies4. However, the insufficient amount of MVA in the nature has largely limited the compound for further drug development. In our attempt to synthesize cyclopeptides mimicking the natural MVA by using some ordinary amino acids for replacing the DMCPAs, we failed to produce cyclic peptide analogues with significant anticancer activity. D- and L- DMCPAs appeared to be the amino acid moieties that play key roles in the anticancer potency of this type ofcyclopeptides. Therefore, we designed the syntheses of the two unique amino acids (D- and L-DMCPAs), which are to be used to construct the cyclopeptide that has the same structure as the natural one (MVA).

Based on the retrosynthetic analysis, we have carried out the synthesis of D- and L-DMCPAs. The glutamic acid derivative, with intrinsic chiral center and the backbone of DMCPAs, was chosen as the starting compound. The first total synthesis of Boc-D-(2S, 3S)-2,3-dimethylcyclopropyl-glycine, one of the DMCPAs, has been accomplished in 13 steps with a significant overall yield of 11% upon optimization of the reaction conditions. Similar strategy is now being applied for the synthesis of Boc-L-(2S, 3S)-2,3-dimethylcyclopropyl-glycine (L-DMCPA). The total synthesis of the naturally occurring anticancer cyclopeptide MVA can then be accomplished by applying our previously developed synthetic methods of cyclic heptapeptides. The two unique amino acids can also be used as building blocks to construct other bioactive molecules.

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B-24

Analysis of tongue flora in patients with chronic gastritis caused by dampness and turbidity
濕濁中阻型慢性胃炎患者的舌苔菌群分析

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Abstract:

Objective: To investigate the analysis of tongue flora in patients with chronic gastritis (CG) and normal subjects, and to find the genera with significant differences.

METHODS: Eighteen patients with damp-medium obstructive CG were selected (SZ group) and 30 normal subjects as a control group (CO group) were selected and the tongue flora was sequenced and analyzed by 16srRNA gene sequencing technology.

RESULTS: (1) Alpha diversity analysis showed that the Shannon index was significantly higher at the genus level in the SZ group compared with the CO group ($p < 0.05$); (2) Beta diversity analysis showed that the community composition of the CO group and SZ group at the phylum level had fewer cross-sections in the PCoA plot, and the difference was more significant ($p < 0.05$); (3) The Venn diagram showed that the number of species in the SZ group was 672 and the number of species in the CO group was 231; (4) The LEfSe multilevel species difference analysis was used to find the differences in the order system (phylum, class, order, family, genus) according to the systematic taxonomy, and 13 species were found. Patients with SZ had significantly lower levels of Streptococcus. ($P < 0.05$) and increased levels of Prevotella. ($P < 0.05$)

CONCLUSION: Microecological sequencing of tongue samples revealed changes in the tongue flora of patients with wet-medium obstructive CG with the development of disease, indicating that changes in oral microorganisms are closely related to the development of inflammation and that these changes in oral microorganisms These oral microbial changes may become microbiological indications for certain systemic diseases, especially digestive system diseases.

Keywords: Chronic gastritis; Tongue flora; 16S rRNA gene sequencing technology; Bacterial phylum

Acknowledgement:

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B-25

Pretreatment at Zusanli (ST36) by Electroacupuncture Inhibits Systemic Inflammation and T Lymphopenia in Septic Mice
電針預處理足三里穴對膿毒症小鼠全身炎症和T淋巴細胞減少的抑製作用

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Abstract:

Background: Sepsis is an organ dysfunction syndrome characterized by a dysregulated response to infection1. Sepsis is the most common disease in intensive care unit and is one of the main causes of death in coronavirus disease 2019 (COVID-19)2. Maladaptive systemic inflammation and T lymphopenia have a dramatic impact on the prognosis of sepsis3. Antibiotics and glucocorticoids have major side effects that limit their clinical implications in sepsis4. There is an urgent need to develop more comprehensive and safe therapies that can control the high mortality of sepsis. Electroacupuncture (EA) is expected to be an effective preventive and therapeutic method for sepsis5,6. This study aims to determine the potential of EA at Zusanli (ST36) to prevent experimental septic mice induced by endotoxemia.

Methods: BALB/c mice were randomly assigned into control PBS treatment, endotoxemia induced by LPS, or experimental EA treatment of endotoxemic mice. EA was performed stimulating the ST36 acupoint for 30 min, once a day for 3 days. After the third day, EA mice undergo an intraperitoneal injection of LPS, counterpart control and endotoxemic mice received either PBS or LPS challenge without previous EA. Mice were evaluated for survival and main clinical symptoms. Bio-Plex cytokine assay was used to analyze the concentration of cytokines both at 2 and 12 hours. T lymphocytes were analyzed by Western blot and flow cytometry.

Results: EA at ST36 improved the survival rate of endotoxemic mice by 42.9%, compared to untreated mice. EA also dramatically improved the ear temperature and symptom scores of endotoxemic mice. EA blunted the inflammation by inducing a lasting inhibition of the production of inflammatory factors (IL-1β, IL-5, IL-6, IL-10, TNF-α, IFN-ϒ, MIP-1β, KC and eotaxin). Furthermore, Western blot and flow cytometry analyses showed that EA significantly reduced T-lymphocyte pyroptosis and apoptosis.

Conclusion: Pretreatment of EA halted systemic inflammation and improved T-cell lymphopenia, and ultimately improved the survival of endotoxemic mice.

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B-26

Study on the Mechanism of Feiyan Ning Granule Regulating Autophagy Against Invasion and Metastasis of lung cancer
肺岩寧顆粒調控細胞自噬抗肺癌侵襲轉移的機制探討

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Abstract:

Objective: The study the mechanism of Feiyan Ning Granule in regulating autophagy and inhibiting the growth and metastasis of lung cancer cells. In order to clarify the anticancer efficacy and mechanism of Feiyan Ning Granule against recurrence and metastasis. The anti-cancer mechanism provides data support and new ideas for the prevention and treatment of lung cancer with traditional Chinese medicine.

Methods:

1. Intervention of A549,LLC and NCI-H1975 lung cancer cells with Feiyan Ning granule,using Cell Counting Kit-8 to verify the inhibitory effect of FYN granule on lung cancer cell proliferation and determine the IC50 value.

2. The inhibitory function of the medicines on the migration and invasion of lung cancer cells were detected by cell scratch assay and Transwell invasion and metastasis experiment.

3. Acridine orange staining (AO) was used to monitor the changes of autophagy flow in A549,LLC and NCI-H1975 lung cancer cells.

4. Detection of autophagy-related proteins by Western blot in lung cancer cells treated with Feiyan Ning granule.

5. Transmission electron microscope(TEM) was used to observe the change trend of autophagy structure in lung cancer cells after Feiyan Ning granule intervention.

Results:

1. Cell Counting Kit-8 test results: The proliferation of A549,LLC and NCI-H1975 lung cancer cells was significatively inhibited by Feiyan Ning granule (P<0.01).

2. Scratch results showed: Compared with Control group,drugs group and had lower change degree of scratch distance (P<0.01,P<0.05,P<0.01),(P< 0.01).

3.Transwell showed: Compared with the Control group,the number of transmembrane A549,LLC and H1975 cells in drugs group were significantly reduced after cell intervention(P<0.01).

4. Acridine orange staining (AO) experiment suggested: the changes of autophagy tide in acridine orange stained lung cancer cells were monitored by confocal laser scanning microscope(CLSM). Compared with control group,drugs could effectively inhibit the formation of autophagy flow in lung cancer cells.

5. Western blot indicates that Feiyan Ning granule could regulate the expression levels of

ATG5,ATG7,LC3,P62 and NBR1 autophagy related proteins in A549,LLC and H1975 lung cancer cells.

6. Transmission electron microscopy indicated that autophagy capacity of A549,LLC and H1975 lung cancer cells could be inhibited through Feiyan Ning granule.

Conclusion:

1.Feiyan Ning granule can inhibit the cells proliferation,growth, invasion and metastasis of A549,LLC and NCI-H1975 lung cancer cells.

2.Feiyan Ning granule can play a role in its anti-lung cancer the power of invasion and metastasis by adjusting and controling the expression levels of autophagy related proteins ATG5,ATG7,LC3,P62 and NBR1.

Keywords: Traditional Chinese Medicine; Fei Yanning Granule; Autophagy;

Invasion and Metastasis.

Acknowledgement:

Thanks to the organizers and my university for their support.Sighing that time has passed and everything is changing.Thanking medicinal path and kindheartedness.Thanks to the instructor for teaching me tirelessly.Feeling the vastness of everything in the heavens and the earth, the medical path is moved by the heart, and you can't help yourself. However, the paper is always shallow, and I am afraid to miss everyone’s good. Sincerely.

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B-27

Modified Taohong Siwu Decoction improves the cardiac function after myocardial ischemia/reperfusion in rats by promoting endogenous stem cell mobilization and regulating metabolites

加味桃紅四物湯通過促進內源性幹細胞動員和調節代謝產物改善大鼠心肌缺血再灌注後心功能

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Abstract:

Background: Reperfusion is one of the methods to treat myocardial infarction (MI), but it may cause myocardial ischemia/reperfusion (I/R) injury. Taohong Siwu Decoction (THSWD) has been proven to treat cardiovascular diseases such as MI, and modified THSWD may have a better therapeutic effect. Our research is to reveal the effect of modified THSWD on myocardial protection in the early and long-term myocardial I/R injury, and to preliminarily explore its possible mechanism.

Methods: Myocardial I/R injury rat models were constructed, and then the rats were intragastric administration with different doses (low dose, medium dose and high dose) of modified THSWD. After 24 h of intragastric treatment, TTC and Evans blue staining were used to detect the area of myocardial infarction. The CK content, LDH content and SOD activity in the serum were determined using corresponding assay kits. TUNEL staining was used to detect cell apoptosis in myocardial tissue. The number of c-kit and Sca-1 positive cells were determined by immunofluorescence staining, and the expression of SDF-1 and SCF was measured by ELISA assay. After 4 weeks of intragastric treatment, Masson’s trichrome staining was used to detect the infarct size and the collagen content in the infarct area. The changes of cardiac function were detected by echocardiography, and the serum of rats in the I/R group and the high dose modified THSWD group was collected for metabonomic analysis.

Results: After 24 h, the high dose modified THSWD could significantly reduce the infarct area and the serum CK content, while enhance the SOD activity compared to the other three groups. The level of LDH in the medium dose and high dose modified THSWD group was significantly lower than that of the model group, and the level of LDH in the high dose modified THSWD group was the lowest among groups. The treatment of high dose modified THSWD could significantly inhibit the cell apoptosis of myocardial tissue, increase the number of c-kit+ and Sca-1+ stem cells, and enhance the levels of serum SCF and SDF-1. After 4 weeks, the infarct size and collagen content in the infarct area were significantly reduced in the high dose modified THSWD group. Echocardiography showed that the EF and FS values of rats in the high dose modified THSWD

group were the highest. Metabolomics analysis indicated that there were significant differences in metabolites and metabolite pathways between the high dose modified THSWD group and the model group.

Conclusion: Modified THSWD could improve the cardiac function, reduce cell apoptosis, infarct area and collagen content after I/R in rats, which mechanism might be related to promoting endogenous stem cell mobilization and regulating metabolites.

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B-28

Moxibustion may delay the aging process of Wistar rats by regulating intestinal microbiota
艾灸可通過調節腸道菌群延緩 Wistar 大鼠的衰老進程

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Abstract:

As one of the important treatments of health care and anti-aging in traditional Chinese medicine (TCM), moxibustion has been proved to have the effects of scavenging free radicals, anti-oxidation, reducing inflammatory reaction, regulating immunity and so on. Recent studies have shown that intestinal microbiota affect the process of aging. The relationship between aging, moxibustion and intestinal microbiota is still unclear. In this study, we explored the effects of moxibustion at Guanyuan (RN4) on intestinal microbiota, short-chain fatty acids and immunological characteristics of young and elder female Wistar rats to explore the relationship between aging, moxibustion and intestinal microbiota. Six 12-week-old female Wistar rats were young group (Y), and twelve 36-week-old female Wistar rats were randomly divided into elder group (C) and moxibustion group (M). The rats in M group were received mild moxibustion at Guanyuan (RN4) acupoint, 20 min/d for 40 days. The rats in Y group and C group were not given any therapeutic intervention. The results showed that moxibustion increased the abundance of intestinal probiotics (mainly Lactobacillus) and the level of short chain fatty acids, the microcirculation blood flow around Guanyuan (RN4) was also significantly improved in elder rats. In addition, the expression of MyD88, MAPK, TRAF6, NF-κB in intestinal tissue was down-regulated, and the levels of inflammatory cytokines in intestinal were decreased.

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B-29

Exploring the potential mechanism of "xiaozhongfang" for limb lymphedema based on network pharmacology prediction

基於網絡藥理學預測探討消腫方治療肢體淋巴水腫的潛在機制

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Abstract:

Traditional Chinese medicine has shown effectiveness for prevention and treatment of inflammation and alleviating swelling1."Xiaozhongfang"external application is a clinical formula for the treatment of lymphedema of the limbs, consists of Fu Ling, Astragalus, Safflower, Phellodendron, Weilingxian, Poria Bark, Mulberry Bark, Hibiscus Leaf and Mangosteen, and the whole formula is based on the core principle of "removing blood stasis and promoting water retention" has achieved significant efficacy in preliminary clinical application. To investigate the active ingredients, targets and mechanism of action of the anti-swelling formula against limb lymphedema based on network pharmacology2.

METHODS: The active ingredients and targets of action of the constituent drugs in the decongestant formula were downloaded from the Traditional Chinese Medicine Systematic Pharmacology Analysis Platform (TCMSP) database and screened according to drug-like properties (DL) and oral bioavailability (OB), the limb lymphedema-related targets were screened in the GeneCards database, the drug-disease modulation network was constructed using Cytoscape 3.7.2, and then PPI network was constructed using STRING database, and R3.6.3 was used for GO and KEGG functional enrichment analysis.

Conclusion: This study investigated the material basis and mechanism of action of Formula in the treatment of limb lymphedema using network pharmacological analysis, which laid a theoretical foundation for an in-depth investigation of the effective ingredients and exhaustive mechanism of "Xiaozhongfang" in the treatment of limb lymphedema.

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B-30

Oblongifolin C prevents the clustering of circulating tumor cells by down regulating Src/FN1 pathway to prevent lung cancer metastasis
Oblongifolin C 通過下調 Src/FN1 通路阻止循環腫瘤細胞成簇防治肺癌轉移發生

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Abstract:

Metastasis is the leading cause of death in lung cancer patients1. Circulating tumor cells (CTCs), as an important ‘executors’ of distant tumor metastasis, have significantly enhanced metastatic potential when they aggregate into clusters, while dissociating CTC clusters into single cells can significantly inhibit the occurrence of tumor metastasis2. This study aims to reveal the mechanism of CTC clustering in lung cancer and to explore the effect and mechanism of Oblongifolin C (OC) in inhibiting CTC clustering and metastasis in lung cancer. Based on the circulating tumor cell line (CTC-TJH-01) of human lung adenocarcinoma that we have established in vitro. We used an ultra-low adsorption cell culture plate to establish an CTC clusters culture model in vitro and found that compared with a single CTC-TJH-01 cells, the CTC-TJH-01 cell clusters has stronger metastatic ability. In addition, CTC-TJH-01 cell clusters also has tumor dormancy, strong drug resistance, cancer stem cell phenotype, and the time of adhesion to lung and survival in peripheral blood were longer. Multi-omics studies found that the expression of FN1 and Src in focal adhesion pathway was significantly up-regulated in CTC-TJH-01 cell clusters. Knockdown of FN1 or Src significantly inhibited the clustering and invasion abilities of CTC-TJH-01 cells but had no significant effect on cell survival. When the expression of FN1 or Src protein was up-regulated, it could significantly promote the clustering and invasion of CTC-TJH-01 cells and had no significant effect on cell survival. Besides, the gene and protein expression of FN1 also changed after Src gene knockout or overexpression. We found that OC, an active substance from *Garcinia yunnanensis*, could inhibit the clustering and invasion of CTC-TJH-01 cells by down regulating Src/FN1 pathway. When the expression of Src or FN1 protein was down-regulated, the inhibitory effect of OC on CTC-TJH-01 cell clustering and invasion could be significantly increased, while up-regulation the expression of Src or FN1 protein can effectively reverse the inhibitory effect of OC on the clustering and invasion of CTC-TJH-01 cells. Moreover, the results of animal experiments showed that OC could significantly inhibit the lung metastasis of CTC-TJH-01 cell clusters in NOD-SCID mice. This study confirmed that Src protein and related signal pathways can be used as intervention targets to inhibit CTCs clustering and prevent lung cancer metastasis. As a natural Src protein potential inhibitor, OC can effectively inhibit the clustering of lung cancer CTCs and has the potential to inhibit cancer metastasis.

