

The Connotation and Extension of Formulated Essential Oil (FEO)

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Abstract. The FEO is made from a certain proportion of essential oil component of the curative effect, including terpenes, aliphatic, aromatic and nitrogen containing sulfur compounds. Traditional essential oil is processed and made into tablets, capsules and other dosage forms oral administration, effective ingredients are difficult to absorb. The essential oil is mainly used by external treatment, easy to penetrate the skin, through the skin and the mucosa to reach the blood, and with the blood to run the whole body, to play the treatment effect of disease prevent and beauty anti-aging. The emergence and extension of FEO have led to the development of extraction, processing, laboratory research and new drug development. This paper will introduce the connotation and epitaxy of FEO from its composition, extraction and analysis methods and application fields.

Introduction

Essential oils are crucial markers of aromatic plants. Their antioxidant activity is the basis of many applications, such as food preservation, pharmaceuticals, beauty care, non-traditional medicine, and natural therapies [1,2]. The pharmacodynamics and beauty care functions of single-side essential oil are integrated, as the application field has been improved, the pharmacological action has also increased. FEO is a combination of essential oil component of clinical efficacy, which is an extension and development of "component Chinese medicine" and compound preparations. Essential oils are mostly used in the pharmaceutical industry, and the research process of formulation essential oil enhances the targeted screening of specific diseases, and laid the foundation for the study of the pharmacodynamics and the safety of essential oil. Therefore, the pharmacodynamics research and medical application are the connotations of the essential oils. Pharmacological tests show that most of the essential oils have the function of anti-cancer, antimicrobial, anti-virus, anti-oxidative, insecticidal, insect repellent and sedation of the central nervous system [3,4]. As the pharmacology of essential oil becomes more and more clear, its application field is no longer confined to the cosmeceuticals industry. With the further development of traditional Chinese medicine and in-depth research, not only from the essential oil to the formulation of essential oil transformation, application field also has a medical and perfume application extends to the prognosis of medical, health care, food, antimicrobial agent, insecticide, poultry farming, etc...

The Connotation of FEO

The composition of FEO is similar to that of component Chinese medicine, and the theoretical basis of component Chinese medicine is the clinical effective prescription. Extraction, separation and purification of the components and developing mode of FEO are similar to component Chinese medicine. This comes under the guidance of the basic theory of traditional Chinese medicine (TCM), with targeted development and utilization the exact original medicinal materials. The extraction of essential oil makes the effective composition enriched, which is the sublimation of clinical effective prescription and the inheritance and development of Chinese Materia Medica.

The Origin of FEO and Chinese Materia Medica

Components of traditional Chinese medicine are innovation on the basis of inheritance, its characteristics are the pharmacodynamic substances and the mechanism of action is relatively clear, with these drug characteristics of "safe, effective, stable, and controllable". The component compatibility is the fundamental of the research on the components of Chinese medicine [5]. Outline of modernization of Chinese medicine emphasizes the combination of inheritance and innovation, in terms of formula oil research model and the way of making, conforms to the characteristics of component Chinese medicine. Therefore, we believe that the connotation of FEO is the inheritance and innovation of TCM.

The Origin of FEO and Chinese Medicine Pharmacy

The formulation of FEO mostly comes from the effective prescription in clinic, extraction and preparation similar to natural drugs, composition form similar to the fixed dose compound preparation; After the process of reduction, effective component selection and matching relationship research, the quality of the final product has to be evaluated; The pharmacodynamic study of FEO also includes the main pharmacodynamics and dose effect relationships, with reference to chemical drugs, as well as the aging relationship; Under the guidance of traditional Chinese medicine theory, the optimum compatibility design method was adopted to realize the compatibility of active ingredients. Using the traditional Chinese medicine information method, the overall screening model was used to optimize the essential oil. To compare *the technical requirements for the study of new drugs with natural drugs* "it is vital to prove the compatibility in scientific and reasonable way; accordingly study of compound proportion, is proved to be important to find outratio of compatibility. Similarly, the purpose of a compound preparation includes reducing toxicity"^[6]. From the above point of view, the application and emergence of FEOs are similar to the development of traditional Chinese medicine preparations in the field of medicine.

The Extension of FEO

Extraction Process and Quality Analysis [7, 8]

Most traditional compound essential oils are extracted mainly from mixed herbs. However, the extraction rate of essential oils is difficult to determine, and the ratio of essential oils is also difficult to determine. The condition for extraction of different essential oils varies with the type of essential and also the type of medicinal plant source. Similarly conditions of extraction such as different solvents, pressure and temperature varies with different extraction methods. Obviously, it is unscientific to extract

essential oils from a mix of medicinal herbs. By contrast, the FEO is the essential oil component extracted from a single medicinal herb and then mixed according to different proportions, so it is more accurate than the traditional compound essential oil. Considering the different characteristics of each kind of medicinal herb, each FEO combines traditional methods of extraction with new methods. The traditional extraction methods include steam distillation, Soxhlet extraction, solvent extraction, etc., which are traditional methods and ultrasonic assisted extraction, microwave assisted extraction, supercritical fluid extraction, and subcritical fluid extraction are other new methods.

The composition of traditional essential oil mixture is complex and not centralized. It is difficult to pay attention to syndrome differentiation and treatment of traditional Chinese medicine, and the characteristics of individual medication are not fully manifested. The FEO take into account the characteristics of various essential oils, and then combine the characteristics of various diseases. Finally, on the basis of syndrome identification and treatment, it is required to determine the ratio of essential oils. There are many methods for analyzing the components of a single essential oil. This article summarizes as follows: Thin-layer chromatography, High performance thin-layer chromatography, High performance liquid chromatography, Fouriertransform infrared spectroscopy, Gas chromatography-hydrogen flame ion detector, Supercritical fluid chromatography and Gas chromatography-mass spectrometry.

