

Short Commentary

Discriminate Rhizome and Fibrous Root of *Coptis chinensis* Based on HPLC Fingerprint and Multivariate Statistical Analysis

Jiu Hua Song and Kai Shi*

College of New Energy Materials and Chemistry, Leshan Normal University, Leshan, China

In this study, the content of berberine, the main active analytical component in the different parts (the rhizome and the fibrous root known as Huanglian and Huanglianxu in Chinese) of *Coptis chinensis* was determined by HPLC quantitative analysis. The HPLC fingerprints of the Huanglianxu and Huanglian were developed, 14 common peaks of the HPLC fingerprints were analyzed by OPLS-DA, HCA, SA, and PCA. The berberine content and the similarity value of Huanglian was much higher than Huanglianxu. Moreover, on the basis of 14 common peaks, the differences and similarities between Huanglian and Huanglianxu were compared from the overall metabolic spectrum. The results also showed that the difference between Huanglian and Huanglianxu is obvious, and the different parts have obvious aggregation trend respectively. Berberine plays the most important role in the identification of Huanglian and Huanglianxu. The analysis results of quantitative analysis, PCA, SA, OPLS-DA and HCA are mutually supportive and consistent.

Research Purpose and Background

Coptis chinensis has been used as one of the most important drugs in TCM for thousands years [1,2]. It has significant effects in detoxification, clearing heat, dispelling fire, lowering blood sugar, anti-cancer [3,4]. With the increase of clinical application and economic benefits, the by products of *Coptis chinensis* such as fibrous roots, stems and leaves are also gradually entering the market, which causing quality of medicine inferior, and affects the efficacy, safety [5].

*Corresponding author: Kai Shi, College of New Energy Materials and Chemistry, Leshan Normal University, Leshan, China, Tel: +86 17602893025; E-mail: shikai9901@163.com

Citation: Song JH, Shi K (2022) Discriminate Rhizome and Fibrous Root of *Coptis chinensis* Based on HPLC Fingerprint and Multivariate Statistical Analysis. J Altern Complement Integr Med 8: 282.

Received: September 26, 2022; **Accepted:** October 06, 2022; **Published:** October 13, 2022

Copyright: © 2022 Song JH, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

The fibrous roots of *Coptis chinensis* can account for one third of the output of the whole medicinal material, but the pharmacopoeia stipulates that the fibrous roots must be removed when harvesting [6]. How to distinguish fibrous root from rhizome and how to make rational use of these fibrous roots are the key issues for the comprehensive utilization of *Coptis chinensis* [6]. At present, the research on the similarity and difference between Huanglian and Huanglianxu mainly focuses on the content of one or more alkaloid [7,8], and lacks the comparison of the differences between them from the level of overall metabolic components. To ensure the quality of medicinal materials and the safety of consumers, it is necessary to develop a objective and comprehensive method to identify them from the whole metabolic profiles level.

Summary Outlook

In a recent study, our team found that there are obvious differences between Huanglian and Huanglianxu. Based on HPLC fingerprint the multivariate statistical analysis was successfully used in the identification of the different parts, and the identification markers with statistical significance were screened out.

We should pay more attention to the metabolic process of the differential markers of medicinal materials to provide the basis for the production and cultivation of *Coptis chinensis*, which is helpful to the quality control of *Coptis chinensis*.

Our team will further use HPLC-MS method to identify each component in the rhizome and fibrous root, so we can combine qualitative analysis and quantitative analysis to achieve a comprehensive identification of them. We would calculate the equivalent of the active compositions of Huanglianxu, and effectively adjust the dosage of Huanglianxu according to the actual needs to replace Huanglian, so as to solve the problem of resource shortage of *Coptidis*.

In recent years, chemical methods based on chromatographic fingerprints and quantitative detection have been recognized as powerful tools [9]. Although progress has been made in quality control, there are still many difficulties in determining which chemical composition best reflect the correlation with the desired biological activity [9]. We believe that with the technological progress, we would use biological fingerprints combined with chromatographic fingerprints to evaluate the quality and identify the different parts of *Coptidis*.

