

## Research system of modern Chinese herbal compound based on drug combination

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**Keywords:** Drug combination; Traditional Chinese medicine; Chinese herbal compound

**Abstract:** Drug property is a common angle and important means to study drug compatibility. Exploring the law of drug property compatibility can deeply reveal the connotation of compatibility from the essence of drugs and increase the credibility and understanding of traditional Chinese medicine. Relevant research has been carried out in theory, experiment, clinical and other aspects. The theory of traditional Chinese medicine is an important basis for guiding the clinical use of traditional Chinese medicine. The traditional Chinese medicine can be summarized as four Qi, five flavor, meridian, ups and downs, and so on. According to different drug properties, drugs have their own efficacy and characteristics. Sex effect relationship is to study the relationship between drug properties and efficacy. On the one hand, it explains the relationship between sex and efficacy; On the other hand, it is proposed that the research direction of sex effect relationship should be analyzed systematically from the aspects of characteristics and clinical application value. It is difficult to fully reflect the law of drug use based on the drug properties of traditional Chinese medicine if the research is limited to a single drug or two kinds of drugs (gas and taste). This paper discusses the research of modern Chinese medicine compound prescription based on the combination of medicinal properties, which is of great significance.

### 1. Introduction

In recent years, the relationship between drug properties and efficacy has become a hot topic in the theoretical study of Chinese medicine properties. The correlation between drug properties and efficacy can be proved through theoretical analysis, pharmacological experiments, statistical analysis and other channels [1]. The theoretical system of traditional Chinese medicine is an important part of the theoretical system of traditional Chinese medicine and is an important basis for guiding the clinical use of traditional Chinese medicine. The drug properties are finally summarized according to the effects of drugs on the body and the actual efficacy against clinical symptoms after repeated verification in practice, which is a high generalization of the multiple effects of drugs [2]. In the process of continuous improvement of traditional Chinese medicine research, various theories of medicinal properties have been established. This whole set of theories of medicinal properties has established a system of four properties, five flavors, meridians, ups and downs, etc. The drug properties of traditional Chinese medicine are summarized according to the external performance of the body after medication. The theory of drug properties includes four Qi, five flavors, ups and downs, meridians, toxicity, etc. it is a relatively complete theoretical system of traditional Chinese medicine; it is a theoretical tool to explain the efficacy and mechanism of traditional Chinese medicine; it is the core of the basic theory of traditional Chinese medicine; It is the basis for clinical prescription [3]. Under this theoretical framework, each traditional Chinese medicine will be placed in the corresponding attribute, and the most characteristic content of its many aspects of drug properties will be emphasized. According to the principle of traditional Chinese medicine syndrome differentiation and its efficacy in clinical application, the research and Discussion on the correlation between drug properties and efficacy will be of great significance to the re sublimation of traditional Chinese medicine theory [4]. At present, the theory of drug resistance has been systematically studied from the perspectives of literature, experiment and clinic, and a large number of achievements have been accumulated in the material basis, biological effect and evaluation related to drug resistance, which has laid a good foundation for the further

development of the theory of drug resistance. Due to the complexity of the theory of drug properties, most of the current studies focus on the nature and taste of the meridians, and the research results are difficult to reflect the overall effect of different content of drug properties [5]. This paper has an important contribution in this respect.

## 2. Basic concept of drug combination

Drug property is the general term of the properties and properties related to drugs and efficacy, and it is the rule of drug use summarized by physicians in the past dynasties according to the therapeutic effect of drugs in the long-term medical practice [6]. In recent years, on the basis of rethinking the previous theoretical research on drug properties, we have constantly recognized the importance of "sex effect relationship", combined drug properties with effects, and conducted preliminary research on the relationship between drug properties and efficacy of some Chinese medicines. Drug combination refers to the efficacy of Chinese medicine expressed by two or more drug elements [7]. The drug combination pattern refers to the drug compatibility relationship formed by multiple drug combinations with the same or similar efficacy that occur repeatedly. On the basis of a large number of studies and induction of single drug, it is gradually realized that the relationship between drug and efficacy is not a one-to-one correspondence, but the relationship between different elements of drug as a whole and efficacy [8]. Each element of Chinese medicine's property reflects the property and function of Chinese medicine from different dimensions and levels with its own characteristics. The basic idea of new drug creation based on drug combination is shown in Figure 1.