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B-31

On the Treatment of Central Nervous System Leukemia from the Perspective of "Deficiency, Toxin, Phlegm and Blood Stasis"

從“虛、毒、痰、瘀”論治中樞神經系統白血病

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Abstract:

With the gradual improvement of detection means and diagnosis level, the current treatment means of Western medicine are relatively limited in the face of the following difficult diseases and syndromes. Under the guidance of the basic theory of traditional Chinese medicine, through the summary of its risk factors and pathophysiology, this paper discusses the role of pathogenic factors such as "deficiency, toxin, phlegm and blood stasis" in the occurrence and development of central nervous system leukemia（CNSL）, and puts forward the treatment method of "strengthening the spleen and kidney, clearing away evil toxin, eliminating phlegm and turbidity, promoting blood circulation and removing blood stasis", which provides a new idea for the traditional Chinese medicine treatment of central nervous system leukemia.

B-32

Anti-Tumor Effects of Chinese herbal Medicine Compounds and its nano-formulations by Regulating Immune System in Microenvironment
中藥複方及其納米製劑在微環境中調節免疫系統的抗腫瘤作用

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Abstract:

Traditional Chinese medicine, including herbal medicine, acupuncture and meditation, has a wide range of applications in China. In recent years, herbal compounding and active ingredients have been used to control the growth of a tumor, reduce suffering, improve survival quality, and prolong the life span of cancer patients. To reduce the after-effects, herbal medicine can be used in conjunction with radiotherapy and chemotherapy, or it might be an adjuvant to strengthen the immune effect of anti-cancer vaccines. Especially in the immunosuppressed tumor microenvironment, herbal medicine can perform anti-tumor effects by stimulating the immune response.

This speech will sum up the advances in research on anti-tumor immunomodulation in Chinese herbal medicine, including the regulation of the innate immune system(which includes macrophages, MDSCs, natural killer cells)and adaptive immune system (e.g., CD4+ T cells, CD8+ T cells, regulatory T cells (Treg)), adjusting tumor-associated inflammation. In addition, a combination of active ingredients of herbal medicine and modern nanotechnology restructure tumor immune microenvironment. In recent years, immunological anti-tumor therapy in TCM has been applied on a reasonably large scale both nationally and internationally, and there is potential for further clinical expansion. The investigation of immune modulation mechanisms in Chinese herbal medicine will provide novel perspectives of how herbal medicine controls tumor growth and metastasis, which will contribute to the evolution of tumor research.

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B-33

Study on the mechanism of composite N5 in preventing and treating hyperuricemia nephropathy
復方 N5 防治高尿酸 病的機制研究

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Abstract:

Hyperuricemic nephropathy is induced after hyperuricemia with the deposition of uric acid in the kidney, which leads to kidney residential cells apoptosis and inflammation. Kidney formula N5 is a traditional Chinese medicine formula commonly used in the Miao people for the treatment of kidney disorders. This study was conducted to analyze the bioactive compound profiles of N5, investigate its protective effects against hyperuricemic nephropathy, and explore the underlying mechanisms regarding apoptosis and inflammation. Ultra-performance liquid chromatography with a diode-array detector was applied to establish the fingerprint and chemical composition of N5. Potassium oxonate was used to induce hyperuricemic nephropathy in mice, and uric acid was used to stimulate apoptosis and inflammatory response in HK-2 cells, while the mice and cells were treated with N5 to explore its reno-protective effects and mechanisms.

Results showed that chlorogenic acid, neochlorogenic acid, cryptochlorogenic acid, isochlorogenic acid A, isochlorogenic acid B, and isochlorogenic acid C may be the characteristic components of N5. N5 treatment could improve kidney functions in mice with hyperuricemic nephropathies, such as decreasing urine protein, uric acid, and creatinine and serum uric acid, creatinine, and urea nitrogen. Histopathological observations indicated that N5 treatment ameliorated kidney glomerular hypotrophy, tubular damage, and inflammatory infiltration. In addition, in vivo, and in vitro studies revealed that N5 inhibited kidney cells' apoptosis and inflammatory response by targeting the p53-associated intrinsic apoptosis pathway and NF-κB-mediated inflammatory pathway. Based on these results, kidney formula N5 and the bioactive compounds chlorogenic acid and its analogs may be promising candidates for hyperuricemic nephropathy treatment.

Keywords: hyperuricemic nephropathy; nephritis; inflammatory response; apoptosis; gout; hyperuricemia; potassium oxonate; urate oxidase; uric acid; monosodium urate crystal

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B-34

Rosmarinic acid exerts anti-neuroinflammatory effects by inhibiting microglial activation through the regulation of Complement 3/Complement 3a receptor signaling

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Abstract:

Aims: To investigate the influence and mechanisms of rosmarinic acid (RA) on neuroinflammation that activation of microglia based on Complement 3 / Complement 3a receptor (C3/C3aR) signaling. Main methods: in vitro, primary microglia of SD rats were divided into four groups: control group (Ctrl), control+rosmarinic acid group (Ctrl+RA), lipopolysaccharide group (LPS) and LPS+RA group. MTT assay was used to test the effect of RA (0.3-80 μM) on the activity of primary microglia. Griess reagent detected the effect of different concentrations of RA (0.3-80 μM) on the amount of Nitric oxide (NO) produced by LPS stimulated primary microglia. Western blot was used to detect the effect of RA on the expression of C3aR, iNOS and COX-2 proteins in LPS-stimulated microglia in different time points. Lentivirus packaging and transfection of C3aR interference plasmids by using BV2 microgila cells were divided into 7 groups: Ctrl, C3, C3+RA, C3+shRNA, C3+shRNA+RA, C3+EV, and Ctrl +EV. Western blot tested the proteins expression of C3aR, iNOS and COX-2 after adding C3 24 hours. Results: The result showed that RA (10 μM) could be significantly reduced the production of NO in LPS-stimulated primary microglia (P<0.001), and have no effect on activation of primary microglia(P>0.05) on the basis of the results of MTT experiment. Western blot showed that there is no difference between Ctrl and Ctrl+RA for the protein expression of C3aR, iNOS and COX-2(P>0.05) the protein expression of C3aR, iNOS and COX-2 were significantly increased by the stimulation of LPS after 24 hours（P<0.05）. RA could significantly decrease the proteins expression of C3aR, iNOS and COX-2 for induced primary microglia by LPS(P<0.001). After Lentivirus packaging, western blot showed that the proteins expression of C3aR, iNOS and COX-2 were significantly increased after C3 stimulation in BV2 cells compared with the Ctrl (P<0.001). The proteins expression of C3aR, iNOS and COX-2 had significantly decreased （P<0.001）after RA treatment. There is no difference between C3+shRNA,C3+shRNA+RA and C3+RA for the proteins expression of C3aR, iNOS and COX-2 (P>0.05）.

Conclusion: RA could inhibit the activation of microglia to exert anti-inflammatory and neuroprotective effects by inhibiting the expression of complement C3/C3aR .

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B-35

Pharmacology effects and molecular mechanisms of luteolin in overcoming vemurafenib resistance in melanoma
木犀草素克服黑色素瘤對維羅非尼耐藥的藥理作用和機制

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Abstract:

Melanoma is one of the malignancies, with high incidence and lethality [1]. Around half of melanoma patients carry a BRAF mutation of valine 600 to glutamine (V600E). Vemurafenib, as a selective BRAF(V600E) inhibitor (BRAFi), has shown noteworthy efficacy in patients with BRAF(V600E)-mutant melanomas, but most patients develop resistance to it within 8 months. It is critical to explore approaches for overcoming vemurafenib resistance in melanoma treatment.

Luteolin (3’,4’,5,7-tetrahydroxyflavone), a natural flavonoid, has been shown to exert anti-melanoma effects by inhibiting the PI3K/AKT pathway [2]. Activation of the PI3K/AKT pathway promotes BRAFi resistance in melanoma. In this study, we determined whether luteolin overcomes vemurafenib resistance in melanoma via inhibiting the PI3K/AKT pathway.

MTT assays were used to evaluate the anti-proliferative effects of luteolin, and the results showed that luteolin inhibits the proliferation of vemurafenib-resistant A375 (A375VR) cells dose- and time-dependently. To predict the mechanisms responsible for overcoming vemurafenib resistance by luteolin, we adopted the network pharmacology method [3]. It was found that luteolin most likely overcomes vemurafenib resistance by inhibiting the PI3K/AKT signaling pathway. Western blot assays showed that luteolin treatment downregulated the protein levels of EGFR, AXL, and IGF1-R (upstream kinases of PI3K/AKT signaling), decreased protein levels of phosphorylated AKT1 and did not affect AKT1, PI3K, and Hsp90 levels in A375 VR cells. Our results indicate that luteolin overcomes vemurafenib resistance in melanoma cells, and inhibition of PI3K/AKT signaling is involved in the effect of the compound. This study suggests that luteolin has the potential to be developed into a drug for treating vemurafenib-resistant melanoma.

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B-36

Parthenolide overcomes vemurafenib resistance in melanoma
小白菊內酯逆轉黑色素瘤維羅非尼耐受

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Abstract:

Nearly half of melanoma patients harbour an onco-mutation of valine 600 to glutamine (V600E) in BRAF gene. BRAF(V600E) inhibitors (BRAFi) including vemurafenib have shown remarkable clinical efficacy in patients with BRAF(V600E)-mutant melanoma. However, most patients develop resistance to BRAFi within 6-8 months. Currently, no approved drug can overcome vemurafenib resistance. Safe and effective agents for treating vemurafenib-resistant melanoma are needed. Parthenolide, a sesquiterpene found in diverse Chinese medicinal herbs, exerts anti-melanoma effects, while whether it overcomes vemurafenib resistance in melanoma is still unknown. Studies showed that parthenolide downregulates protein levels of BRAF and c-Myc, inhibits the activation of nuclear factor-kappa B (NF-κB), ERK and STAT3 pathways; and these parthenolide affected molecules/pathways have been shown to promote vemurafenib resistance in melanoma. This study aimed to determine whether parthenolide overcomes vemurafenib resistance in melanoma. The results showed that parthenolide dose- and time-dependently reduced viability of, and induced apoptosis and S phase arrest in, vemurafenib-resistant A375 (A375-VR) melanoma cells. Parthenolide inhibited A375-VR tumour growth without obvious toxicity in mice. To explore the mechanisms of action of parthenolide, we preformed drug-targets-disease network analysis, and identified heat shock protein 90α (Hsp90α) as a key mediator of the effects of the compound. Hsp90α is a chaperone of diverse oncoproteins implicated in vemurafenib resistance in melanoma, and therefore, serves as a promising target for overcoming vemurafenib resistance. Molecular docking and dynamic simulation results showed that parthenolide potentially binds Hsp90α. Surface plasmon resonance assays confirmed the direct parthenolid-Hsp90α interaction. Piper assays showed that parthenolide dose-dependently inhibits the ATPase activity of Hsp90α. Immunoblotting showed that parthenolide decreases levels of Hsp90 client proteins including RTKs (EGFR, PDGFR-β, Axl and IGF1-R), B-Raf (V600E), C-Raf and Src, and inhibited their downstream PI3K/Akt, Ras/Raf/MEK and Src/STAT3 pathways in A375-VR cells. The protein synthesis inhibitor cycloheximide diminished the effects of parthenolide on the stability of Hsp90 clients. Also, parthenolide inhibited Hsp90 signaling in A375-VR xenografts.

We also found that in A375-VR cells, parthenolide induced mitochondrial shrinkage, a morphological sign of ferroptosis. And we further found that parthenolide decreased mitochondrial membrane potential (ΔΨm), inhibited GPX4 activity, and elevated levels of Fe2+, LPO, ROS, further suggesting ferroptosis induction. Immunoblotting and RT-qPCR showed that parthenolide downregulated protein levels of the ferroptosis suppressors SLC7A11 and GPX4 but not the mRNA levels of them.

It has been reported that inhibition of Hsp90 downregulates its client protein LAMP2, thus blocks the degradation of GPX4. We have found that low-dose parthenolide is more effective than high-dose parthenolide in restraining A375-VR tumour growth. Immunoblotting showed that low-dose but not high-dose parthenolide decreased the protein level of GPX4 in A375 xenografts. These results suggest that potent inhibition on Hsp90 function by high-dose parthenolide might weaken the effects of parthenolide in overcoming vemurafenib resistance in melanoma through blocking GPX4 degradation.

In summary, we have for the first time demonstrated that parthenolide overcomes vemurafenib resistance in melanoma, and Hsp90 inhibition and ferroptosis induction might be involved in its effects. This work facilities the development of parthenolide as a therapeutic agent in treating vemurafenib-resistant melanomas.

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B-37

RNA Sequencing Analysis Reveals the Potential Therapeutic Mechanisms of Huzhang Tongfeng Granule in MSU-induced Acute Gouty Arthritis Mouse Model

RNA 測序分析揭示了虎杖痛風顆粒對 MSU 誘導的急性痛風性關節炎小鼠模型的潛在治療機制

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Abstract:

Introduction: The Huzhang Tongfeng granule (HZTFG) has been utilized clinically for more than 30 years with satisfactory effects and no significant adverse reactions. However, the mechanisms that underlie HZTFG's effect remain indeterminate.

Objectives: To evaluate the therapeutic effects and molecular mechanisms of Huzhang Tongfeng granule in treating acute gout arthritis (AGA).

Materials and methods: Firstly, the Liquid Chromatography-Mass Spectrometry (LC-MS) analyses were applied to clarify the multi-components of HZTFG so as to establish the quality control parameters. After the MSU crystals-induced AGA model was established, behavioral testing, joint swelling, hematoxylin and eosin (H&E) staining were applied to assess the effect of Huzhang Tongfeng granule on improving joint pain, swelling, synovial inflammation of the monosodium urate (MSU) crystals-injected mice. Moreover, RNA Sequencing (RNA-seq) analysis was performed detecting differentially expressed genes (DEGs) after HZTFG treatment. Thereafter, Gene Ontology (GO) and Kyoto Encyclopedia of Genes and Genomes (KEGG) were enriched via gene set enrichment analysis (GSEA) to assess the functions and pathways of DEGs. Furthermore, Reverse Transcription Polymerase Chain Reaction (RT-qPCR) analysis and enzyme-linked immunosorbent assay (ELISA) were applied for validation in vivo.

Results: After treatment with HZTFG, RNA-seq results revealed 44 genes with significant differences, of which 20 genes were down-regulated and 24 genes were up-regulated. Combined with results of GSEA-based GO and KEGG enrichment plots, we finally validated 10 of these genes with differential expression related to TNF signaling pathway and IL-17 signaling pathway via RT-PCR, including Cxcl1, Cxcl2, Cebpb, Lcn2, Ptgs2, Mmp13, Fos, Socs3, Sele, and Junb. ELISA was also applied to detect the concentrations of tumor necrosis factor-alpha (TNF-α) and interleukin-17 (IL-17). The results were consistent with the results of RNA-seq assay.

Conclusion: Given the finding above, this study concluded that HZTFG attenuates MSU crystals-induced inflammatory response in acute gouty arthritis by inhibiting the activation of TNF and IL-

17 signaling pathways. It suggested that oral HZTFG can be an effective complementary alternative treatment for gouty arthritis, and further provided the potential therapeutic targets for AGA treatment.

