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# Chinese Herbal Medicines

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## Editorial

### Comprehensive summary of material basis – Laying a foundation for substances of medicine food homology development

Traditional Chinese medicine (TCM) has experienced the stages of ancient medicine, internal or external treatment and prescription medicine during thousands of years. “Excellent doctor preventive treatment of disease, or casual treatment” has always been the highest state pursued by practitioners of TCM. This process also guided the development of the TCM discipline. The concept of substances of medicine food homology (SMFH) was introduced by TCM researchers with the hope of minimizing health risks by keeping health maintenance at the daily stage (Liu, Wang, Huang, Dong, & Xiao, 2024; Sha et al., 2023). At present, the research of SMFH is sweeping the world, and the discovery of active substances with health care or therapeutic effects from natural plants has attracted more and more attention. In recent years, *Astragalus Radix* (Huangqi in Chinese), *Dendrobium Officinale Caulis* (Tiepishihu in Chinese), etc. have been successfully approved as SMFHs after *Ginseng Radix et Rhizoma* (Renshen in Chinese), *Angelica Sinesis Radix* (Danggui in Chinese), and so on. Utilizing the scientific laws governing objective events to reveal the intrinsic scientific meaning from herbs is the main task of contemporary researchers in TCM. Improvements in technology and understanding have facilitated a transformation in the development of TCM. It has been transformed from a single treatment for diseases to a whole process health maintenance which integrates the prevention and treatment of unhealthy diseases and individualized treatment.

#### 1. Research status and material basis of SMFH

Theoretical and practical research on Chinese herbal medicine has always been ongoing. Ancient medical practitioners applied the same classification of “four properties” and “five flavors” in TCM to the food field. At the same time, according to the difference in purpose, it was considered that the healthy person eats food while the patient eats medicine, which was also the first manifestation of SMFH ideas (Chen, 2023). Ancient pharmacological writings, especially food-based materia medica writings, recorded a large number of herbal medicines for SMFH and provided detailed descriptions on related principles, efficacy, contraindications and usage, which provided a valuable basis for the research of current SMFH varieties. The delineation of SMFH in TCM is broad, and the difference with drugs is only in the dosage. Therefore, the SMFH catalog should be further expanded. Since 1987, when the Chinese Ministry of Health firstly announced a catalog with 33 types of both drugs and foods, 102 types of TCMs have been classified

now. The article published in this issue suggests that the concept of SMFH has attracted much attention in recent years (Liu, Wang, Huang, Dong, & Xiao, 2024). Through the mining of Chinese SMFH patent information in the past 20 years, it is confirmed that the development of SMFH products in China is changing from rough to high-quality, and the demand for high-quality patents is urgent.

Chemical composition is the material basis of SMFH. Alkaloids, flavonoids and saponins are abundantly present in plants, and typical examples are curcumin, allicin, catechin and caffeine, which play the roles of anti-inflammatory, antioxidant, antibacterial and cholesterol-lowering effects; whereas, in terms of macromolecules, a large number of active polysaccharides and nucleic acids not only act as bioactives, but also play the roles of gene expression regulators (Yao, He, & Xiao, 2023). In this journal, articles on the composition, pharmacological effects and development of *Rubus chingii* Hu, *Cymbopogon citratus*, *Ganoderma lucidum* spore oil, *Hippocampus* and *Platycodon grandiflorum* are reviewed (Xiong et al., 2024; Du et al., 2024; Liu et al., 2024; Zhang et al., 2024; Zhang, Wang, Zhang, Liu, & Bai, 2024). Comprehensive summarization from pharmacodynamic components to pharmacological capabilities is a fundamental aspect of the advancement of TCMs into the food field. The above articles also summarize the current application status and safety evaluation of some herbs to lay the foundation for subsequent development. In addition, *Lycium spp.* and *P. grandiflorum* are reviewed in terms of genetic diversity and microbial fermentation, respectively (Yao, Wang, Heinrich, Wang, & Xiao, 2024; Shi et al., 2024). The genetic diversity of *Lycium spp.* is firstly revealed at the level of chloroplast genome, and the urgency of conservation of its wild genetic resources is raised (Yao, Wang, Heinrich, Wang, & Xiao, 2024). The international market for *P. grandiflorum* as a well-defined SMFH plant remains to be developed. Microbial fermentation modification of *P. grandiflorum* has been widely researched, and fermentation causes the dramatic compositional variability and consequent changes in medicinal efficacy, which provides a scientific summary for the development and utilization in the field of SMFH for *P. grandiflorum* (Shi et al., 2024).

#### 2. Application of SMFH

*Panax ginseng* C. A. Mey. (Renshen in Chinese), also known as the king of herbs, is rich in ginsenosides, polysaccharides, volatile oils, etc. Extensive research has contributed to improve the *P. gin-*

seng industry (Wang et al., 2023). Nowadays, a variety of ginseng-based products, such as tea, cosmetics, and medicinal excipients, are being developed. The production of *P. ginseng* is expected to exceed 100 000 tons soon, leading to hundreds of thousands of upstream and downstream employments. *R. chingii* is also a major species in SMFH. There are currently more than 400 species of raspberry that have been identified, and the *Chinese Pharmacopoeia* (2020 edition) lists *R. chingii* as the only medicinal species (Chinese Pharmacopoeia Commission, 2020). As the third generation of gold fruit in the world, it has a wide application history and use prospect in the East and West. Analyzed from a chemical point of view, polyphenols (C6/C6-C3/C6-C3-C6) are the main acting components and the main material basis for *R. chingii* to exert antioxidant and antibacterial effects for use in food, dietary supplements, cosmetics and pharmaceutical industry. In addition, a large number of terpenes and organic acids ensure the ability of *R. chingii* to regulate nephroprotection, nerves, endocrine and immunity. From the perspective of development, *R. chingii* seems to provide a reference for the development of other SMFH products: A series of templated references for herbs from planting, harvesting, processing, extraction, refining, etc.; in addition, a large number of trace elements and relatively well-defined polysaccharides in it have been used to the industry as additives. In the East, raspberries are often used as herbal preparations, anti-sunburn preparations, dental preparations, aftershave preparations, antiperspirants and other medical and cosmetic applications; in the West, raspberries are more commonly used as ingredients in the high-end market, and are known as “Ruby”, “Cancer Buster”, and “Fruit of Life”. While in recent years, the research of new materials based on *R. chingii* as raw materials has developed functional edible films with pH sensitivity, arsenic and chromium purification materials in water with extremely simple preparation processes, pH-sensitive indicators or packaging films, and so on. Even up to this point in the research, *R. chingii* still has a great potential for development, which seems to be related to the application of technical means (Xiong et al., 2024).

The article focus on summarizing the resources, current status, and development prospects of SMFH herbal medicines. The review of *R. chingii*, *C. citratus*, *G. lucidum* spore oil, *Hippocampus*, *Lycium* spp. and *P. grandiflorum* is expected to provide a comprehensive summary of the existing researches and provide guidance for subsequent studies. Similarly, the development of SMFH is one of the

tricks used by TCM to solve the real problems. A trickle of water becomes a river and ocean, the summary of the related fields can help researchers to correctly recognize the situation and put forward key ideas for solutions.

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