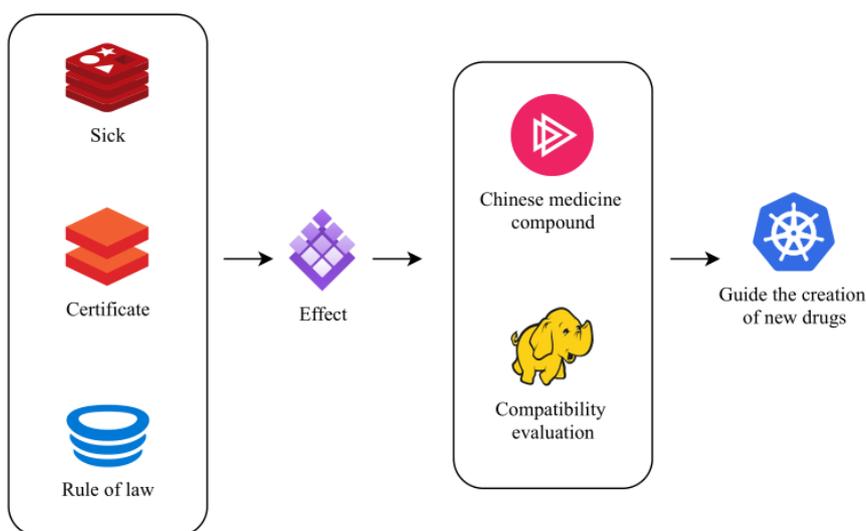


Figure 1 Basic idea of new drug creation based on drug combination

Various properties of traditional Chinese medicine are the summary of the properties of traditional Chinese medicine from different angles and at different levels. Therefore, some literatures suggest that the nature, taste and meridians should be studied as a whole [9]. The multi-dimensional properties become the basis of the efficacy of traditional Chinese medicine, and the multi-dimensional properties and their interactions constitute the overall efficacy of traditional Chinese medicine. This is not fundamentally different from the overall efficacy of the prescription composed of the compatibility of different performance drugs. The single medicine itself is a complex of multiple drugs, thus closely linking the study of the drug composition of the single medicine with the study of the compatibility law of the prescription [10]. Ming Miao Zhongchun pointed out in the book of *Materia Medica* classics that "medicine has five flavors and contains four Qi. It is formed by the smell... Good and good medicines are mixed by the smell, different in nature, different in number, and different in preparation and use". This explains the relationship between the combination of medicinal properties and their functions.

### 3. Chinese herbal compound

#### 3.1. Traditional Chinese medicine and its compound

At present, there are 13596 kinds of traditional Chinese medicine resources in China, including 11537 kinds of medicinal plants, 1581 kinds of medicinal animals and 75 kinds of medicinal minerals. Such rich resources provide a solid material foundation for the further development of traditional Chinese medicine [11]. Under the guidance of the theory of traditional Chinese medicine, various traditional Chinese medicines are used in accordance with the formulation rules of the monarch, the minister and the assistant envoy, and form a variety of compound prescriptions. Due to the different components, there will be obvious differences in the efficacy and side effects of various compounds. This is the biggest feature of the practical application of traditional Chinese medicine and the difference between traditional Chinese medicine and other countries and regions [12]. The photos of traditional Chinese medicine are shown in Figure 2.



Figure 2 Photos of traditional Chinese Medicine

In practical application, traditional Chinese medicine is not used alone. Under the guidance of the theory of traditional Chinese medicine, all kinds of traditional Chinese medicine are used in accordance with the formulation rules of monarchs, ministers and assistants. Which constitutes a wide variety of compound compounds. Since ancient times, there have been innumerable discussions on Chinese herbal compound. The treatise on Febrile Diseases written by Zhang Zhongjing in the Eastern Han Dynasty contains 279 Chinese herbal prescriptions; In the Sui and Tang Dynasties, Sun Simiao wrote 5504 prescriptions for thousands of gold; Wang Tao of the Tang Dynasty wrote more than 48659 secret prescriptions for foreign affairs; The Pu Ji Fang written by Zhu Su in the Ming Dynasty contains 35196 first prescriptions. Since the Qing Dynasty, the development of compound medicine has been more rapid. In addition to classic prescriptions, there are also a large number of folk prescriptions. According to the census results in 2008, a total of 120000 private drug prescriptions and test prescriptions were collected. The number of Chinese herbal compound should be more than ten times the total number of Chinese herbal medicines. It is not only the difference in quantity, but more importantly, the folk and clinical use of traditional Chinese medicine is not a single traditional Chinese medicine. In fact, the treatment experience of traditional Chinese medicine is the experience of applying compound medicine to treat diseases. In addition to classic prescriptions, there are also a large number of folk prescriptions.