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B-38

Research Advances in Quiescent Cancer Cells: Molecular Mechanisms And Therapeutic Agents
靜止期癌細胞的分子機理及藥物研究進展

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Abstract:

Cancer cells can become quiescent, reversibly residing in G0 phase, to survive unfavourable conditions such as nutrient and oxygen deprivation. Quiescent cancer cells (QCCs) challenge cancer treatment because their resistance to most conventional treatment, and ability to re-proliferate causing tumour growth and progression.

Despite the significant clinical impact of QCCs, its experimental protocol has unresolved or non-standardized aspects, such as inconsistent methods to establish model, lack of in vivo models, inadequate efforts of developing QCCs-targeting agents, etc. We first present the existing QCCs preclinical models, detection method and their scope of application. Interestingly, the distinct features of cancer cell lines make them suitable for certain models, whereas various conditions (such as contact inhibition, deprivation of essential substances) induce quiescence but with varying gene expression profiles. Therefore, model selection should consider the cell line features and the close resemblance to the studied QCCs condition. QCCs are detectable based on their characteristics such as Ki-67 negativity, low cellular RNA content, label-retaining ability and dysregulated molecular markers. Other detection methods that applied fluorescence indicators have enabled static and dynamic examination of QCCs.

Next, we discuss the development of QCCs-targeting agents that covers repurposing of clinically used drugs (such as imatinib, all-trans retinoic acid, selumetinib, clofazimine) and newly studied drugs. The existing drugs have been used to treat other diseases and are discovered to possess QCCs-targeting actions. Some compounds that derived from Chinese Medicine, such as Guttiferone K and Safranal, potentially retain QCCs in quiescence state, blocking them from re-proliferate.

Developing effective QCCs-targeting agents are crucial in impairing cancer growth, progression and recurrence. Models that can better recapitulate true behavior of QCCs may achieve breakthrough in identifying the key players in modulating the survival and activation of QCCs, thus providing effective therapeutic opportunities. Although current QCCs detection methods are confined to preclinical setting, superior and safe methods will potentially assist treatment choice and monitoring of recurrence- and metastasis-free cancer patients.

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B-39

Deoxyelephantopin overcomes sorafenib resistance in hepatocellular carcinoma and inhibits Akt signalling
去氧地膽草素通過抑制 Akt 信號傳導抗索拉非尼耐藥肝細胞癌

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Abstract:

Hepatocellular carcinoma (HCC) is one of the deadliest diseases around the globe and its 5-year survival rate is lower than 10%. The multikinase inhibitor sorafenib is the first line targeted therapeutic agent for advanced HCC. However, most patients develop sorafenib resistance within 6 months. Akt activation plays a pivotal role in sorafenib resistance and Akt inhibition has been proposed as a potential strategy to overcome sorafenib resistance1. Deoxyelephantopin (DEO), a sesquiterpene lactone found in *Elephantopus scaber* L., was reported to have anti-cancer effects through downregulating Akt signalling. Therefore, we hypothesized that DEO exerts anti-cancer effects in sorafenib-resistant HCC through downregulating Akt signalling. Cell assays showed that DEO time- and dose-dependently inhibited the proliferation and colony formation ability of sorafenib-resistant HepG2 (HepG2-SR) cells. DEO also induced G2/M phase cell cycle arrest and apoptosis in HepG2-SR cells. Western blotting results showed that DEO inhibited phosphorylation of Akt at Ser473. Our results demonstrated that DEO overcomes sorafenib resistance in HCC, and inhibition of Akt signalling contributes to the underlying mechanisms. These findings provide a pharmacological groundwork for developing DEO as a drug for treating sorafenib-resistant HCC.

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B-40

The water extract of aloe prevents fluoxetine-induced multiple-drug resistance of E. coli by reversing ROS formation and membrane permeability
蘆薈水提物通過抑製 ROS 的產生及膜通透性蛋白的變化保護大腸桿菌免受氟西汀誘導的多重抗生素耐藥性突變

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Abstract:

Synthetic chemical is one of the main treatments for depressive disorders, but its serious side effects arouse public concerns. Evidence reveals long term exposure to antidepressants causing multiple-drug resistance (MDR) mutation among gut microbiomes. The MDR mutants in gut poses a threat to intestinal balance and bacterial infection treatment. Effective strategies are thus in urgent need to prevent MDR mutants, mediated by anti-depressants. We aimed to screen for herbal extracts that could protect E. coli from being MDR during the co-culture with fluoxetine. We established a screening platform to screen for herbal extract to prevent E. coli being MDR colonies, as cocultured with fluoxetine. To figure out the mechanistic action, the formation of reactive oxygen species (ROS) and the expression of key biomarkers, including outer membrane proteins (OmpF and OmpC), superoxidative stress activator (SoxS) and efflux pump (AcrA/B-TolC), were determined in E. coli being treated with fluoxetine and aloe extract. The water extract of Aloe vera (L.) Burm. f. (aloe; Liliaceae family) was identified as a potential agent to prevent E. coli being MDR colonies, as induced by fluoxetine. Aloe extract robustly suppressed the formation of ROS and MDR colony in E. coli. However, thiourea and N-acetylcysteine, two well-known antioxidants, showed no activity in preventing MDR formation. Additionally, aloe extract directly affected the fluoxetinetriggered early stress response of E. coli and reversed the expression of downstream genes. By fractionation of the extract, the polysaccharide of aloe showed robust activity in preventing fluoxetine-mediated MDR. This study therefore suggested the aloe extract as the adjuvant agent to combat bacterial MDR during anti-depressant treatment.

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B-41

Chrysoeriol ameliorates collagen-induced arthritis in mice and inhibits STAT3 signaling
金聖草素緩解膠原導致的小鼠關節炎並抑制 STAT3 信號通路

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Abstract:

Rheumatoid arthritis (RA) is a chronic inflammatory disease1. Fibroblast-like synoviocytes (FLS) have cancer cell-like characteristics, such as abnormal proliferation and resistance to apoptosis, and play a pathogenic role in RA2. Activation of signal transducer and activator of transcription 3 (STAT3) promotes proliferation and suppresses apoptosis of RA-FLS, resulting in synovial hyperplasia and joint damage3. Chrysoeriol (CSR) is a flavone that has been shown to have anti-inflammatory effects and inhibit STAT3 signaling in our previous studies4. The present study aimed to determine whether CSR has anti-RA effects, and to investigate the involvement of STAT3 signaling in its effects.

The collagen-induced arthritis (CIA) DBA-1J mouse model was used to assess the in vivo anti-RA effects of CSR. IL-6/soluble IL-6 receptor (IL-6/sIL-6R)-stimulated RA-FLS were used to evaluate the in vitro effects of CSR. Immunoblotting and ELISA were used to examine protein levels. CCK-8 assay and crystal violet staining were employed to examine cell proliferation. Annexin V-FITC/PI double staining was employed to detect cell apoptosis.

In animal assays, we found that intragastric administration of CSR attenuated paw swelling and bone erosion, suppressed synovial hyperplasia, down-regulated serum levels of pro-inflammatory cytokines (TNF-α, IL-1β and IL-6), and improved body weight gain of CIA mice. In cell assays, CSR suppressed hyperproliferation of, and evoked apoptosis in, IL-6/sIL-6R-stimulated RA-FLS. Mechanistic studies revealed that CSR inhibited activation/phosphorylation of STAT3 (Tyr705) in synovial tissues of CIA mice and in IL-6/sIL-6R-stimulated RA-FLS. CRS also decreased STAT3 nuclear level and down-regulated protein levels of cleaved caspase-3, cleaved caspase-9, Bcl-2 and Mcl-1 in the cell model. Over-activation of STAT3 significantly diminished the anti-proliferative effects of CSR in IL-6/sIL-6R-stimulated RA-FLS.

In summary, we for the first time demonstrated that CSR ameliorates CIA in mice and suppresses hyperproliferation of RA-FLS. Inhibition of STAT3 signaling is involved in CSR's anti-RA effects. This study provides a pharmacological basis for developing CSR into a novel anti-RA agent.

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B-42

Rehmannioside D attenuates pathogenesis of multiple sclerosis through inhibiting peroxynitrite induced IL2R nitration

通過抑制 IL2R 的過氧亞硝基緩解多發性硬化

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Abstract:

T cell autoimmunity, especially T-helper 17 (Th17), plays critical role in multiple sclerosis (MS) pathogenesis. Activated T cell infiltrated from periphery immune system secretes inflammatory cytokines to exaggerate CNS damages in experimental autoimmune encephalomyelitis (EAE), a well-established MS animal model. Regulatory T cell subset (Tregs) produces anti-inflammatory cytokines IL-10 and TGF-β to suppress the migration of Th17 and maintain immune homeostasis of CNS, preventing axonal damage and demyelination. Peroxynitrite exerts crucial roles in inducing inflammatory damage in the MS/EAE pathogenesis. However, whether peroxynitrite could modulate Th17/Tregs axis and affect Th17 inflammatory infiltration in active EAE remains unclear. We found that peroxynitrite-mediated 3-nitrotyrosine on Tregs was coincidently increased with EAE progression, which was remarkably attenuated by peroxynitrite decomposition catalyst. Meanwhile, the inhibition of peroxynitrite increased Tregs, reducing Th1/Th17 infiltration into CNS in active EAE mice. After detecting the tyrosine nitration of Treg-specific protein, we found that interleukin 2 receptor (IL-2R) was nitrated in the lymph nodes of active EAE mice. Thus, the peroxynitrite-mediated Tregs reduction and dysfunction in the periphery immune system could be a critical pathological process to aggravating Th1/Th17 infiltration and CNS damage in MS/EAE pathogenesis. Furthermore, we found that Rehmannioside D (RehD), a natural medicinal compound with a high capability of inhibiting 3-nitrotyrosine, increased the release of IL-10 by Treg through reversing the nitration of IL-2R in active EAE mice and PBMC of healthy donors and MS patients. Taken together, RehD could be a promising drug candidate to inhibit peroxynitrite-mediated Tregs reduction and dysfunction, decrease Th1/Th17 infiltration and attenuate CNS damages.

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B-43

Ginsenoside Rg1 Ameliorates Atopic Dermatitis in a Mouse Model

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Abstract:

Atopic dermatitis (AD) is a common chronic inflammatory disease characterized by intense itch, inflamed skin, and a relapsing course. Skin barrier dysfunction facilitates allergen sensitization and systemic allergic responses in AD patients1. Current AD therapies have limitations. Safe and effective agents for treating AD are needed. Ginsenoside Rg1 is a principal pharmacologically active component of Ginseng. Previous studies have shown that Ginseng extracts are beneficial in the management of skin diseases due to their antioxidant, immunomodulatory, anti inflammatory, and antimicrobial activities2. Whether ginsenoside Rg1 has anti-AD effects is to be addressed. This study aimed to determine if ginsenoside Rg1 exerts anti-AD effects and to investigate the underlying mechanisms of action. For these purposes, a mouse model of calcipotriol (MC903)-induced AD was used. Ear thickness and scratching behavior were measured during the experiment. Cytokine levels in lesioned tissues were detected by multiplex cytokine assay or RT-qPCR. The epithelial tight junction proteins E-cadherin, Claudin-1 and ZO 1 were examined by immunohistochemistry and Western blotting. Topical application of ginsenoside Rg1 on mouse ears significantly decreased ear thickness and scratching counts without affecting body weight of the model mice. Dexamethasone, a clinical drug used as a positive control, also inhibited mouse ear thickening. However, dexamethasone failed to restrain mouse scratching. Even worse, dexamethasone deteriorated body weight loss of the model mice. Histological analyses confirmed that ginsenoside Rg1 ameliorated pathological changes including the thickened dermal and epidermal. Immunohistochemistry, Western blotting, and RT-qPCR results showed that expression levels of the tight junction marker ZO-1 and the adherens junction proteins E-cadherin and Claudin-1 were decreased in the ear epidermis of the model mice; ginsenoside Rg1, but not dexamethasone, dose-dependently and significantly upregulated levels of these protein in the epidermis, indicating that ginsenoside Rg1 improves skin barrier function. Ginsenoside Rg1 significantly decreased mast cell infiltration toward ear lesions, downregulated levels of the cytokines IL-4, IL-1β, IL-33, TLSP, IL-2 and GM-CSF in lesioned ears, and lowered serum IgE level of the model mice, indicating that the compound has an anti-allergic inflammatory effect. Mechanistically, ginsenoside Rg1 inhibited the degradation of IκBα, the phosphorylation of IκBα at ser32, and the phosphorylation of p38 at Thr180/Tyr182 in mouse lesioned ears. Collectively, ginsenoside Rg1 ameliorates atopic dermatitis by improving skin barrier function and inhibiting allergic inflammation in mice; inhibition of NF-κB and p38 pathways is involved in the anti-allergic inflammatory effects of the compound. Findings of this study suggest that ginsenoside Rg1 can be developed into an effective and safe anti-AD agent.

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B-44

Flavonoids from Seabuckthorn (Hippophae rhamnoides L.) protect neurons from β-amyloid-induced apoptosis and oxidation damage

沙棘黃酮減少 β-澱粉樣蛋白對神經元造成的凋亡和氧化損傷

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Abstract:

Seabuckthorn is an excellent plant resource of "medicine homologous food". Over a long history of nutritional and pharmaceutical application, the fruit of Seabuckthorn has been proved to show benefits in treating several diseases, including cardiovascular diseases, obesity and digestive system disorders. Seabuckthorn is rich in flavonoids, e.g., isorhamnetin, quercetin and kaempferol. Here, we determined the potential functions of Seabuckthorn flavonoids (hereinafter called "SBF") in treating neurodegenerative diseases. In cultured PC12 cells, SH-SY5Y cells and primary cortical neurons, the application of SBF induced neuronal differentiation. This activation was blocked by inhibitors of PI3K/Akt and MAPK/ERK. Additionally, SBF showed synergistic functions with neurotrophic factors (e.g., NGF and BDNF) in stimulating the neurite outgrowth. In parallel, SBF protected the cultured neuronal cells from Aβ_{25-35}-induced cell death. In addition, SBF suppressed the pro-apoptosis and ROS accumulation, as caused by Aβ_{25-35}. The application of SBF in neuronal cells stimulated Nrf2 translocation from cytoplasm to nucleus, and thereafter which up- regulated the downstream factor ARE/HO-1. Thus, SBF was able to stimulate neurite outgrowth via activation of PI3K/Akt and ERK1/2 pathway, and which had the capacity to protect neuronal cells from the Aβ25-35-induced apoptosis via activation of Nrf2/ARE/HO-1 pathway.

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B-45

Patchouli Alcohol Ameliorates the Learning and Memory Impairments in an Animal Model of Alzheimer's Disease via Modulating SIRT1
廣藿香醇通過調節 SIRT1 改善阿爾茨海默病動物模型的學習和記憶障礙

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Abstract:

Alzheimer's disease (AD) is one of the most prevalent neurodegenerative diseases. Patchouli alcohol (PA), a major active ingredient isolated from Pogostemonis Herba, exhibits extensive bioactivity in the central nervous system (CNS) and exerts neuroprotective effects. This study aimed to investigate the anti-AD effects of PA in an animal model of AD and to elucidate the underlying molecular mechanisms. Here, we reported for the first time that PA could penetrate the blood-brain barrier (BBB) to exert its protective effects on the brain after a single-dose oral administration. Our results revealed that the concentration of PA in the brain of rats was increased from 5 min and peaked at 10 min after the oral administration, then descended gradually until 360 min. The Morris water maze test results showed that PA could significantly ameliorate the learning and memory deficits induced by streptozotocin (STZ) in rats. Meanwhile, PA enhanced the silent information regulator 1 (SIRT1) expression. Moreover, PA markedly alleviated the tau pathology by inhibiting the hyperacetylation (at the site of Lys174) and hyperphosphorylation (at the sites of Thr181, Thr205, Ser396 and Ser404) of tau protein. The administration of PA relieved neuroinflammation by suppressing the activation of microglia and astrocytes via the deacetylation of NF-κB at Lys 310 (K310). In addition, PA also efficiently down-regulated the Aβ expression in the STZ-treated AD rats. EX527, a SIRT1 selective inhibitor, could partially abolish the cognitive deficits improving effect of PA and inhibit the down-regulation of acetylated tau and acetylated NF-κB p65, but not affect Aβ expression, suggesting that PA exhibited neuroprotective effects against AD via upregulating SIRT1. In conclusion, PA could improve the cognitive and memory impairments in the STZ-induced AD rat model. The underlying mechanisms involve the alleviations of neuroinflammation and tau pathology via modulating SIRT1 and suppression of Aβ deposition. Our findings have underscored the potential of PA as an anti-AD pharmaceutical.