References

1. Chinese Pharmacopoeia Commission (2015) Pharmacopoeia of People's Republic of China. Beijing: Chemical Industry Press 2015:303-305.
2. Meng FC, Wu ZF, Yin ZQ, Lin LG, Wang RB, et al. (2018) *Coptidis* rhizoma and its main bioactive components: recent advances in chemical investigation, quality evaluation and pharmacological activity. Chin Med 13:13.
3. Dong Q, Qiu LL, Zhang CE, Chen LH, Feng WW, et al. (2016) Identification of compounds in an anti-fibrosis Chinese medicine (Fufang Biejia-Ruangan Pill) and its absorbed components in rat biofluids and liver by UPLC-MS. J Chromatogr B 1026:145-151.

4. Liu F, Zhang H, Qing LS (2013) Study on HPLC digital fingerprint of *CoptidisRhizoma* and content determination of seven alkaloids. J Tradit Chin Med 38: 3713-3719.
5. Zeng Y, Zhu JP, Fan SQ, Liang HH, He H, et al. (2019) Comparative study on alkaloid content in different parts of *Coptis chinensis* grown in wild and cultivated. J Hunan Univer Chin Med 39:856-859.
6. Feng QL (2012) The research on the effects of *Coptis* roots to the quality of *Coptis*. Journal of TCM Univ of Hunan 32:11-12.
7. Peng F, Qu XY, Zhong GY, Zhang BX, Wang Y, et al. (2012) Determination of six alkaloids in different parts of *Coptis chinensis* by HPLC. Chinese herbal med 43:509-511.
8. Hao YM, Huo JH, Wang T, Sun GD, Wang WM (2020) Chemical profiling of *Coptis* rootlet and screening of its bioactive compounds in inhibiting *Staphylococcus aureus* by UPLC-Q-TOF/MS. J Pharmaceut Biomed 180: 113089.
9. Li JX, Yan D, Ma LN, , Xiong Y, Yan CX, et al. (2013) A quality evaluation strategy for *Rhizoma coptidis* from a variety of different sources using chromatographic fingerprinting combined with biological fingerprinting. Chin Sci Bull 58: 4092-4100.



