

Book Review

# The *Shennong's Herbal Canon* for Health Management of Herbal Foods

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**ABSTRACT:** The *Shennong's Herbal Canon* lays the foundation for the basic theory of herbal combination in traditional Chinese medicine (TCM). However, after the Tang dynasty, the text of this book was nearly entirely lost, with only a short preface and a catalogue of 365 herbs remaining. In *Interpretation of Shennong's Herb Canon and Catalogue of Herbal Foods*, molecular anthropologist Hui Li systematically elaborated on the philosophical basis and practical application by starting from the TCM perspective and integrating multi-disciplinary scientific evidence. This book provides scholars with numerous empirical and logically-based scientific hypotheses and offers insights for daily health maintenance.

**Keywords:** *Herbal Canon*; Health management; Herbal combination; Herbal foods; *Jun-Chen-Zuo-Shi*; *Qiqing*



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The *Shennong's Herbal Canon*, also known as the *Herbal Canon*, is one of the fundamental works in traditional Chinese medicine (TCM). According to tradition, the *Shennong's Herbal Canon* is believed to have originated during the Yangshao culture (c. 6.5 to 5.3 ka B.P.), when the cultural progenitor Shennong compiled his practical knowledge after extensively sampling various herbs. It was not until the Eastern Han dynasty that this knowledge was documented in written form. However, the text was lost after the Tang dynasty, resulting in a loss of the theoretical foundation for herbal remedies. The extant text of the *Shennong's Herbal Canon* comprises merely a short preface and a catalogue of 365 herbs.

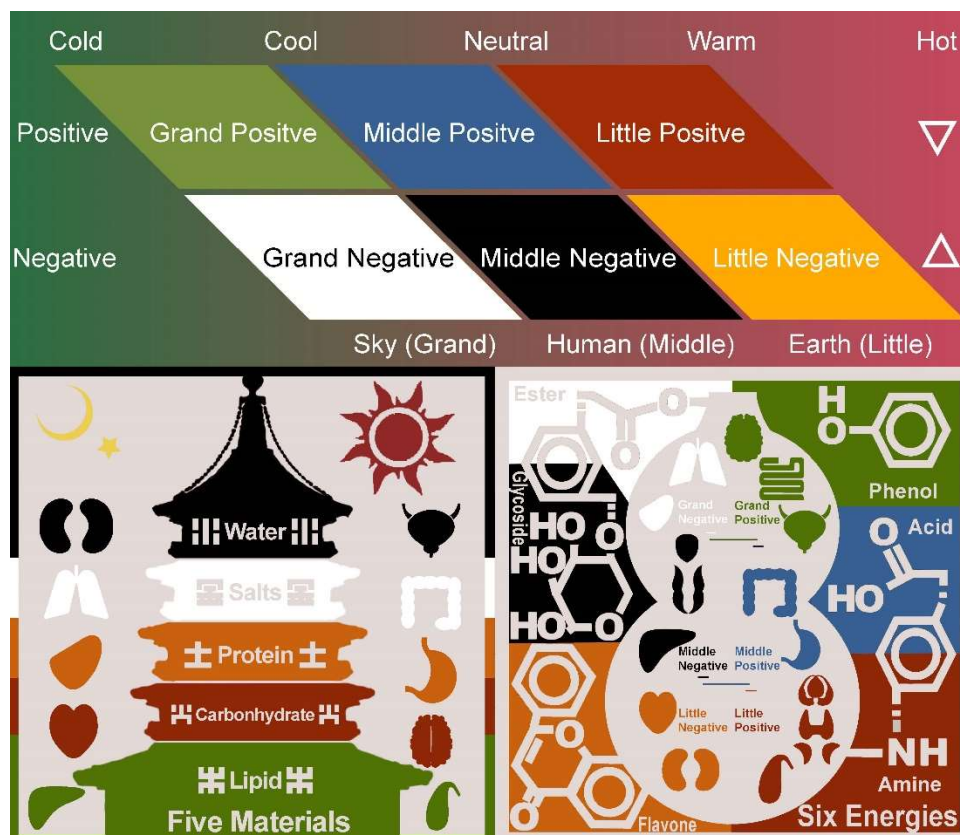
Different from evidence-based modern medicine, the TCM is established on the basis of human practice experience, combined with traditional Chinese philosophy, culminating in a coherent theoretical system. Although this theoretical system is controversial, modern scientific evidence increasingly supports various therapies based on TCM theory. A recent book set out to reclaim the central place of human experience in the scientific enterprise by invoking the image of a blind spot [1]. Therefore, most human experience, particularly systematical empirical summaries such as TCM basic theory, should be the source of scientific issues, but textual interpretation is required due to historical context.

In *Interpretation of Shennong's Herb Canon and Catalogue of Herbal Foods*, molecular anthropologist Hui Li, drawing from the preface of the *Herbal Canon* combined with the *Yellow Emperor's Inner Canon* (also known as *Inner Canon*), speculates that the *Herbal Canon* systematically elaborated on the philosophical categorization of herbs based on the Three Powers (Sky, Human, Earth), the proportion of herbal combination (*Jun, Chen, Zuo, Shi*), the seven relationship of herbal combination (*Qiqing* in Chinese), processing procedures, herbal preparations, diagnostics, treatment, the optimal times for herb consumption, as well as common disease. In the book's preface, Anlong Xu, the president of the Beijing University of Chinese Medicine and vice president of the China Association of Chinese Medicine, emphasizes that upholding principles while fostering innovation is a crucial mission in TCM research. "Upholding principles" entails adhering to the fundamental theories of TCM, while "fostering innovation" involves engaging in innovative explorations based on modern science. Li's book creatively interprets the original text by integrating multi-disciplinary evidence, particularly herbal combination.