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B-46

Mechanism of Cistanches Herba in Treatment of Parkinson's Disease Based on Network Pharmacology and Molecular Docking
基於網絡藥理學和分子對接探討肉蓯蓉治療帕金森病的作用機制

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Abstract:

The study aimed to explore the mechanism of Cistanches Herba in treatment of Parkinson's disease based on network pharmacology and molecular docking. The active components in Cistanches Herba were selected as candidate compounds by the TCMSP1. And the target information of Cistanches Herba was obtained by PubChem and sea database. The target information of Parkinson's disease was obtained by GeneCard database and the common target gene information was obtained by comparing traditional Chinese medicine and disease targets. PPI network was constructed by means of STRING. The key target genes were enriched by GO and KEGG pathway in DAVID 6.8 database. The Cytoscape software was applied to construct the network diagram of traditional Chinese medicine-chemical compound-target. The gene targets in the network were sorted according to the degree value, the first five key targets are selected. Finally, the five key targets were in connection with the effective active components of Cistanches Herba by using AutoDock Vina tool[2]. In the end, the results showed that 6 active components were screened from Cistanches Herba beta-sitosterol, arachidonate, suchilactone, Yangambin, quercetin, Marckine. 308 prediction targets were obtained by intersection, which were analyzed by PPI. 38 key target genes were filtered out, and the key target genes were enriched by GO and KEGG pathway. Finally, it was found that GO rich BP includes intracellular signal transduction; CC analysis mainly included protein complex, mitochondrion; MF results mainly included ATP binding, protein complex binding. KEGG pathway enrichment mainly included PI3K/Akt, miRNAs, HIF-1, TNF, FOXO signal pathways, etc. The first five key targets were MAPK8, ESR1, SRC, JAK2 and AKT1. The results of molecular docking showed that the six active components of Cistanches Herba had good binding activity with five key targets. This study found that Cistanches Herba can play a multi-component, multi-channel and multi-target synergistic role in the treatment of Parkinson's disease by protecting mitochondrial function, regulating protein activity, regulating autophagy and inhibiting neuroinflammatory response.

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B-47

Network Pharmacology-based analysis of Ju Ying Emulsifiable Paste in the treatment of acne
基於整合藥理學探究棋櫻乳膏治療痤瘡機制

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Abstract:

Traditional Chinese medicine (TCM) holds that the formation of acne vulgaris is closely related to dampness-heat in the lung and stomach. The syndrome type mostly belongs to wind-heat in the lung and lack of Yin in the liver and kidney. The method of clearing heat and dispelling dampness, and tonifying liver and kidney should be given. Although Ju Ying Emulsifiable Paste (JYEP) effective in treating acne without prominent adverse events, the possible molecular mechanism of how JYEP alleviates acne vulgaris remains elusive. According to the proven clinical efficacy, we applied the network pharmacology method to explore the pharmacological targets and potential mechanisms of JYEP in the treatment of acne. Firstly, LC-MS/MS analysis was used to perform the quality control of ingredients in JYEP. Secondly, after limiting conditions, 21 components were gain after deduplication, and 441 correlative targets are included. Then, we constructed the networks among the active compounds, marks, and diseases to decipher the pharmacological actions of JYEP. Finally, the results showed the possible kernel signal pathway connected with acne included IL17 signaling pathway, AGE-RAGE signaling pathway in diabetic complications, TNF signaling pathway, and HIF-1signaling pathway. Besides, JUN, TNF, IL6, NF-κB1, RELA (p65), MAPK1, STAT3, and EP300 might be related to JYEP in acne treatment. In summary, we revealed the potential targets and kernel pathways, providing additional evidence for the clinical application of JYEP treated acne.

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B-48

Acteoside promotes B cell-derived IL-10 production and ameliorates autoimmunity
毛蕊花糖苷促進 B 細胞來源的 IL-10 產生從而改善自身免疫疾病

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Abstract:

IL-10-producing regulatory B (Breg) cells are well-recognized for maintaining immune tolerance. The impaired Breg cell function with decreased IL-10-producing capacity has been found in autoimmune diseases, such as rheumatoid arthritis, lupus and primary Sjogren's syndrome (pSS)[1]. However, seldom therapeutic agents targeting Breg cells are available to treat those autoimmune diseases. Here, we showed that acteoside (AC), a caffeoyl phenylethanoid glycoside from a medicinal herb *Radix Rehmanniae*, could promote IL-10 production from both human and murine B cells via critically regulating the toll-like receptor (TLR)4/PI3K axis. Moreover, TLR4 was found increased in Breg cells from mice with experimental SS (ESS), a mouse model that recapitulates human pSS. Thus, B cells from the ESS mice were susceptible to AC treatment, showing higher IL-10-producing capacity than those from naïve controls. In addition, AC treatment also promoted the production of IL-10 from $TLR4^{+}CXCR4^{+}$ plasma cells of ESS mice. Notably, we found that AC was able to enter lymphoid organs upon oral administration. AC treatment effectively increased $IL\text{-}10^{+}$ B cells in ESS mice and ameliorated disease pathology accompanied by reduced T effector cells, including Th17 and T follicular helper cells in the ESS mice. In conclusion, AC could promote Breg cell function and attenuate ESS pathology *in vivo*, which may be a promising drug candidate for treating pSS and other autoimmune diseases.

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B-49

The Effects of a Transgelin-2 Agonist Administered at Different Times in a Mouse Model of Airway Hyperresponsiveness
不同時間給予 Transgelin-2 激動劑對氣道高反應小鼠模型的影響

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Abstract:

Airway hyperresponsiveness (AHR) is one of the most important pathological features of asthma[1]. More than 339 million people worldwide suffer from asthma, which is expected to increase to 400 million by 2025[2]. The prevalence of asthma varies from 1 to 18% in different regions[3]. In China, the total prevalence of asthma is 4.2%[4]. In addition, asthma imposes a severe economic burden[5]. In addition, asthma imposes a severe economic burden. The annual direct cost of asthma is 82 billion dollars in America and more than 72 billion euros in Europe[6,7]. Therefore, reducing airway hyperresponsiveness has always been an important research direction in the treatment of asthma.

The primary goal of asthma treatment is to reverse early airway changes, limit the late effects of airway remodeling to effectively control AHR and improve the quality of life of patients[8]. The clinical treatments for treating acute airway contraction of AHR include β2-agonists, muscarinic antagonists, etc[9]. However, there are concerns regarding the limitations and side effects of regular bronchodilators[10-12]. For example, evidences showed that administration of β2-agonists such as terbutaline induced receptor desensitization and lost its efficacy[13]. In addition, significant side effects, such as palpitation and cramps, lead to the limitation of clinical application further[14]. Thus, new effective and low-risk strategies are needed to provide alternatives in asthma management regarding both uncontrollable symptoms and the side effects of conventional drugs[15,16].

Acupuncture is an important therapy in traditional Chinese medicine and asthma has been listed as an acupuncture indication in 1979 and 2002 by WHO[17,18]. Our previous study was based on the acupuncture points GV14, BL12 and BL13 (Three Acupuncture Points and Five-needle Method). This acupuncture therapy is inherited from professor Jing-Ming Shao, a national famous traditional Chinese medicine doctor[19]. Our study further found transgelin-2 was a new target of acupuncture in treating asthma and TSG12(PubChem CID: 1896138) was a specific transgelin-2 agonist that can simulate the effect of acupuncture[20]. Previous studies have preliminarily shown the efficacy of TSG12 in cellular and asthma animal models. TSG12 inhibited the contraction of rat airway smooth muscle cells induced by acetylcholine in a dose dependent manner, and the half-maximum effective concentration (EC_{50}) was 6.8 nM[21]. However, the optimal administration time of TSG12 to reduce AHR and the pharmacological effects are still unclear. In this study, the effects of TSG12 inhalation at two different administration times, before and during AHR occurrence, on pulmonary functions

in mice were examined. Changes of pulmonary resistance and dynamic compliance were studied in mice using the Resistance and Compliance System. Hematoxylin-eosin staining was used to study the effect of different administration time on inflammatory changes in lung tissues and qRT-PCR was used to study the effect of different administration time on related gene expression.

In summary, our study shows that the transgelin-2 agonist effectively reduces pulmonary resistance when TSG12 inhalation both before and during AHR, and the effect may be related with the increased gene expression of transgelin-2 and MLC.

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B-50

Screening traditional Chinese medicine in promoting fish growth by using growth hormone-IGF1 signaling in HEK293T cells
以 HEK293T 細胞為模型，在 GH-IGF1 信号通路上篩選對促進魚類生長有功效的傳統中藥

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Abstract:

Aquaculture supplies more than 50% of all consumed seafood globally, and 18.7 million people worldwide currently work as fish farmers. For fish farming to be economically beneficial, farmers require fish to grow fast and with good quality. Additionally, fish are highly susceptible to the weather and bacterial diseases, the longer it takes for fish to grow, the higher the risk. Chinese herbal extracts have the potential to have similar effects as of growth hormone (GH), boosting fish growth without the dangers of hormone-ingestion in humans or environmental contamination. GH works by activating the downstream insulin growth factor 1 (IGF1) signaling pathway, which increases IGF1 and stimulates growth in vertebrates via the activation of P13K/AKT and MAPK/ERK signaling [1]. IGF1 is an indicator of body growth in vertebrates [2]. A firefly luciferase plasmid vector pEZX-PL01 containing the tilapia (*Oreochromis mossambicus*) IGF1 promotor was transfected into HEK293T cells. The promotor sequence has been proven to be activated in eukaryotic cells. The transfected cells were treated with herbal extracts, and an increase in luciferase activity indicated an activation of the IGF1 promotor. Using this method for screening of herbal extracts, over 300 herbal extracts were screened for growth promoting effects. Twenty-nine herbal extracts showed significant increase of the activity. Amongst the positive hits, Ziziphus Spinosae Semen, Salviae Plebeiae Herba and Glycyrrhizae Radix were chosen for further study. These herbal extracts showed low toxicity in vitro and induced the pEZX-PLo1 activity in a dose-dependent manner in the plasmid transfected HEK293T. They are ideal candidates for further in vivo studies and possible application in aquaculture.

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B-51

Identification of the potential mechanisms of Huzhang Tongfeng Granules against acute gouty arthritis through network pharmacology and *in vivo* analysis

通過網絡藥理學探討虎杖通風顆粒治療急性痛風性關節炎的潛在機制

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Abstract:

Objective: To identify the potential mechanism of Huzhang Tongfeng Granules (HTG) for the treatment of acute gouty arthritis (AGA).

Methods: First of all, we used network pharmacology to build a network of components-targets of HTG. Secondly, ClusterONE algorithm was applied to construct a modular network as well as discover hub genes and kernel pathways. Lastly, MSU crystals-induced AGA mice model was used to verify the hub genes and kernel pathways of HTG.

Results: HTG down-regulated the expressions of ADRB3, PIK3CA, FYN, PIK3R1, CASR, PLCG1, SYK, EGFR, and up-regulated MC1R, MC5R. Moreover, according to the kernel clusters enrichment analysis, HTG regulated NF- κ B and P13K-Akt signaling pathways to ameliorate AGA mice model.

Conclusion: In summary, the potential targets and kernel pathways were proved in this study, supporting the clinical application of Huzhang Tongfeng Granules for the treatment of acute gouty arthritis.

B-52

The effects of PIK75, a p110α and DNA-PK dual inhibitor, on triple negative breast cancer treatment

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Abstract:

Triple-negative breast cancer (TNBC), which lacks the expression of the estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2), is the most aggressive subtype of breast cancer[1,2]. It is the most challenging subtype in breast cancer treatment and chemotherapy remains major treatment for TNBC, due to the lack of recognized molecular targets for therapy and the ineffectiveness of common treatments like hormone therapy and drugs that target ER, PR and HER-2. Also, TNBC patients exhibit poorer 5-year survival due to relatively higher rates of metastasis and reoccurrence when compared with other breast cancer subtypes[1-3].

Hundreds of new compounds and combinations are in development for TNBC treatment[4]. Among a panel of DNA-PK inhibitors, PIK75, a small molecule of compound, showed the most potent inhibitory effects on proliferation against TNBC cell lines. It has been reported that, apart from its inhibition on DNA-PK (IC_{50}=2 nM), PIK75 also showed effects on p110α (IC_{50}=5.8 nM) and this is highly selective when compared to p110ϒ (IC_{50}=76 nM)[5]. Both p110α (expressed by PIK3CA gene) and DNA-PK (expressed by PRKDC gene) have been targeted in cancer therapy, given their critical function in tumor formation and DNA damage response pathways[6-8].

Further investigation on the anti-TNBC effects of PIK75 showed excellent growth inhibition in a panel of 9 human TNBC cell lines, with the IC_{50} values ranging from 20 nM to 2 μM and a better efficacy than Alpelisib, an FDA approved drug used to treat *PIK3CA*-mutated, hormone receptor-positive advanced breast cancer patients[9]. In addition, PIK75 dramatically reduced the colony formation efficiencies at all tested concentrations than Alpelisib in monolayer cell culture on three representative TNBC cell lines. We also found that PIK75 could significantly inhibit the mobilization of TNBC cells by scratch wound assay at different concentrations via several epithelial-mesenchymal transition markers.

Due to less stronger binding between PIK75 and p110α protein *in silico* than the binding of Alpelisib, we postulated that the better effects of PIK75 on TNBC proliferation than Alpelisib is due to the dual inhibition of p110α and DNA-PK by PIK75. However, drug combination treatments on several TNBC cells using a single p110α inhibitor (Alpelisic) and a single DNA-PK inhibitor (Nedisertib) are not showing synergistic effects. Thus, there might be other pathways involved in the inhibition effects of PIK75 other than these two proteins (p110α and DNA-PK).

To conclude, PIK75 showed potent inhibition effects on TNBC cells on its growth, colony formation and cellular mobilization. There is an unmet need to further discover the mechanism of the effects of PIK75 on TNBCs, which will serve as a pre-clinical profile for the compound as a potential TNBC drug treatment.

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B-53

Exploration of the Neuroprotective effects and mechanism of Tianma Gouteng Pair on Alzheimer's Disease through TgCRND8 mouse and network pharmacology
基於轉基因小鼠 TgCRND8 和網絡藥理學探討 天麻 - 鉤藤藥對防治阿爾茨海默疾病的作用和機制

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Abstract:

Tianma Gouteng Pair (TGP), commonly as a unit, is applied in many traditional Chinese medicine formulae to cure headache, dizziness, and dementia. Numerous pharmacological researches have suggested that Tianma or Gouteng show curative effects on AD, but the mechanism of TGP against AD remains unknown. Therefore, this work aimed to investigate anti-AD effect and mechanism of TGP by TgCRND8 mice and network pharmacology.

TgCRND8 AD-mice were employed to investigate the anti-AD effect of TGP through such behavioral tests as open field (OF) test, novel object recognition (NOR) test and Morris water maze (MWM) test to determine the behavior changes of mice, and the level of AD-related hyperphosphorylation of tau protein in brain tissues with the aid of western blot analysis. Network pharmacology was used to explore the potential mechanism of TGP against AD.