- Advances In Industrial Biotechnology | ISSN: 2639-5665
- Advances In Microbiology Research | ISSN: 2689-694X
- Archives Of Surgery And Surgical Education | ISSN: 2689-3126
- Archives Of Urology
- Archives Of Zoological Studies | ISSN: 2640-7779
- Current Trends Medical And Biological Engineering
- International Journal Of Case Reports And Therapeutic Studies | ISSN: 2689-310X
- Journal Of Addiction & Addictive Disorders | ISSN: 2578-7276
- Journal Of Agronomy & Agricultural Science | ISSN: 2689-8292
- Journal Of AIDS Clinical Research & STDs | ISSN: 2572-7370
- Journal Of Alcoholism Drug Abuse & Substance Dependence | ISSN: 2572-9594
- Journal Of Allergy Disorders & Therapy | ISSN: 2470-749X
- Journal Of Alternative Complementary & Integrative Medicine | ISSN: 2470-7562
- Journal Of Alzheimers & Neurodegenerative Diseases | ISSN: 2572-9608
- Journal Of Anesthesia & Clinical Care | ISSN: 2378-8879
- Journal Of Angiology & Vascular Surgery | ISSN: 2572-7397
- Journal Of Animal Research & Veterinary Science | ISSN: 2639-3751
- Journal Of Aquaculture & Fisheries | ISSN: 2576-5523
- Journal Of Atmospheric & Earth Sciences | ISSN: 2689-8780
- Journal Of Biotech Research & Biochemistry
- Journal Of Brain & Neuroscience Research
- Journal Of Cancer Biology & Treatment | ISSN: 2470-7546
- Journal Of Cardiology Study & Research | ISSN: 2640-768X
- Journal Of Cell Biology & Cell Metabolism | ISSN: 2381-1943
- Journal Of Clinical Dermatology & Therapy | ISSN: 2378-8771
- Journal Of Clinical Immunology & Immunotherapy | ISSN: 2378-8844
- Journal Of Clinical Studies & Medical Case Reports | ISSN: 2378-8801
- Journal Of Community Medicine & Public Health Care | ISSN: 2381-1978
- Journal Of Cytology & Tissue Biology | ISSN: 2378-9107
- Journal Of Dairy Research & Technology | ISSN: 2688-9315
- Journal Of Dentistry Oral Health & Cosmesis | ISSN: 2473-6783
- Journal Of Diabetes & Metabolic Disorders | ISSN: 2381-201X
- Journal Of Emergency Medicine Trauma & Surgical Care | ISSN: 2378-8798
- Journal Of Environmental Science Current Research | ISSN: 2643-5020
- Journal Of Food Science & Nutrition | ISSN: 2470-1076
- Journal Of Forensic Legal & Investigative Sciences | ISSN: 2473-733X
- Journal Of Gastroenterology & Hepatology Research | ISSN: 2574-2566
- Journal Of Genetics & Genomic Sciences | ISSN: 2574-2485
- Journal Of Gerontology & Geriatric Medicine | ISSN: 2381-8662
- Journal Of Hematology Blood Transfusion & Disorders | ISSN: 2572-2999
- Journal Of Hospice & Palliative Medical Care
- Journal Of Human Endocrinology | ISSN: 2572-9640
- Journal Of Infectious & Non Infectious Diseases | ISSN: 2381-8654
- Journal Of Internal Medicine & Primary Healthcare | ISSN: 2574-2493
- Journal Of Light & Laser Current Trends
- Journal Of Medicine Study & Research | ISSN: 2639-5657
- Journal Of Modern Chemical Sciences
- Journal Of Nanotechnology Nanomedicine & Nanobiotechnology | ISSN: 2381-2044
- Journal Of Neonatology & Clinical Pediatrics | ISSN: 2378-878X
- Journal Of Nephrology & Renal Therapy | ISSN: 2473-7313
- Journal Of Non Invasive Vascular Investigation | ISSN: 2572-7400
- Journal Of Nuclear Medicine Radiology & Radiation Therapy | ISSN: 2572-7419
- Journal Of Obesity & Weight Loss | ISSN: 2473-7372
- Journal Of Ophthalmology & Clinical Research | ISSN: 2378-8887
- Journal Of Orthopedic Research & Physiotherapy | ISSN: 2381-2052
- Journal Of Otolaryngology Head & Neck Surgery | ISSN: 2573-010X
- Journal Of Pathology Clinical & Medical Research
- Journal Of Pharmacology Pharmaceutics & Pharmacovigilance | ISSN: 2639-5649
- Journal Of Physical Medicine Rehabilitation & Disabilities | ISSN: 2381-8670
- Journal Of Plant Science Current Research | ISSN: 2639-3743
- Journal Of Practical & Professional Nursing | ISSN: 2639-5681
- Journal Of Protein Research & Bioinformatics
- Journal Of Psychiatry Depression & Anxiety | ISSN: 2573-0150
- Journal Of Pulmonary Medicine & Respiratory Research | ISSN: 2573-0177
- Journal Of Reproductive Medicine Gynaecology & Obstetrics | ISSN: 2574-2574
- Journal Of Stem Cells Research Development & Therapy | ISSN: 2381-2060
- Journal Of Surgery Current Trends & Innovations | ISSN: 2578-7284
- Journal Of Toxicology Current Research | ISSN: 2639-3735
- Journal Of Translational Science And Research
- Journal Of Vaccines Research & Vaccination | ISSN: 2573-0193
- Journal Of Virology & Antivirals
- Sports Medicine And Injury Care Journal | ISSN: 2689-8829
- Trends In Anatomy & Physiology | ISSN: 2640-7752

Submit Your Manuscript: <https://www.heraldopenaccess.us/submit-manuscript>