Can scutellarin be regarded as a bioactive marker for quality control of *Scutellaria barbata*?

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Abstract:

Introduction: Generally, chemical markers of herbs listed in Chinese Pharmacopoeia (CP) are usually used for quality control purpose. However, the presence and amount of these chemical markers do not necessary reflect on the pharmacological activities of the herbs. Scutellarin, present in *Scutellaria barbata* (SB, 半枝蓮), was shown to possess anti-tumor effects [1]. This study aimed to validate the CP recommended dosages of SB and the corresponding dosages of scutellarin in controlling colon tumors progression in preclinical mouse model.

Materials and Methods: Hot water extract of SB (SBW) was prepared and the content of scutellarin in SBW was quantified using Ultra-Performance Liquid Chromatography. Mice bearing human colon HCT116 tumors received oral administration of SBW or scutellarin for 4 weeks. The tumor growth and metastasis level were evaluated after the treatments.

Results: Results showed that the yield of SBW was 20.3 % (w/w) and the content of scutellarin in SBW was 0.54 %. When the tumor-bearing mice were treated with CP recommended dosages of SBW, i.e. 615 and 1230 mg/kg, and scutellarin (only at 7 mg/kg), the tumor weight were significantly reduced by 28.7, 36.9 and 28.8 %, respectively after 4 weeks of treatment [2]. Besides, SBW (615 mg/kg) and scutellarin (7 mg/kg) treatments could suppress tumor cells metastasis to lungs by 23.4 % and 29.5 %, respectively. SBW treatments also induced significant changes in expressions of colon cancer metastasis-related proteins in tumors, such as E-cadherin, Tspan 8, CXCR4, and Src kinase [2].

Conclusions: The present study has demonstrated that both SBW (at the mouse equivalent dosages to clinical dosages recommended by CP) and scutellarin could exert similar anti-tumor and anti-metastatic effects in colon tumor-bearing mice. Hence, the compound scutellarin could be

regarded as a bioactive marker for quality control of Scutellaria barbata in terms of its anti-tumor properties.

References:

1. Sun C, *et al. J Cancer*. **2018**, 9(18): 3247-3256; [2] Yue GGL, *et al. Phytotherapy Research*, **2021**, 35(1): 361-373.