#### 3.2. Current situation of Chinese herbal compound

For a long time, most of the Chinese traditional medicine prescriptions in our country are in the backward situation of prescribing prescriptions in traditional Chinese medicine, filling prescriptions in pharmacies, and self boiling by patients. The production technology of Chinese herbal compound is extremely backward, and the product quality is difficult to guarantee. The variety of traditional Chinese medicine compound preparations is relatively single, most of which are pills, powders, creams and pills, which can not adapt to modern preparations. Moreover, the unique philosophical thought and theoretical system of traditional Chinese medicine cannot be understood and accepted by western modern medical and pharmaceutical theories; The folk and clinical efficacy of traditional Chinese medicine is difficult to be verified and explained by modern pharmacological models. The interaction between the drug components, the interaction between the drug components and the internal environment and the reaction state of the body constitute a nonlinear complex system that produces the overall efficacy advantage of the compound. All kinds of Chinese herbal

medicines have become a serious obstacle for Chinese herbal medicines to go global. The domestic and foreign markets of Chinese herbal medicines have been facing a serious crisis of other countries' involvement and division. When we stand at the turn of the century, this sense of historical responsibility and national mission becomes more and more heavy.

Although many years of exploration have given us a lot of experience, lessons and inspiration, there is still no breakthrough progress in the research and development of Chinese herbal compound, and there are still considerable problems. The research of traditional Chinese medicine prescription mostly stays at the stage of clinical efficacy observation, and its efficacy and action principle cannot be explained by modern science. The research of traditional Chinese medicine prescription mostly stays at the stage of clinical efficacy observation, and its efficacy and action principle cannot be explained by modern science. Although the experimental pharmacology research of traditional Chinese medicine is gradually improved and improved, most of them are limited to the observation of the whole animal, and lack of in-depth and systematic research at the molecular and cellular levels. Moreover, sometimes the selected pharmacological model is difficult to objectively reflect the main efficacy of the compound, and cannot truly express the clinical efficacy of the compound. As far as the current situation is concerned, the research on traditional Chinese medicine compound is only a formality, and little is known about the material basis and mechanism of the therapeutic effect of the compound. It is urgent to consider and improve the pharmacological model that correctly reflects the clinical therapeutic effect of the compound, and the compound research has not yet found a path with Chinese characteristics.

### **3.3. Thoughts on the study of traditional Chinese Medicine**

The purpose of drug research is to ensure the quality of drugs, to effectively prevent and treat diseases, and to promote clinical application. The pharmacokinetics and bioavailability of the active ingredients of traditional Chinese medicine are still not very clear. The clinical main therapeutic effect should be roughly parallel to the selected pharmacological index or biological activity index. It is necessary to study the compound Chinese medicine as an organic whole. Through the elaboration of the principles and basic theories of TCM prescription, the whole compound prescription should be systematically studied, and it should not be limited to a single Chinese medicine. Only these two indicators can truly reflect the clinical efficacy of the compound, can the clinical efficacy and folk experience be expressed through modern pharmacological methods. When discussing the material basis of the therapeutic effect of the compound, the principle of simultaneous separation of substances and activity should be adopted, and multiple activity screening indicators should be used for evaluation as far as possible to track and isolate the target active ingredients as soon as possible. In this regard, we should try to avoid using a single activity evaluation index, otherwise it is difficult to comprehensively reflect the efficacy of the compound.

How a specific Chinese herbal compound should take medicine is mostly based on the traditional Chinese medicine's characteristics of cold, hot, warm, cool, tonic and purgation and the law of the alternation of yin and Yang in the four seasons. There is no objective basis in the laboratory. Therefore, the monitoring of the effective ingredients of the compound has become an important aspect of modern compound research. After the target active ingredients are determined, the distribution and content of the active ingredients in the compound and its single herbs are discussed to clarify the contribution of each single herb to the composition. In order to more effectively control the quality of compound medicinal materials and ensure the drug effect, the composition monitoring of traditional Chinese medicine compound gradually transits from one or two index components to multiple index components, and the index components develop to the effect components. With the application of modern gas phase, liquid phase, mass spectrometry and other technologies, combined with the corresponding efficacy studies, the monitoring and research of the components of traditional Chinese medicine have been rapidly developed. After the target active ingredients are determined, the distribution and content of the active ingredients in the compound and its single Chinese medicine are discussed to clarify the contribution of each single Chinese medicine to the composition.

#### 4. Conclusions

Traditional Chinese medicine prescription, which is based on the principle of overall regulation, has played an important role in practice. We firmly believe that with the rapid development of modern science, the research of traditional Chinese medicine will be further developed. Chinese herbal compound is the hub of TCM theory and clinical treatment, and is the main form of TCM clinical medicine. Traditional Chinese medicine has been developing up and down, and still shows its unique advantages and vigorous vitality in human medical and health undertakings. The key lies in the clinical efficacy. However, the carrier attached to the clinical efficacy of TCM can be said to be mainly the ordered combination of yin and Yang attributes of traditional Chinese medicine (TCM) - natural drugs (TCM), rather than the stacking of several simple effective ingredients. New technologies and methods should be adopted as far as possible in the study of pharmacology of Chinese herbal compound, so as to reveal the material basis and mechanism of action of the compound, reveal the profound connotation and laws of drug compatibility, and explain why the Chinese herbal compound is effective in a black box like a white box.

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