The OF test showed that TGP administration led to anxiety reduction of TgCRND8 mice, as the treated mice spent significantly more time in the center area than that of mice in the vehicle group, but did not present significant differences in the total distance travelled. In NOR test, TGP group mice demonstrated improved cognition than the vehicle group, as indicated by significantly more time spent with the novel objects. In MWM test, during the training session, TgCRND8 vehicle group mice exhibited significantly longer escape latencies than the TGP group mice; in the probe trial, TgCRND8 vehicle group mice spent less time in the target quadrant compared with wild type mice and impairments of spatial learning and memory associated with TgCRND8 mice were significantly alleviated by oral gavage of TGP, as indicated by decreased escape latency and improved target quadrant occupancy. TGP could also significantly reduce the hyperphosphorylation of tau protein at the sites of Ser396 and S404 thus improving the cognition of TgCRND8 mice. The network pharmacology suggested that the top 10 hub targets of TGP against AD were TP53, Akt1, EGFR, IL1β, MAPK3, HIF1A, CASP3, PIK3R1, VEGFA and PTGS2, and ample evidence suggested that these targets were related to AD occurrence.

The present study suggested that TGP could improve the cognitive deficits of TgCRND8 mice and suppress the AD-related hyperphosphorylation of tau protein in the brain of the TgCRND8 mice. In addition, the network pharmacology-guided mechanism of TGP against AD will be further studied in the near future.

C-01

Effects of Acupuncture Combined with Donepezil Hydrochloride on Mild to Moderate Alzheimer's Disease and Related Plasma Biomarkers: An Exploratory Randomized Clinical Trial
針刺結合鹽酸多奈哌齊對輕中度阿爾茨海默病及相關血漿生物標誌物的影響：一項探索性隨機臨床試驗

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Abstract:

Background: Acupuncture has been recommended for treating Alzheimer's disease (AD), but evidence for its biomarkers of effectiveness remains limited. Amyloid-beta (Aβ40), Aβ42, neurofilament light chain (NfL) and glial fibrillary acidic protein (GFAP) levels have emerged as possible biomarkers of cognitive function1 that may reflect the impact of acupuncture treatments.

Objective: To assess the: 1) effects of two 12-week acupuncture treatment on Aβ40, Aβ42, NfL and GFAP in Chinese older Adults with mild-moderate AD; and 2) relationship of biomarkers changes to those in cognitive function.

Method: 40 participants were randomly assigned to the acupuncture group or control group at a 1:1 ratio, with treatment conducted thrice weekly for 12 weeks. Blood collections were performed at baseline and week 12 and measured via Single Molecule Array technology. The cognitive functions were assessed by Alzheimer's Disease Assessment Scale-Cognitive section (ADAS-Cog) and Mini-Mental State Examination (MMSE).

Results: The acupuncture group showed significantly greater decrease in ADAS-Cog and increase in MMSE scores than control group ($p < 0.05$). A significant decrease from baseline in levels of plasma Aβ40 and Aβ42 ($p < 0.001$) was more pronounced in acupuncture group than control group after adjusting baseline scores as covariates. Improvements in ADAS-Cog was positively correlated with decrease in Aβ40 and Aβ42 (adjusted $r2 = 0.34$, $p=0.044$; adjusted $r2 = 0.37$, $p=0.027$), not in GFAP and NfL. The associations of decrease Aβ40 levels to improvements in ADAS-Cog appeared more pronounced in the acupuncture group than in the control group after adjusting age and sex factors (adjusted $r2= 0.38$ versus 0.03, p for interaction=0.001).

Conclusion: Acupuncture is a safe and effective technique to improve cognition over the short term of 12 weeks in mild-moderate AD patients. Acupuncture treatment may alter plasma Aβ and GFAP level. Biomarkers decreases were associated with improvements in cognitive function suggesting potential functional relationships. The study illustrates the value of using plasma Aβ as biomarker for evaluation of acupuncture treatment effects at early stage of AD.

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C-02

Effect of Helicobacter pylori infection in the stomach on microorganisms in tongue coating of patients with chronic gastritis
幽門螺桿菌感染對慢性胃炎患者舌苔微生物的影響研究

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Abstract:

Objective: Investigate the effect of Helicobacter pylori (Hp) on tongue characteristics of patients with chronic gastritis and analyze the correlation between Hp and tongue coating flora. Methods 120 patients with chronic gastritis (54 cases in the positive group and 66 cases in the negative group) were selected. The tongue images of the patients were observed and recorded. Tongue coating samples were collected. 16S rRNA gene sequencing technology was used to sequence the flora of tongue coating. T-test and chi-square tests were used to compare the differences between the two groups.

Methods: 120 patients with chronic gastritis (54 cases in the positive group and 66 cases in the negative group) were selected. The tongue images of the patients were observed and recorded. Tongue coating samples were collected. 16S rRNA gene sequencing technology was used to sequence the flora of tongue coating. T-test and chi-square tests were used to compare the differences between the two groups.

Results: (1) The core bacteria in Hp (+) group (relative content ≥1%) consists of *Prevotella-7. Neisseria*, *Streptococcus*, *Veillonella*, *Leptotrichia*, *actinomyces*, *Haemophilus*, *Prevotella*, *Porphyromonas*, but the relative abundance of *Neisseria*, *Streptococcus* and *Haemophilus* in Hp (+) group was significantly higher than that in HP (-) group; (2) At the phylum level, the relative abundance of *Proteobacteria* in HP (+) group increased significantly ($P < 0.05$), while the relative abundance of *Bacteroides* and *Saccharibacteria* in HP (-) group increased significantly ($P < 0.05$); At the genus level, the relative abundance of *Streptococcus* and *Neisseria* in Hp (+) group increased significantly ($P < 0.05$);In Hp (-) group, the relative abundance of *prevotella-7*, *Veillonella* and *g-norank-p-saccaribacteria* increased significantly ($P < 0.05$); (3) In Hp(+) group,Greasy fur and *g _ unclassified_ k_ Norank* was positively correlated ($r = 0.285$, $P = 0.038$,g_Lactobacillus was negatively correlated ($r = - 0.290$, $P = 0.035$); And crimson tongue and *g__ Corynebacterium*、*g__ Moraxella*、*g__ Alloprevotella*、*g__ Mogibacterium*、*g__ Aggregatibacter*、*g__ Ruminococcaceae_ UCG-014*、*g__ Tannerella* were negatively correlated ($P < 0.05$).

Conclusion: Although Helicobacter pylori infection does not change the species composition of the core flora of the tongue coating, it has a significant impact on the relative abundance and diversity of the tongue coating flora. This paper explains the viewpoint of "the tongue is the external syndrome of the spleen and stomach" in traditional Chinese medicine with the nonsubjective change of the flora and its far connection, to promote the absorption of traditional Chinese medicine theory into modern medicine, at the same time, realize the risk assessment, early

diagnosis and prognosis of gastrointestinal diseases and related systemic diseases, and effectively promote the individualized and accurate medical treatment of diseases.

Keywords: Helicobacter pylori; Bacteria in tongue coating;16S rRNA; Greasy coating; chronic gastritis

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C-03

Clinical effect of Tiaoxin decoction on coronary heart disease patients with anxiety/depression： A randomized controlled clinical trial

調心方治療冠心病伴焦慮 / 抑鬱患者臨床療效研究：一項隨機對照臨床試驗

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Abstract:

Objectives: To explore the clinical effect of Tiaoxin Formula in the treatment of patients with coronary heart disease with anxiety/ depression.

Methods: A total of 66 patients with coronary heart disease and anxiety/ depression were randomly divided into the Tiaoxin decoction group (n=33) and the Deanxit group (n=33)· The Deanxit group was treated with Flupentixol and Melitracen Tablets and the Tiaoxin decoction group was treated with Tiaoxin decoction based on fundamental treatment. The treatment lasted 8 weeks. Before and after treatment, the changes in Patients health questionnaire (PHQ-9 scores)、Generalized Anxiety Scale (GAD-7 scores)、Seattle Angina Questionnaire (SAQ scores), heart rate variability、serum levels of 5-HT、 β-TG, and MPO、 the clinical efficacy and the incidence of adverse reactions in the two groups were observed.

Results: According to the statistical analysis of the baseline indexes of the two groups, there was no significant difference (P>0.05), and the two groups were comparable. After treatment for 8 weeks, the total effective rate for TCM syndromes in the Tiaoxin decoction group was 87.88% and that in the Deanxit group was 63.64%, there was statistical significance (P<0.05). Compared with before treatment, at 4 weeks and 8 weeks after treatment, the score of PHQ-9 and GAD-7 were decreased (P<0.05), and there was no statistical difference between the two groups(P>0.05). At 4 weeks and 8 weeks of treatment, the SAQ dimension scores of the two groups were significantly increased (P<0.05). Compared with the Deanxit group, the two dimensions of physical limitation and angina stability scores were significantly higher in the Tiaoxin decoction group (P<0.05). Compared with before treatment, the levels of serum 5-HT in the two groups were significantly increased, and the levels of serum β-TG and MPO were significantly decreased (P<0.05). Compared with before treatment, the standard deviation of the normal NN intervals (SDNN) and standard deviation of the average NN intervals (SDANN) of the heart rate variability in the Tiaoxin decoction group was increased (P<0.05). After treatment, the SDNN and SDANN of the Tiaoxin decoction group were significantly increased (P<0.05). During the treatment period, the incidence of adverse drug reactions in the Tiaoxin decoction group was lower than that in the Deanxit group with statistical significance (P<0.05). Conclusions: Tiaoxin decoction are effective for the treatment of patients with coronary heart disease accompanied by anxiety and depression, improving clinical symptoms, increasing serum 5-HT levels, decreasing serum β-TG and MPO levels, and there are few adverse reactions safety for patients, with a high clinical value.

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C-04

Clinical Efficacy of Si-Jun-Zi-Tang and Regulation of Gut Microbiota in Postoperative Lung Cancer Patients
四君子湯對肺癌術後患者的臨床療效研究以及對腸道菌群的調節作用

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Abstract:

Background: The expanding global population of patients with lung cancer represents a public health challenge. Gut microbiota is closely related to cancer progressions, inflammatory responses, and immune dysregulations. Si-Jun-Zi-Tang(SJZT), a Traditional Chinese Medicine formula from Prescriptions of Peaceful Benevolent Dispensary, is widely utilized for cancer patients with deficiency of vital energy, performing well in nourishing vitality. SJZT exerts anti-tumor and immunoregulation effects by regulating microbiome dysbiosis and modulating gut homeostasis. Accordingly, the regulation of gut microbiota by SJZT could be a new strategy for cancers. However, the therapeutic effect of SJZT in postoperative lung cancer and the mechanism related to gut microbiota remain unknown.

Aim: To investigate the clinical efficacy of SJZT in postoperative lung cancer and the regulation of gut microbiota, thus providing a new perspective and clinical basis for postoperative lung cancer.

Methods: 65 postoperative lung cancer patients were recruited and randomly divided into the control group or the SJZT group. The quality of life was evaluated using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30) and Lung Cancer 13 (QLQ-LC13). The outcomes endpoint was the mean change of each item from baseline to week 1 and 4. The clinical parameters such as blood cell cluster differentiation antigen and circulating cytokines levels were evaluated before the intervention, at week 1 and 4. We assessed the fecal microbial abundance and diversity by performing the 16S rRNA sequencing and bioinformatics analysis.

Results: SJZT significantly enhanced the physical and cognitive functioning in QLQ-C30. For blood parameters, CD3+,CD3+CD4+, CD3+CD8+, IL-10 level were greatly upregulated, and IL-8 level was downregulated by SJZT compared to the control group. 16S rRNA sequencing revealed that SJZT significantly increased the richness and composition diversity of the microbial community. Furthermore, we identified several microbiota biomarkers that showed a significant difference between the two groups. Notably, SJZT prominently enriched the abundance of beneficial gut microflora producing short-chain fatty acids, such as Acidaminococcaceae, Christensenellaceae, Subdoligranulum, Phascolarctobacterium, and Alistipes.

Conclusions: Our study indicates that SJZT improves life qualities, ameliorates immune functions, and alleviates inflammatory cytokines in postoperative lung cancer patients. The mechanism could be concerned with increasing the richness and diversity of gut microbiota and optimizing microbial

structure, thus keeping gut micro-environment equilibrium and immune homeostasis. Our findings uncover that SJZT demonstrates the therapeutic potential in postoperative lung cancer and shows clinical significance for gut microbiota-oriented strategies by SJZT.

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C-05

Establishment of A Nomogram-Based Prognostic Model (LASSO-COX Regression) for Predicting Progression-Free Survival of Primary Non-Small Cell Lung Cancer Patients Treated with Adjuvant Chinese Herbal Medicines Therapy: A Retrospective Study of Case Series

基於列線圖的預測中草藥輔助治療的原發性非小細胞肺癌患者無進展生存的預後模型（LASSO-COX 回歸）的建立：一項病例係列的回顧性研究

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Abstract:

Nowadays, Jin-Fu-Kang Oral Liquid, one of Chinese herbal medicines (CHMs) preparations, has been widely used as an adjuvant therapy for primary Non-Small Cell Lung Cancer (PNSCLC) patients with the syndrome of deficiency of both qi and yin (Qi-Yin deficiency pattern) based on Traditional Chinese Medicine (TCM) theory. However, we found insufficient evidence of whether long-term CHM treatment could prolong Progression-Free Survival (PFS) of PNSCLC patients by quantitative measurement. Thus, we established a nomograph-based prognostic model for predicting PNSCLC patients' PFS, involved in Qi-Yin deficiency pattern and be treated with supplementary formula for Jin-Fu-Kang Oral Liquid over 6 months, by using their electronic medical records, in order to provide feasibly designed research for preliminarily judging and evaluating PNSCLC patients' individualization prognosis with long-term CHM-treatment in theoretical epidemiology. In our retrospective study, a series of 197 PNSCLC cases were enrolled and divided into 2 datasets at the ratio of 5:4 by Kennard-Stone algorithm, as a result of 109 in training dataset and 88 in validation dataset. Besides, TNM stage, operation history, sIL-2R, CA724 were considered as 4 highly-correlated predictors for modeling based on LASSO-Cox regression. Additionally, we respectively used training dataset and validation dataset for establishment including internal validation and external validation, and the prediction performance of model was measured by concordance index (C-index), integrated discrimination improvement (IDI), and net reclassification indices (NRI). Moreover, we found that the model containing clinical characteristics and bio-features presented the best performance by pairwise comparison. Next, the result of sensitivity analysis proved its

stability. Then, for preliminarily examination of its discriminative power, all eligible cases were divided into high-risk or low-risk progression by the cut-off value of 57, in the light of predicted Nomogram scores. Ultimately, a completed TRIPOD checklist was used for self-assessment of normativity and integrity in modeling. In conclusion, our model might offer crude probability of uncertainly individualized PFS with long-term CHMs therapy in the real-world setting, which could discern the individuals implicated with worse prognosis from the better ones. Nevertheless, our findings were prone to unmeasured bias caused by confounding factors, owing to retrospective cases series.

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Jianhui Tian, Bin Luo, and Ming Yang conceived the study, analyzed the data, and wrote the paper. Zujun Que and Tianle Luo collected and extracted the first-hand data and provided analyses for the datasets. Ming Yang conducted statistical analyses. Zixin Han offered suggestions on methodology, modified statistical terminology and polished this manuscript. All authors edited the manuscript and approved of the final version.

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C-06

Effects of the Prolong Life with Nine Turn Method qigong on brain functional changes in patients with chronic fatigue syndrome in terms of fatigue and quality of life
延年九轉法氣功對慢性疲勞綜合徵患者疲勞及生活質量腦功能變化的影響

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Abstract:

Background: Chronic fatigue syndrome (CFS) is characterized by persistent fatigue, which often leads to physical and psychological damage. The prolong life with nine turn method (PLWNT) Qigong is considered one of the complementary treatments for improving symptoms in patients with CFS. However, the neurophysiological relevance of these effects remains poorly understood. In this study, we used functional magnetic resonance imaging (fMRI) to study the effects of PLWNT intervention on the neural circuits in subjects with CFS.