The *Jun-Chen-Zuo-Shi* principle is one of the most influential theories in herbal combination [2]. The Li's book interprets the complex relationships among *Jun, Chen, Zuo, and Shi* herbs, focusing primarily on the proportional

combinations of herbs. The *Jun* (King) herbs treat a disease’s main cause or primary symptoms to strengthen the functions of the organs. The *Chen* (Minister) herbs serve to broaden the effects of *Jun* and remove pathological factors, such as inflammatory cytokine. The *Zuo* (Aide) herbs are used to modulate the effects of *Jun* and *Chen* and to counteract the toxic or side effects of these herbs. The *Shi* (Herald) herbs are used to ensure that all components in the herbal regimens are well absorbed and to help deliver or guide them to the target organs. Except for the relationship of herbal regimens, the *Jun-Chen-Zuo-Shi* principle is interpreted as the dosage proportioning rule: one *Jun*, a half *Chen*, a third *Zuo*, a fifth *Shi*.

Another key principle is the seven relationships of herbal combination based on the TCM multi-dimensional theory and cold-hot property, known as *Qiqing*. The cold-hot property of herbs refers to the hierarchy from cold to hot: cold, cool, neutral, warm, and hot properties (Figure 1), such as hot-attributed yellow tea and cold-attributed green tea. The TCM multi-dimension theory, also known as meridian theory, is a physiological and biochemical classification of organs or glands in the human body based on prolonged practice. According to the meridian theory, the interstitial fluid flows through the human body by way of twelve channels, which are connected with at least one organ or gland. Twelve channels are divided into six Positive (*Yang*) channels and six Negative (*Yin*) channels because of the opposite flow direction. Positive or negative channels are further divided into three pairs of channels, respectively (Figure 1). A recent study reveals an organized energy system dependent on distance from thermodynamic equilibrium, finding that cells displayed an optimal advantageous state between the two wave types, yielding maximum energy to drive cell functionality [3]. Given that the thermal effect along the channels would be generated after taking herbal infusion, infrared imageries captured after drinking the six types of tea found the highest temperatures along the corresponding channels, possibly suggesting an intracellular and intercellular regular change along certain channels [4]. Various diseases or symptoms are caused by the blocked organ-specific channels. Therefore, TCM therapies aim to activate the blocked organ-specific channels, such as herbal remedies. Integrating the TCM multi-dimensional theory and cold-hot property of herbs, the seven relationships of herbal combination are defined, i.e., Monarch, Promotion, Assistant, Compatibility, Control, Inhibition, and Opposition (Table 1). According to *Qiqing* combination, the same pairs of channel-attributed herbs can be combined, whereas opposite or different pairs of herbs cannot be combined due to potential toxicity.



**Figure 1.** The *Shennong’s Herb Canon* for health management of herbal foods. the organ-specific attributes and five energy attributes of herbs (up). The five materials (bottom left) and six energies (bottom right) link herbal function to the key compounds.

**Table 1.** The *Qiqing* principle for seven relationships of herbal combination \*.

Multi-Dimensional Attributes		The Degree of Five Energy Attributes		
		0	1–2	3–4
Meridian-attributed differences	Same channels	Monarch	Promotion	Compatibility
	Same pair of channels	Assistant		Control
	Codirectional but not the same pairs of channels	Inhibition		
	Opposite direction channels	Opposition		

\* The same pairs of channel-attributed herbs can be combined (Monarch, Promotion, and Assistant for Health, Compatibility and control for detoxification), whereas different pairs of herbs (Inhibition and Opposition) cannot be combined due to potential toxicity.

The aforementioned principles of herbal combination primarily represent a macroscopic understanding, lacking the correlation between the components and functions of herbs at the molecular level. Li's book proposes potential correlations between components and functions based on a lot of scientific evidence and practical experience. Various natural products are divided into five types of nutrients and six types of bioactives (Figure 1). Five types of nutrients (Five materials) are used to maintain normal physiological function, which is metabolized by different organs. Lipid is metabolized by the liver and gallbladder, carbohydrates by the heart and brain, proteins by the spleen and stomach, salts (maybe refer to minerals and vitamins) by the lungs and intestines, and water by the kidneys and bladder. The six types of bioactives (Six energies) are used for health management and disease treatment, i.e., phenols for Grand Positive meridians, aromatic acids for Middle Positive meridians, amines (nitrogen-containing organic compounds) for Little Positive meridians, esters for Grand Negative meridians, glycosides for Middle Negative meridians, flavones for Little Negative meridians.

Except for the herbal remedy, there are five other Chinese medicine therapies. In Li's book, these six therapies can be classified into biological (guiding, massage), physical (acupuncture, scraping), and chemical (herbal remedies, moxibustion) therapies. Acupuncture, herbal remedies, and guiding (e.g., *Taiji* and *Wuqinxi*) are internal regulatory therapies while scraping, moxibustion, and massage are external force intervention therapies. No matter what kind of therapy, their principle aims to activate organ-specific channels, achieving the effects of eliminating diseases and maintaining health. In the final section of the book, the author not only presents the principles of medication timing and seasonal health management but also enumerates the health effects of 395 herbal foods.

Although much of the content in Li's book still requires a large amount of modern scientific evidence, as the author stated, this book serves as an initial catalyst to inspire further exploration. The book provides scholars with numerous empirical and logically-based scientific hypotheses and offers insights for daily health maintenance. It represents contemplation and interpretation of the original texts, thereby paving the way for the modernization of traditional Chinese medicine.

### Ethics Statement

Not applicable.

### Informed Consent Statement

Not applicable.

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### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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