Microbiology and Agriculture

The content of base nitrogen, total bacterial count and pH value were used as indexes, the fresh-keeping effect of the active film containing grape seed essential oil and clove essential oil was evaluated. The results showed that the shelf life of the product could be prolonged by 3~4 day [9]. According to the change of fatty acid value of rice, the effect of compound essential oil (garlic essential oil: cinnamon essential oil as 1:3) was evaluated wherein the shelf life of rice treated with this compound essential oil at room temperature was 415 days, higher than that of the control group of 122 days [10]. The common spoilage microorganisms in food show different sensitivities to essential oils, oregano oils and thyme essential oils had the best antibacterial activity. The synergistic effect of added essential oils was further studied by checkerboard dilution method. It was found that oregano and thyme composite showed significant additive effect to all strains [11].

Plant essential oil is a plant derived drug "efficient, safe, stable and controllable", has the advantages of anti parasite, enhance immune function, improve animal anti stress ability and improve animal growth performance. This is one of the key and hot point of research and development of new feed additives at present [12]. The FEO (carvacrol, thymol, cinnamaldehyde and Allicin) can improve piglet growth performance, feed efficiency and improve economic efficiency, reduce the digestive function of piglets fed diets and did not affect the growth performance of piglets [13]. Another study shows that the extraction of essential oil mixture can stimulate the growth of intestinal bacteria, reduce harmful bacteria proliferation and improve intestinal function; it also can improve the growth performance of Broilers [14].

Disease Prevention and Control and Traditional Chinese Medicine Cosmetology

Mosquito bites disturb people's normal work and rest, can infect a variety of diseases, and the use of chemical pesticides has brought about a series of problems, such as environment and ecology. With pure aromatic camphor leaves oil, and Geranium oil as

effective component, developed a new long-acting repellent ointment and tincture, have good repellent effects on mosquitoes such as *Aedes albopictus*, *Anopheles sinensis* and *Culex pipiens pallens*[15]. The main fungi of *Tinea pedis* is *Trichophyton rubrum*, *Epidermophyton floccosum* and *Trichophyton mentagrophytes*. Many studies have confirmed that lemongrass, thyme and cinnamon essential oil has good antibacterial properties, but the effects of anti fungus *tinea pedis* of the combination of the three is rarely reported. The research shows that the three essential oil in a 1:1:1 ratio for the above three kinds of fungi of *Tinea pedis*, showed synergistic effects [16].

The volatile oil of wormwood and *Artemisia annul* has medicinal value, where in its volatile components penetrate through percutaneous absorption, hence finds use as patch products, treatment of severe acne. The results show that the functional cosmetic products have good antibacterial and anti acne effect [17]. Gold agate perfume is made up by a variety of natural plant essential oils, without synthetic chemical mosquito repellent, has a unique fragrance, no stimulation. Both animal and human tests showed that the mosquito repellent effect was obvious and the economic benefit was considerable, and the invention patent certificate was obtained in 2015 (patent number: ZL2013 10557271.2) [18].

The Advantages of FEO

Classical books do not have the relevant definitions of formulations, essential oils, nor were preparation criteria recorded. Analysis of its form and preparation process, the formulation of essential oils is the innovative development of "component Chinese medicine", similar to the clinical compound preparation of traditional Chinese medicine. Referring to the literatures, it is concluded that the compatibility of different essential oils with similar effects is the compatibility theory of formulated essential oils. Formulation essential oils in medical, cosmetic, food preservation, mosquito averse and other fields are used, which shows that it exists in all aspects of our lives.

Summary

FEO have problems pertaining to their safety that need to be addressed. Although essential oils are widely used, but there are few studies on their safety. Whether in vitro, or in vivo, or in clinical trials, there is a lack of safety studies on formulated essential oils. Essential oils derived from plant extracts, have the threat of allergens. However, no studies have been made on the allergenic effects of formulated essential oils. Each plant essential oil contains different chemical components, and the direct mixing between different essential oils can lead to a mutual reaction, which may lead to the reduction of active ingredients and increase in the number of invalid or harmful components. FEO is the potential direction of Chinese medicine, but it needs exact theoretical standards. There is no systematic, complete and standard theoretical system for the extraction, preparation and compatibility of FEO, no definite standard for the selection of the preparation process and the optimum ratio, and it is difficult to solve the problems such as the subjective factors.

Formulated essential oil can enrich the active ingredients, and its development conforms to the research model of "component Chinese medicine". The formulation is similar to the clinically effective compound preparation. Therefore, the FEO has potential development and utilization value, can not be abandoned, only to learn from each other. Therefore, we should actively deal with the unstable factors in the

development of formulated essential oils, and explore their medicinal value. The compatibility of the theory, the design of the extraction scheme, the standard of efficacy evaluation, the choice of the best mixture ratio, the safety and the quality of formulated essential oils should be further studied. We should set up a reasonable theoretical system and operation process. The preparation, research and clinical application of formulated essential oils should be incorporated into reasonable standards. We also should strength the application of formulated essential oils in medicine, and actively expand its development in food processing, poultry, animal husbandry, bacteriostasis, insect killing, spices, cosmetics and other aspects.

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