Methods: Thirty four CFS patients were randomly divided into a PLWNT group (who received Qigong exercises) and a control group (who received cognitive behavioral therapy, CBT). Both groups were taught by a highly qualified professor at the Shanghai University of Traditional Chinese Medicine once a week and were supervised online during the remaining 6 days at home, over 12 consecutive weeks. We calculated the regional rs-fMRI index amplitude of low-frequency fluctuations (ALFF) for all subjects. To study the changes of the brain network, we used the brain regions with significant differences in ALFF as the regions of interest for whole-brain functional connectivity (FC) analysis. The Multi-dimensional Fatigue Inventory 20 (MFI-20) and Short Form 36-item Health Survey (SF-36) were used for clinical symptom assessment to explore the possible correlation between the rs-fMRI indicators and clinical variations.

Results: The ALFF values of the right superior frontal gyrus (SFG), and left median cingulate gyrus (DCG) were increased, whereas those of the left middle occipital gyrus (OG), right middle OG and left middle temporal gyrus (MTG) were decreased in PLWNT group. The FC values between the DCG and middle temporal gyrus (MTG), and those between the left OG and the right OG were enhanced. In addition, the SF-36 were positively with the left OG (r=0.524), SFG(r=0.517) and DCG(r=0.533), MFI-20 were negatively with the SFG(r=-0.542) and DCG(r=-0.578). These results were all corrected by FWE (voxel level $p < 0.001$, cluster level $p < 0.05$).

Conclusion: In conclusion, PLWNT can relieve the fatigue symptoms of CFS patients and improve their quality of life. CFS patients have abnormal regional spontaneous neuronal activity and abnormal functional connections between regions after PLWNT intervention. The study was approved by the Ethics Committee of Yueyang Hospital of Integrated Traditional Chinese and Western Medicine (Ethics Approval Number: 2018-043), and registered in the American Clinical Trial Registry (12/04/2018), Registration Number is NCT03496961.

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C-07

Supplementation With Xuanfei Pingchuan Prescription Can Reduced Experimental Mice Bronchial Inflammation And Restored Microbial Balance
補充宣肺平喘方能減輕實驗小鼠支氣管炎症和恢復微生物平衡

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Abstract:

Objective: Asthma is a common respiratory disease, the prevalence of asthma among adults in China was found to be 4.2% in people aged 20 years and older. The treatment rates of asthma patients are extremely low. Xuanfei Pingchuan Prescription (XFPCF)is a classical traditional Chinese medicine prescription for asthma or bronchial inflammation. This study was aimed to reveal the therapeutic effect of asthma or bronchial inflammation and uncovered its mechanism mediated by RhoA and microbiota.

Methods: Rats with 2% mixtures (ovalbumin 100 mg, aluminum hydroxide 100 mg and saline 1 ml)-induced bronchial inflammation were administrated with XFPCF. Overall signs were observed by body weight loss and cough frequency. Pulmonary general sign was evaluated by pulmonary. The mechanism of XFPCF reducing bronchial inflammation was detecting by inflammatory cytokines, expression level of RhoA, Rock2 and Adam33, as well as microbiota in gut.

Results: XFPCF significantly reduced cough frequency, inflammatory cytokines and lung injury. 2% mixtures-induced bronchial inflammation were also alleviated by XFPCF, as indicated by down-regulated expression of inflammatory cytokines (IL-4, IL-5) and the RhoA, Rock2 and Adam33. Meanwhile, XFCPF greatly improved intestinal microbiota imbalance by enriching Lactobacillus, Lachnospira, Bifidobacterium, Lachnospiraceae, Coprococcus-1, ParasutterellaXuanfei Pingchuan and Firmicutes to Bacteroidete ratio and decreasing Treponema-2, Dechloromonas, Flavobacterium, Bdellovibrio, Nitrospira, Ruminiclostridium, Ruminiclostridium_9, Unclassified_f_Ruminococcaceae in the feces of asthma rats. Finally, significant correlations appeared between XFPCF-mediated bacteria and Rho, Rock2.

Conclusion: XFPCF could alleviate bronchial inflammation by decreasing expression of inflammatory cytokines and the RhoA, Rock2 and Adam33, and reshaping the microbiota in gut, which contributes to clarifying the clarifying the mechanism by which XFCPF ameliorated bronchial inflammation.

Key words: Xuanfei Pingchuan Prescription; asthma; intestinal microflora; bronchial inflammation

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H-01

Oliganthin H: a novel compound exhibiting potent effect of eradicating both active and dormant prostate cancer cells
Oliganthin H: 一個能同時清除增殖期和靜止期前列腺癌細胞的新化合物

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Abstract:

Quiescent cancer cells (QCCs) refer to a class of rare cells that temporarily and reversibly reside in the G0 phase. QCCs are resistant to and can survive most chemotherapy and radiotherapy targeted at proliferating tumor cells. Surviving QCCs hold the ability to re-enter the cell cycle and reproliferate once the tumor microenvironment achieves appropriate conditions. The re-proliferation of QCCs is considered to be the primary contributor to prostate cancer recurrence and progression. Therefore, developing novel agents that can eradicate QCCs is of great importance in preventing prostate cancer relapse. Previous studies have identified several leading compounds that could selectively kill quiescent prostate cancer cells [1] or block quiescent prostate cancer cells from re-entering the cell cycle [2]. In this study, Oliganthin H (OH), a new compound belonging to the xanthone derivatives, was extracted from the leaves of Garcinia oligantha. Surprisingly, OH demonstrated potent cytotoxicity on both proliferating and quiescent prostate cancer cells. Apoptosis inhibitor Z-VAD but not necroptosis inhibitor NSA could significantly rescue OH-induced cell death in both proliferating and quiescent LNCaP cells. In turn, NSA but not Z-VAD could significantly rescue OH-induced cell death in both proliferating and quiescent PC-3 cells. These results suggested that OH triggered different death mechanisms in two prostate cancer cell lines. Since PC-3 is well-known as a p53-mutant cell line, we hypothesized that the condition of p53 might determine whether prostate cancer cells will undergo apoptosis or necroptosis in response to OH. Moreover, combination therapy of OH and Docetaxel markedly reduced the mini-tumor size in a 3D spheroid model of LNCaP cells in vitro. Our in vivo results demonstrated that a combination of OH and Docetaxel significantly suppressed tumor growth of PC-3 cell xenografts, improved survival time, and delayed tumor recurrence in nude mice.

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H-02

Tectoridin stimulates the activity of human dermal papilla cells and promotes hair Shaft elongation in mouse vibrissae hair follicle culture
利用射干苷提高人類頭髮真皮乳頭細胞的活性並促進毛髮生長

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Abstract:

To search hair growth-promoting herbal extract, a screening platform of having HEK293T fibroblast being transfected with pTOPFLASH DNA construct was developed over a thousand of herbal extracts and phytochemicals were screened. One of the hits was ethanolic extract of Rhizoma Belamcandae, the rhizome of Belamcanda chinensis (L.) DC. Tectoridin, an isoflavone from Rhizoma Belamcandae, was shown to be responsible for this activation of promoter construct, inducing the transcription of pTOPFLASH in the transfected fibroblasts in a dose-dependent manner. The blockage by DKK-1 suggested the action of tectoridin could be mediated by the Wnt receptor. The hair growth-promoting effects of tectoridin were illustrated in human follicular dermal papilla cells and mouse vibrissae organ cultures. In tectoridin-treated dermal papilla cultures, an activation of Wnt signaling was demonstrated by various indicative markers, including TCF/LEF1 transcriptional activity, nuclear translocation of β-catenin, expressions level of mRNAs encoding axin-related protein, (AXIN2), β-catenin, lymphoid enhancer- binding factor-1 (LEF-1), insulin-like growth factor 1 (IGF-1) and alkaline phosphatase (ALP). In addition, an increase of hair shaft elongation was observed in cultured mouse vibrissae upon the treatment of tectoridin. Tectoridin, as well as the herbal extract of Rhizoma Belamcandae, possesses hair promoting activity, which deserves further development.

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H-03

Modular pharmacology-based approach to identify hub genes and kernel pathways of taodan granules treated psoriasis
基於模塊化藥理學探究桃丹顆粒治療銀屑病核心靶標和關鍵途徑

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Abstract:

Ethnopharmacological relevance: Taodan granules (TDG) have been observed to decrease interleukins, or psoriasis area and severity index (PASI) score for psoriasis vulgaris, without significant adverse events1. However, the regulatory network remains elucidated.

Aim of the study: The objective is to identify critical genes and kernel pathways of TDG treated psoriasis. Materials and methods: Firstly, the authors constructed a network of components-targets of TDG using network pharmacology. Secondly, the ClusterONE algorithm, the next paradigm in drug discovery2, was adopted to build a modular network and identify critical genes and corresponding pathways. Thirdly, the critical genes and kernel pathways were verified in imiquimod (IMQ) induced psoriasis-like mice model.

Results: The results validated that TDG downregulated the mRNA expression of MMP2 (degree=5, $P<0.05$), IL6 (degree=9, $P<0.05$), TNF (degree=14, $P<0.05$), CCL2 (degree=8, $P<0.05$), CXCL2 (degree=8, $P<0.05$), IL1B (degree=9, $P<0.05$), and JUN (degree=9, $P<0.05$), while upregulated IL10 (degree=8, $P<0.05$) expression. Besides, TDG were observed to regulate IL17 signaling pathway and TNF signaling pathway (size=18), via the skin tissue homogenate of psoriasis-like mice.

Conclusion: In summary, this study identified the potential targets and pathways, providing additional evidence for the clinical application of TDG treated psoriasis.

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Q-01

Sequential grade evaluation method exploration of TCM decoction pieces based on "network prediction → grading quantization → efficacy validation"
基於"網絡預測→等級量化→藥效驗證"的中藥飲片序貫分級評價方法探索

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Abstract:

Integrating traditional characteristics and systems pharmacology to predict and understand systems-level effects for different grades of TCM decoction pieces is a meaningful exploration. To establish a sequential grade evaluation method with strong operability and controllable quality for decoction pieces, 3 steps were conducted: (1) Indicators of ingredients and bio-effects were predicted by network pharmacology, and the potential pharmacodynamic ingredients and key targets were analyzed integrating screening results and literatures. (2) 45 batches of Huajuhong decoction pieces from different producing areas were collected and graded by original plant, planting place, and harvesting time. The chemical indicators determination of Huajuhong decoction pieces was conducted by Ultra Performance Liquid Chromatography (UPLC). (3) 112 rats with idiopathic pulmonary fibrosis (IPF) model were used to evaluated the efficacy within graded groups. The results showed: (1) There are 22 key targets corresponding to 20 potential ingredients related to immunity and inflammation pathways for Huajuhong. Naringin and rhoifolin were chosen as the chemical indicators, and IL-6, IL-8, MCP-1, MIP-1α, TNF-α, TGF-β1 were selected as bio-indicators for different grades of Huajuhong decoction pieces. (2) The contents of the naringin and rhoifolin can reflect the quality of different grades of Huajuhong decoction pieces. (3) The efficacy of different grades of Huajuhong decoction pieces can delay the progression of IPF in varying degrees via the selected bio-indicators' pathways. This sequential grading evaluation method is an attempt to apply systems pharmacology which integrates network pharmacology, quantitative chemical and experiments on animals to the classification of TCM decoction pieces. Combining the concepts of traditional theory and modern technology to explain the complex grading mechanism of TCM decoction pieces is worth popularizing and applying.

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Q-02

Peptide Markers for Authentication of Houzao by LC -MS/MS
應用 LC -MS/MS 技術鑑定猴棗的肽標記物

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Abstract:

Houzao (bezoar) is an expensive imported Chinese medicine that is commonly used to transform phlegm. There are many interfering materials in the related products, and there is no marker for authentication purposes. Here, peptide markers for authentication of Houzao are screened by LC-MS/MS for the first time. 323 peptides, whose peptide sequences were confidently identified, were found in Houzao sample based on Nano-LC-MS/MS combined with proteomics analysis. Among them, a peptide (protein source: pepsin A) showed theoretical specificity and high signal abundance, were selected as authentication marker to develop a highly sensitive and selective analytical method by LC-QQQ-MS/MS. By comparing with common interfering materials, the specificity of the marker was confirmed with experimental verification. The analytical method was subsequently applied to detect Houzao products and raw materials in the market, revealing that some products and raw materials are not high quality.

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Q-03

A multicenter, randomized, controlled, double-blind clinical study on the effect of "qi-blood biochemistry" staged treatment on symptom clusters associated with postoperative adjuvant chemotherapy lung cancer patients

“氣血生化”分階段治療對肺癌術後輔助化療患者相關症狀群影響的多中心、隨機對照、雙盲臨床研究

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Abstract:

Objective: To analyze the effect of "qi-blood biochemistry" staged treatment on the symptom clusters associated with postoperative adjuvant chemotherapy lung cancer patients.

Methods: A multicenter, randomized, controlled, double-blind trial was designed to observe postoperative adjuvant chemotherapy patients with stage Ib-IIIa lung cancer. They were admitted to five hospitals in Shanghai from December 2016 to August 2020, randomly divided into treatment and control groups according to a 2:1 ratio, with a total of 173 cases completing treatment, 116 cases in the treatment group (staged Chinese medicine+chemotherapy) and 57 cases in the control group (staged Chinese medicine placebo+chemotherapy) , every 21 days for 1 cycle, a total of 4 cycles of treatment.

Results: The total effective rate of the TCM clinical evidence was 40.59% in the treatment group better than that of the control group by 5.77% ($P<0.01$); the fatigue-appetite loss-insomnia symptom cluster improved in the treatment group compared with the control group ($P<0.01$); the fatigue-appetite loss-insomnia symptom cluster improved in the treatment group compared with the control group on the 14th day of the 1st cycle of chemotherapy ($P<0.01$), and the lung cancer-specific symptom cluster improved on the 14th day of the 3rd cycle of chemotherapy ($P<0.05$).

Conclusion: Staged treatment with "qi and blood biochemistry" can improve the symptom clusters associated with postoperative adjuvant chemotherapy lung cancer patients.

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P-01

Discovery of new cholestane glycosides from *Ypsilandra thibetica*
丫蕊花中新型膽甾烷型甾體皂苷衍生物的挖掘

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Abstract:

Ypsilandra thibetica Franch, as a heraceous plant of the genus *Ypsilandra* (Melanthiaceae family), is mainly distributed in southwestern China1. Pharmacological studies have shown that this herb has antitumor, antibacterial, and hemostatic activities, especially for gynecological bleeding diseases[2,3]. Our previous studies have discovered thirty-three new steroidal glycosides including twenty-three spirostanol saponins, two furostanol saponins, four cholestanol saponins, two pregnane glycosides, and two C22-steroidal lactone glycosides from this species[3,4]. Some of them showed cytotoxic, antifungal, antibacterial, hemostatic, and anti-HIV-1 activities[5,6].

In this study, further phytochemical investigation on this herb was conducted. Ten new cholestane glycosides were obtained. Their structures were elucidated on the basis of HR-ESI-MS, IR, 1D-, 2D-NMR data as well as chemical methods, and the structures of compounds 1-3 have been further confirmed by X-ray single crystal diffraction. Compound 1 is a novel (16S,23*R*,24*R*,)-3β-ol-5α-cholest-6-one-24-β-D-fucopyranoside possessing two oxygen bridges between C-16 and C-23 and between C-18 and C-23. Compound 2 is the first 23-spirocholestane skeleton with a ketal carbon at C-23 to link to C-16, and C-2' of the arabinosyl moiety and an oxygen bridge between C-24 and C-1' of the arabinosyl moiety. Compounds 3-10 are 23R- or 23S-spirocholestane derivatives with different hydroxyl, acetyl, and glycosyl groups. Preliminary results from biological screening assays showed that compounds 1, 2 (50 M) could significantly reduce the nitric oxide production in mouse macrophages RAW264.7 cells. Further biological evaluation of these novel cholestane glycosides will be performed.

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P-02

Design and synthesis of novel diterpene analogues based on the ent-kaurene scaffolds discovered from Isodon plants as anticancer agents
基於從香茶菜植物中發現的貝殼杉烷型化合物設計和合成新型抗癌二萜類似物

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Abstract:

The *ent*-kaurane diterpenoids are widely distributed in terrestrial plants, especially in *Isodon* species. Over 1,000 *ent*-kauranes with diversified skeletons have been isolated from plants, and many of them displayed numerous biological activities ranging from antitumor, antibacterial to anti-inflammatory activities.[1,2] Structurally, compounds with a 6/6/6/5-fused tetracyclic ring system is the most common class among the discovered *ent*-kaurane diterpenoids. They possess multiple functional groups attached to its carbon skeleton, and those having an α, β-unsaturated conjugate system in ring D are constantly found to own antitumor activities.[3] However, this α, β-unsaturated keto moiety might act as a Michael addition acceptor to react with universal nucleophiles (SH-enzymes or SH-coenzymes) in the biological system, which could result in unwanted side effects in humans when they are developed as drugs. In our recent study, we discovered that some ent-kaurane analogues derived from the Michael addition on the α, β-unsaturated ketone could still retain the biological activities. Inspired by this, we designed to synthesize new derivatives by adding functional groups on the α, β-unsaturated ketone system in the *ent*-kaurane diterpenoids isolated from *I. flexicaulis*.[4] One of the syntheses is adding 1,2,3-triazole and phosphinate moieties, resulting in corresponding 1,4-disubstituted analogues. We hypothesize that by disrupting this α, β-unsaturated conjugate system from an ent-kaurane structure, the compound toxicity will be significantly reduced while its antitumor activity still retains.

Based on the aforementioned synthetic rationale, 31 *ent*-kauranes by D-ring substituted with 1,2,3-triazolyl and phosphinate have been prepared. These compounds have been evaluated for their anticancer activities against three human cancer cell lines (HCT116, A375, A549). As a result, most of the derivatives demonstrated anticancer activities against the cancer cell lines. We will select the most potent ones for further mechanism and toxicity study *in vitro* and *in vivo*.

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P-03

Novel meroterpenoids as anticancer agents identified from the medicinal plant *Miliusa sinensis*

藥用植物中華野獨活新抗癌活性成分野獨活烷類雜萜分子的發現

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Abstract:

Geranyl meroterpenoids are a group of natural compounds biogenerated through a hybrid biosynthesis pathway, and they have gained increasing attention in the recent years due to their wide range of bioactivities including antitumor and antiviral activities. Nature is a master for producing diversified compounds by combining different structure features. One of its created masterpieces is miliusane molecule, which contains 18 carbons in its skeleton formed by a construction between a homogentisic acid and a geranyl monoterpene. Miliusanes are found abundantly in the plants of *Miliusa* genus. Through our screening program of several thousands of plant extracts of Lingnan region, *M. sinensis* was identified to be a potential anticancer plant lead in our previous study.1 Subsequent bioassay-guided separation of two *Miliusa* plants led to identification of 31 new miliusanes.[2,3] Some of them were demonstrated with potent *in vitro* and *in vivo* antitumor activities by partially targeting p21-dependent inducing cellular senescence pathway.[3]

In the present study, we report our continuing phytochemical effort to discover additional novel miliusanes from *M. sinensis*. As a result, 20 miliusanes including 12 new ones were isolated and identified from the twigs and leaves of this plant, which expanded the structure diversity of natural miliusane family. These compounds have evaluated against a panel of human cancer cell lines including colorectal (HCT116, HT29), stomach (AGS, BGC823) and melanoma A375 cells. Several of the miliusanes (**1, 2, 4, 11, 14** and **15**) were found to potently inhibit the cancer cell growth with IC_{50} values ranging from 0.52-5.10 μM in at least three cancer cell lines. The bioactivity results provided additional insights on the structure activity relationship of miliusanes, which can be a further guide for lead optimization of miliusane structures.

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X-01

Preparation and in vitro evaluation of total flavones of Epimedium nanosuspensions
淫羊藿總黃酮納米混懸劑的製備及體外評價

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Abstract:

OBJECTIVE: The total flavones of Epimedium nanosuspensions (TFE-NSps) were prepared to improve their solubility and dissolution. METHODS TFE-NSps were prepared by miniaturized media milling method and precipitation-high pressure homogenization method. The particle size, TEM, FT-IR, and PXRD of TFE-NSps were characterized and the content, saturated solubility, and in vitro dissolution of TFE-NSps were evaluated.

RESULTS: The three obtained TFE-NSps were physically stable, their particle sizes were all below 200 nm, and the morphology and sizes were uniform. The molecular structure of each compound was not changed in TFE-NSps compared with that in the the raw TFE. The crystalline form of some compounds in total flavonoids of Epimedium was weakened in the nanosuspension with Soluplus as the stabilizer but changed into amorphous form in the nanosuspension with SDS as the stabilizer. The saturation solubility of icariin in the three TFE-NSps was increased to 2.37-, 0.36-, and 1.49-fold, respectively, compared to that in the raw TFE. The dissolved percentages of total flavonoids in the three TFE-NSps were 76.97%, 77.48%, and 85.40%, respectively.

CONCLUSION: The obtained TFE-NSps by miniaturized media grinding method and precipitation-high pressure homogenization method can improve the solubility and dissolution of TFE. The present research will provide some references for developing high bioavailability formulations of total flavonoids of Epimedium.

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X-02

System Theory and Modernization of Chinese Medicine: A Retrospect and Prospect
系統論與中醫現代化：回顧和展望

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Abstract:

System theory has integrated into the research paradigm of Traditional Chinese Medicine (TCM) since 1980s with the support of famous scientist like H.S. Tsien. It defines a subset of objects and depicts interactions between them within a holistic context by utilizing mathematical models, which shares common aspects with classical theory of TCM. Objects are elements with highest priority in the whole system network, often referred as agents that communicate with others, shape the properties of the network, and contribute to the hemostasis of the network.

The underlying mechanism of how these objects communicate could be exemplified by the black box model. A black box model is composed of three parts: a set of input variables, a box entity, and a set of outcomes. For example, to construct a black box model of formula, drugs in the formula could be considered as input variables, formula itself seen as box entity, and effect of the formula, or the alleviations of symptoms seen as outcomes. The black box model provides a basic analytical framework for the study of complex effects of formulas, shifting the focus of research from pharmacodynamics of one single herb monomer to a broad network.

System theory has provided a sustainable explanatory space for the various branches of TCM. Application of this new theory extracts the inner logic of the classical narrative of TCM with symbolic language, and promotes advances in basic theory, diagnostics and formula research. Organs have been regarded as multifunctional agents that work dependent on others since ancient times. They are viewed as a set of connective symbols rather than anatomical entities. Similarly, five elements in the basic theory are not correspond to natural substances like water, wind, fire, metal, but serve as input variables in the systematic context. Inspired by system theory, researchers constructed a complex network of "neuro-endocrine-immune" to study the nature of spleen deficiency, concluding that the overall performance exists only if spleen was understood in the network perspective. System theory also promotes innovation in diagnostics. Organ based, median based, and triple energizer based syndrome differentiation were attempted to union as distinct layers in the network model. Besides, artificial intelligence and biomedical engineering technologies made novel accurate diagnostic models accessible, and accelerated the standardization of diagnostic terms of TCM. As to formula research, system theory deepens our understanding of the organizing principles of the formulas in the Treatise on Febrile Diseases. Also, new concepts like pair-herb and triple-herb have attracted widespread attention thanks to tools from system theory.

Overall, system theory deeply influenced the research paradigm of modern TCM, yet few of them has translated into clinical practice. We could foresee that with the development of computational

and system biology and multi-omics technologies, more tools could be adopted to explain the molecular mechanisms of formulas, to evaluate the efficacy of TCM treatments, thus to promote the modernization of TCM.

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X-03

Composition Principle of Prescriptions for Stroke in book Sheng Ji Zong Lu: Based on Traditional Chinese Medicine Inheritance Computing System

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Abstract:

Objective: The traditional Chinese medicine inheritance computing platform (version 3.0) was used to analyze the prescription law of Traditional Chinese Medicine in the treatment of cerebral apoplexy in book *Sheng Ji Zong Lu*, thus providing the diagnosis and treatment ideas for modern doctors in the clinical application of traditional Chinese medicine in the treatment of cerebral apoplexy.

Methods: The of prescriptions for stroke in book *Sheng Ji Zong Lu* were summarized and then analyzed via the traditional Chinese medicine inheritance computing system V3.0.

Results: A total of 68 prescriptions, which are composed of 186 Chinese medicinals. The majority of the medicinals are Wen, Han, and Ping in Xing, and Xin , Gan , and Ku in Wei, acting on Ganjing, Xinjing, and Pijing, and they are responsible for relieving exterior syndrome, qi-restoratives, interior-warming, calming liver wind and activating blood circulation to dissipate blood stasis. There are 15 medicinals with frequency ≥10 and main function of qi-restoratives, supporing yang and interior-warming. There were 10 medicinal combinations with frequency ≥ 9, and 10 medicinal combinations with a confidence level of ≥0.6. The 186 medicinals can be classified into 3 clusters.

Conclusion: The treatment of stroke by physicians in the Northern Song Dynasty recorded in book *Sheng Ji Zong Lu* has always been based on the core treatment principles of "dispelling wind diaphoresis, qi-restoratives and warmth internal organs, calming liver wind, activating blood circulation to dissipate blood stasis, replenishing qi to invigorate the spleen". The treatment of cerebral apoplexy through TCM syndrome differentiation is a reference for the treatment of stroke by physicians of the later world.

X-04

Screening of Medications for Transformation of Idiopathic Membranous Nephropathy to End-stage Renal Disease Using Renal Tissue Whole-Genome Sequencing
應用腎組織全基因組測序篩選及驗證特發性膜性腎病向終末期腎病轉化的中草藥

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Abstract:

Background: The efficacy and safety of chinese herbal medicines in the treatment of idiopathic membranous nephropathy with the risk of progressive renal injury have been confirmed by a number of prospective randomized controlled multicenter clinical trials, which can improve the problems associated with the treatment of glucocorticoids, cyclophosphamide and calcineurin inhibitors.

Aim of study: To screen hub genes involved in the transformation of idiopathic membranous nephropathy to end-stage renal disease by bioinformatics analysis and validation, and to predict targeted chinese herbal medicines and active ingredients with preventive and curative effects.

Methods: We downloaded the idiopathic membranous nephropathy microarray data GSE108113 and End-stage Renal Disease microarray data GSE37171 from the comprehensive gene expression database and used R software to screen for co-expressed genes; we used GraphPad Prism software to verify the homozygous differentially expressed genes in idiopathic membranous nephropathy microarray data GSE115857 and Chronic Kidney Disease The hub genes involved in the transformation of idiopathic membranous nephropathy into End-stage Renal Disease were finally obtained by verifying the expression of homozygous differentially expressed genes in GSE115857 and GSE66494, respectively. We imported the hub genes into the medical ontology information retrieval database to screen chinese herbal medicines with preventive and curative effects.

Results: Eight homozygous intersection genes of transformation idiopathic membranous nephropathy into end-stage renal disease transformation were screened and validated to obtain seven hub genes (FOS, OGT, CLK1, TIA1, TTC14, CHORDC1, ANKRD36B) with biological effects mainly involved in "regulation of RNA splicing", response to thirteen chinese herbal medicines, including Ginseng Radix Et Rhizoma, Lycopi Herba, Gardeniae Fructus was screened for their effects on the prevention and treatment of transformation of idiopathic membranous nephropathy into end-stage renal disease, among which the active ingredient quercetin could dock with the protein molecule encoding the hub gene FOS.

Conclusions: Based on the preliminary prediction of the hub genes involved in the transformation of idiopathic membranous nephropathy into end-stage renal disease and chinese herbal medicines

with preventive and curative effects based on the raw letter analysis, we can provide targets and research ideas for the development of new drugs of related chinese herbal medicines.

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X-05

Integration of Bulk and Single-Cell RNA-Seq Data to Construct a Prognostic Model of Membrane Tension Related Genes for Colon Cancer

整合批量和單細胞 RNA-Seq 數據構建結腸癌膜張力相關基因的預後模型

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Abstract:

Background: Plasma membrane provides a highly dynamic barriers for cancer cells to interact with their surrounding microenvironment. Membrane tension, a pivotal physical property of plasma membrane, has attracted widespread attention since it plays a role in the progression of various cancers. This study aimed to identify a prognostic signature in colon cancer from membrane tension related genes (MTRGs) and explore its implications for the disease.

Methods: Bulk RNA-seq data were obtained from The Cancer Genome Atlas (TCGA) database, then put into the differentially expressed gene analysis. By implementing a univariate Cox regression and a LASSO-Cox regression, we developed a prognostic model based on 4 MTRGs. The prognostic efficacy of this model was evaluated in combination with Kaplan–Meier analysis and receiver operating characteristic (ROC) curve analysis. Moreover, the relationships between the signature and immune cell infiltration, immune status, somatic mutation were further explored. Last, by utilizing single-cell RNA-seq data, cell type annotation, pseudo-time analysis, drug sensitivity and molecular docking were implemented.

Results: We constructed a 4-MTRG signature. Risk score derived from the model was further validated as an independent variable for survival prediction. Two risk groups were divided based on the risk score calculated by the 4-MTRG signature. In addition, we observed a significant difference in immune cells infiltration, such as subsets of CD4 T cells and macrophages, between the high- and low-risk groups. Moreover, in the pseudo-time analysis, TIMP1 was found to express higher as time goes on. Finally, three small molecule drugs, elesclomol, shikonin and bryostatin-1, exhibited binding potential to TIMP-1.

Conclusion: The novel 4-MTRG signature is a promising biomarker in predicting clinical outcomes for colon cancer patients, and TIMP1, a member of the signature, may be a sensitive regulator of the progression of colon cancer.

X-06

Study on the mechanism of saffron to s ynergistically improve the efficacy of immunotherapy for lung cancer
西紅花協同提高肺癌免疫治療療效的作用機制研究

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Abstract:

Aim: Tumor immunotherapy is a therapy based on the regulation of tumor and immune system. Saffron is a traditional Chinese medicine, a number of studies have shown that its related extracts can affect the development of tumor. The purpose of this study is to verify the mechanism of saffron in improving the efficacy of tumor immunotherapy and to provide a new idea for the treatment of tumor with the combination of traditional Chinese medicine and western medicine.

Methods: The transplanted tumor model of LLC (Lewis lung carcinoma, LLC)-Luciferase lung cancer in mice was established to detect the effect of saffron on the transplanted tumor in vivo. At the same time, the tumor growth was tracked by in vivo imaging technique. The number and contents of CD4+ and CD8+ cells were determined by flow cytometry. The mRNA levels of programmed death receptor ligand 1 (PD-L1), T cell immunoglobulin mucin 3 (TIM3), lymphocyte activation gene-3 (LAG3), T cell immunoglobulin and ITIM domain (TIGIT), TOX1, TOX2 and TOX3 were detected by RT-PCR and immunohistochemical techniques to verify the effect of saffron on the regulation of tumor immune microenvironment.

Results: Compared with the control group, the saffron treatment group could inhibit the growth of subcutaneous tumor in mice, and the flow cytometry showed that the number and contents of CD4+ and CD8+ cells in the saffron treatment group were higher than those in the model control group, and the immune function was improved, and the difference was statistically significant ($P<0.05$). The RT-PCR results showed that the gene expression of PD-L1 was down-regulated while the expression of TIM3, LAG3, TIGIT, TOX1, TOX2 and TOX3 in the saffron treatment group was up-regulated compared with the control group (all $P<0.05$).

Conclusion: Saffron can down-regulate the expression of mRNA of PD-L1, enhance the anti-tumor effect of immune cells, improve the distribution of T cells in tumor microenvironment, improve the efficacy of immunotherapy and inhibit the occurrence and development of tumor.

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X-07

Network pharmacology analysis reveals the active compounds and the potential mechanisms underlying the antidepressant effects of herbal formulation Banxia-Houpo-Tang
药理学分析揭示半夏厚朴湯治療抑郁症的活性成分及潜在分子機制

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Abstract:

Background: Banxia-Houpo-Tang (BXHPT), a herbal formulation recorded in *Synopsis of the golden chamber*, has been used to treat depression-like symptoms for thousands of years. However, the action mechanism remains unclear. The aim of this research is to reveal the active compounds and the potential mechanisms underlying the antidepressant effects of BXHPT.

Method: We analyzed 64 compounds identified by UPLC-QTOF-MS from BXHPT extract. Total potential targets were predicted using Similarity Ensemble Approach (SEA), the Search Tool for Interactions of Chemicals (STITCH), SwissTargetPrediction, and Therapeutic Target Database (TTD). The depression-related targets were screened by Comparative Toxicogenomics Database (CTD), PharmGKB, DisGeNET, and GeneCards. Gene Ontology (GO) and the Kyoto Encyclopedia of Genes and Genomes (KEGG) Pathway Enrichment of selected targets were performed using the online bioinformatics tool DAVID at http://david.ncifcrf.gov.

Results: The top enriched KEGG pathway was the serotonin pathway, including 11 targets (APP, HTR7, MAOA, CASP3, HTR1A, HTR2B, HTR1B, MAPK1, HTR2C, HTR2A, and SLC6A4). Moreover, six compounds (Luteolin, N-nornuciferine, Scutellarin, Roemerine, Baicalein, and 6-Shogaol) from the 5 herbs in BXHPT were identified as the corresponding active compounds.

Conclusion: According to our result, the herbal formula BXHPT may ameliorate depression by Luteolin, N-nornuciferine, Scutellarin, Roemerine, Baicalein, and 6-Shogaol via regulating the serotonin pathway.

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X-08

Effects of Percutaneous Coronary Intervention on Tongue Color Manifestation in Patients with Coronary Heart Disease Based on HSV Color Space

基於 HSV 顏色空間分析經皮冠狀動脈介入治療對冠心病患者舌象顏色特徵的影響

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Abstract:

Objectives: The present study aimed to observe the therapeutic effects of percutaneous coronary intervention (PCI) on patients with coronary heart disease (CHD) to provide a reference for understanding the development of CHD from the perspective of traditional Chinese medicine (TCM).

Design: Tongue images were acquired by the tongue intelligent diagnosis instrument developed by Shanghai University of Traditional Chinese Medicine and Shanghai Daosheng Medical Instruments, and by using the "SMX System" tongue image analysis software, the tongue texture and tongue coating features were separated, and the tongue body was segmented. The color of the whole tongue, various parts of the tongue (root, middle, tip, left side, and right side), and tongue coating was extracted with HSV color parameters.

Subjects: Patients diagnosed to have CHD were recruited from Yueyang Hospital of Integrated Traditional Chinese and Western Medicine and Shanghai TCM-Integrated hospital between November 2018 and July 2020. Among the 204 subjects, 112 patients were in the non-PCI treatment group; this group included 38 males (33.93%) and 74 females (66.07%), with an average age of 68.76 ± 9.49 years. The remaining 92 patients were in the PCI treatment group; this group included 66 males (71.74%) and 26 females (28.26%), with an average age of 66.02 ± 10.22 years.

There were no statistical differences in age, course of disease, and BMI values between the two groups.

Results: Statistically significant differences were observed in the H values of the middle and tip of the tongue and in the V values of the whole tongue and of the middle, tip, both sides of the tongue ($P<0.05$). The H values of the middle, the tip of the tongue, and the tongue coating in the PCI treatment group were lower, while the V values of the tongue coating, the middle, tip, both sides of the tongue, and the whole tongue were higher. This indicated that the color of the tongue in the middle and tip of the tongue in the PCI treatment group was light red and purple, but the color of the tongue and the tongue coating was brighter. The presence of tongue color manifestation in CHD patients with PCI treatment indicated that although there may still be blood stasis in the body, there was no damage of body fluid.

Conclusion: There are significant differences in the parameters of the tongue manifestation between the non-PCI and PCI treatment groups. The analysis of the tongue color and motility of the tongue and sublingual collaterals can support the diagnosis of CHD, determine the treatment

plan, estimate prognosis and outcome, and promote objective evaluation and standardization of TCM diagnosis.

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X-09

Efficacy of Chinese Herbal Medicine for Cardiotoxicity Caused by Anthracycline Drugs on Breast Cancer: A Systematic Review and Meta-analysis of Randomized Controlled Trials

中藥複方改善乳腺癌蒽環類化療藥物所致心臟毒性有效性的系統評價和薈萃分析

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Abstract:

Backgrounds: To evaluate the efficacy of chinese herbal medicine for cardiotoxicity caused by anthracycline drugs on breast cancer.

Methods: Pubmed, Cochrane Library, Web of Science, Wanfang, Weipu, Sinomed and Chinese National Knowledge Infrastructure database were searched. The cochrane handbook was applied to assess the quality of included trials. The STATA version 15.1 and Revman version 5.3 were used for data synthesis and analysis.

Results: A total of 70 studies was retrieved. 10 studies including 629 cases were included, the methodological quality of included trials was medium. The result of meta-analysis demonstrated that Chinese herbal decoction combined with athracycline drugs could significantly decrease the incidence rate of cardiotoxicity [RR=0.31, 95%CI=(0.20,0.47), P ＜ 0.001], alleviate the myocardial damage [SMD=-2.54, 95%CI=(-4.56,-0.52), P=0.014], decrease the incidence rate of abnormal electrocardiogram [RR=0.31, 95%CI=(0.23,0.41), P ＜ 0.001], decrease the incidence rate of cardiotoxic symptoms [RR=0.32, 95%CI=(0.23,0.48), P ＜ 0.001], decrease the reduction of LVEF [WMD=6.58, 95%CI=(2.97,10.19), P ＜ 0.001] and reduce the myocardial enzyme value of CK-MB, LDH, and CK [SMD=-2.63, 95%CI=(-4.58,-0.67), P=0.008; SMD=-3.15, 95%CI=(-5.03,-1.28), P=0.001;SMD=-1.14 95%CI=(-1.46,-0.83), P ＜ 0.001].

Conclusion: Traditional chinese herbal decoction combined with anthracycline drugs might be superior to anthracycline drugs alone in preventing cardiotoxicity, which is worth clinical promotion.

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X-10

Advances in Chinese medicine for the treatment of type 2 diabetes mellitus through intestinal flora regulation medicine
中藥通過腸道菌群調節治療 2 型糖尿病研究進展

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Abstract:

Diabetes mellitus is a group of endocrine diseases characterized by hyperglycemia, which can cause damage to tissues and organs in the body through multiple factors, with type 2 diabetes being the most common. Currently, diabetes mellitus has become the third major threat to human health after cardiovascular, cerebrovascular and tumour diseases, and is a serious threat to human health 1. Several studies have shown that the development of type 2 diabetes may be closely related to the intestinal flora. The dysbiosis in diabetic patients is mainly manifested by changes in the abundance and diversity of intestinal flora, which in turn leads to disturbances in energy metabolism, changes in the immune system, intestinal barrier dysfunction, and inflammatory responses that are involved in the development and progression of diabetes 2. At current clinical treatment of diabetes mellitus, most of the oral hypoglycemic drugs are mainly effective, but they lack the effect of regulating intestinal flora. Based on the new therapeutic target of intestinal flora, Chinese medicine with its multi-target and complex composition is more advantageous in regulating the number and structure of intestinal microorganisms, and can exert hypoglycemic effects by improving intestinal flora 3.The most important TCM etiological mechanism in type 2 diabetes is "deficiency of both qi and yin and heat toxicity". Regulating the disorder of intestinal flora is exactly what is meant by treating the "middle jiao" (spleen and stomach) in Chinese medicine, which can repair and improve intestinal mucosal damage and restore intestinal wall permeability4 and change the structure of intestinal flora, thus affecting and improving insulin resistance, hyperglycemia and chronic inflammation, which is of great significance to the prevention and treatment of type 2 diabetes.

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X-11

RESEARCH ON PULSE WAVE RECOGNITION IN PATIENTS WITH ESSENTIAL HYPERTENSION TARGET ORGAN DAMAGE BASED ON DEEP FOREST ALGORITHM

基於深度森林演算法的原發性高血壓靶器官損害脈象識別研究

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Abstract:

Objective: To explore the application effect of deep forest algorithm, TCM consultation and pulse diagnosis information in the classification and identification of patients with target organ damage of primary hypertension. Materials and Methods: 475 patients with target organ damage of primary hypertension were included in the analysis. Data on TCM consultation, pulse diagnosis, and physical and chemical indicators were collected. The classification model was constructed by using the deep forest algorithm, and compared with machine learning algorithms such as random forest, support vector machine, and Adaboost algorithm. Patients were classified into primary hypertension without target organ damage group, primary hypertension with single target organ damage group, and primary hypertension with multiple target organ damage groups, using accuracy, recall, and precision, F1-score, Hamming loss, ROC curve, and other indicators to evaluate the classification effect of the model. Results: The highest classification and recognition accuracy were achieved in the group with multiple target organ damage (97.05%). The classification accuracy of ada algorithm, RF algorithm, and support vector machine (svm) was 89.05%, 95.16%, and 76%, respectively. Among the eigenvectors, high-sensitivity C-reactive protein, blood glucose indicators, disease course, age, renal function indicators, and pulse parameters H4/H1, T5/T4, and H5/H1 highly contributed to the model.Conclusion: The classification model established by the deep forest algorithm can effectively improve the accuracy of classification and recognition of patients with essential hypertension with varying degrees of target organ damage and reduce the classification error. TCM pulse diagnosis parameters H4/H1, T5/T4, H5/H1 have certain reference value for the classification and identification of patients with essential hypertension with varying degrees of target organ damage.

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X-12

Selection and application of clinical efficacy evaluation indexes of traditional Chinese medicine
中醫臨床療效評價指標的選擇與應用

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Abstract:

The clinical efficacy evaluation indexes of traditional Chinese medicine mainly has included endpoints,surrogate endpoints, quality of life assessment and traditional Chinese medicine syndrome. The article analyzed and summarized the current situation of the application of the clinical efficacy evaluation indexes of chronic heart failure in traditional Chinese medicine, and proposed to select the evaluation indexes reasonably according to the research content, index characteristics,intervention methods, and disease epidemiological characteristics. To standardize the new ideas in application of evaluation, we used the comparition of indexs, determination of priority, measuriation and standardization, verification of index. In this study, we aim to provided effective ways to optimize the research design, highlight the advantages of traditional Chinese medicine treatment and improve the clinical efficacy evaluation indexes system of traditional Chinese medicine.

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X-13

Preliminary analysis of clinical application of moxibustion therapy in digestive system diseases based on the General Record of Shengji Zonglu

基於《聖濟總錄》淺析艾灸療法在消化系統疾病的臨床運用

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Abstract:

The ancient medical book of Shengji Zonglu was written in 1117 AD, consists of 200 volumes, of which volumes 191-194 are the Gate of Acupuncture and Moxibustion. The four volumes of medical books have clear, detailed and coherent contents, which collect previous medical books on bone degree, twelve meridians, eight unusual meridians, 354 acupoints, taboos of moxibustion and mismanagement. The clinical experience of moxibustion treatment of digestive system related diseases and the effective prescription of folk moxibustion treatment are summarized. The ancient medical book discusses in detail the basic theoretical knowledge and clinical application of moxibustion, which has very important exploration value. It is hoped that this paper can arouse the resonance of more acupuncturists, so that this ancient medical book from song Dynasty can better promote the application of modern moxibustion in diseases, and make a modest contribution to the revitalization and clinical development of Traditional Chinese medicine.

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V-01

Anti-colorectal cancer effects of the Chinese medicine formula Huai-Hua-San
中藥複方槐花散抗結直腸癌作用

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Abstract:

Colorectal cancer (CRC), a mucosal epithelial malignant tumor, is one of the common tumors of the digestive system. China ranks second in CRC incidence in the world with an annual rate of 4%, while the onset age is younger than in advanced countries. Currently, treatment of CRC is mainly surgery with adjuvant instrument radiotherapy and chemotherapy. Chemotherapy is often used as the main treatment after surgery and fluorouracil (5-FU) is the sole first line drug. However, patients develop resistance to the drug due to prolonged chemotherapy. In addition, long-term use of 5-FU causes neurotoxicity in patients and consequently severely affects their quality of life. Traditional Chinese medicine (TCM), as one of the adjuvant treatments for tumors, has obvious therapeutic effects in clinical practice. Huai-Hua-San (HHS), first documented in "Pu Ji Fang", is one of the TCM prescriptions for treating colorectal cancer. However, no pharmacological effects of HHS have been reported. To investigate HHS' s anti-CRC effects, we prepared an ethanolic extract of HHS (HHSE) by ultrasonic extraction. To control the quality of the extract, we established its chemical profile and quantified 10 compounds in it using Q-TOF mass spectrometry. MTT assays showed that HHSE dose-dependently reduced viability of HCT116 and HCT8 CRC cells. Network pharmacology analysis showed that the PI3K/AKT signaling pathway was the top ranked signaling pathway potentially involved in the anti-CRC effects of HHSE. Molecular docking and dynamics simulation showed that 10 bioactive compounds of HHSE can stably bind to the kinase domain of AKT1, a major functional isoform of AKT. Western blot analyses revealed that HHSE significantly lowered the protein levels of PI3K, AKT, phospho-AKT (Ser 473) and EGFR (an upstream kinase of PI3K/AKT signaling). All the results indicate that HHSE has anti-colorectal cancer effects and inhibition of the PI3K/AKT pathway is involved in these effects. Our findings provide pharmacological justifications for the use of HHS in treating CRC and suggest that HHSE can be developed into an anti-CRC agent.

Keywords: Huai-Hua-San (HHS), colorectal cancer (CRC), PI3K/AKT signaling pathway

Acknowledgement:

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V-02

Systems pharmacology, proteomics and in vivo studies identification of mechanisms of cerebral ischemia injury amelioration by Huanglian Jiedu Decoction

基於系統藥理學、蛋白質組學和體內實驗探討黃連解毒湯抗腦缺血機制

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Abstract:

Ethnopharmacological relevance: Huanglian Jiedu Decoction (HLJDD) has the effect of clearing heat and detoxifying, and has been considered as an effective prescription for cerebral ischemia (CI) for thousands of years in traditional Chinese medicine (TCM)[1]. It can improve the quality of life of patients with ischemic stroke, but its pharmacological mechanism remains unclear.

Aim of the study: The study aimed to explore the pharmacological action and potential mechanism of HLJDD against CI by systems pharmacology, proteomics and in vivo experiments.

Materials and methods: In this study, databases such as TCMIP V2.0 and Genecards were used to predict compounds, targets and CI related targets, and network topology criteria of protein-protein interaction (PPI) network was used to screen core targets. The Database for Annotation, Visualization and Integrated Discovery database (DAVID) was used to discover biological processes and pathways. In addition, molecular docking was performed between the screened core biological active compounds and targets to verify the binding activity. Finally, proteomics and Western blot were performed on cerebral cortex tissues of middle cerebral artery occlusion (MCAO) model rats with HLJDD intervention to further verify the predicted results.

Results: 77 compounds and 308 targets of HLJDD were identified, 54 of which were predicted to be associated with cerebral ischemia. PPI network and enrichment results showed that 8 targets, including AKT1, PTGS2 and TLR4, were core targets of HLJDD in CI. And 19 signaling pathways, including Rap1 signaling pathway, cAMP signaling pathway and arachidonic acid metabolism, were identified as key pathways to the therapeutic activity of HLJDD in CI. Combined with proteomics studies, we identified that Rap1 signaling pathway and upstream and downstream targets were the key mechanisms. Molecular biology experiments showed that RAP1A and AKT expression levels were significantly up-regulated in middle cerebral artery occlusion (MCAO) rats treated with HLJDD ($P < 0.0001$), GRIN1 expression level was significantly down-regulated ($P < 0.0001$). However, ACTB expression level was slightly down-regulated ($P > 0.05$), which may be related to the biological function.

Conclusion: This study confirms the pharmacological effect of HLJDD on cerebral ischemia. These results indicate that HLJDD mediates various pathways such as inhibition of apoptosis, regulation of oxygen balance, inhibition of excitatory toxicity and maintenance of basic cell functions to improve CI by regulating Rap1 signaling pathway.

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