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Analysis of the Application Value of Peony Flower

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Abstract. Objective: To explore the medicinal and edible value of peony flower, and to make rational use of traditional Chinese medicine resources. **Method:** To understand the chemical composition, pharmacological action and edible value of the peony flower by consulting the literature and related information, and summarize and analyze, actively responding to the call of "Modernization of traditional Chinese medicine". **Result:** The value of peony flowers is not only appreciated, but also has high medicinal and edible value. Therefore, the value of peony flowers should be further developed to lay a solid foundation for the development of traditional Chinese medicine and the rational use of medicines in clinical practice. **Conclusion:** Analysis of the application value of peony flower fully reflects the circular utilization of Chinese medicinal herbs"non medicinal parts", and provides references for the development of Chinese medicine and the rational application of traditional Chinese medicine resources, so as to give full play to the application value of peony flower.

Introduction

The peony flowers are the flowers of the peony of the buttercup family, one of the most precious flowers in China. Bitter taste, light, mild-natured, has the function of regulating menstruation and promoting blood circulation. At present, in addition to being an important ornamental flower in our country, the peony root bark - tree peony bark, which is contained in Chinese pharmacopoeia, is widely used in various traditional Chinese medicine prescriptions and has high medicinal value. From the existing research, peony belongs to non-toxic substances, but in the existing peony medicinal history, its flowers are often discarded as waste, resource waste phenomenon is serious. Aiming at the outstanding problems of inadequate application of traditional Chinese medicine resources and environmental pollution, the" Modernization of Traditional Chinese Medicine Research" focus on special in 2017 to carry out the" Non medicinal parts" of traditional Chinese medicine potential pharmacodynamic ingredients discovery, pharmacodynamic active ingredients evaluation and other important technical research; To carry out the recycling of leftovers in the process of production and use of traditional Chinese medicine. Prepare to develop a batch of raw materials and renewable products that can be used in the fields of medical treatment, animal husbandry and aquaculture, pesticide fertilizer, biology, etc., to improve the rational utilization of traditional Chinese medicine resources, improve economic benefits. Therefore, in response to the" Modernization of Traditional Chinese Medicine Research" focus on the special call, the chemical composition, pharmacological effects and edible value of peony were analyzed and summarized, to provide a

reference for the development of traditional Chinese medicine, the rational use of traditional Chinese medicine resources, give full play to the value of peony, to avoid waste of resources.

Medicinal Analysis of Peony Flowers

Peony flowers contains a variety of active ingredients, such as protein, amino acids, vitamins, flavonoids, volatile oil and a variety of trace elements[1-2], some of which are essential for human body, such as protein, amino acids, some of which are very beneficial to human health.

The Chemical Composition of Peony Flowers

The section headings are in boldface capital and lowercase letters. Second level headings are typed as part of the succeeding paragraph (like the subsection heading of this paragraph).

Protein

Protein is an important component of human cells and tissues. In the process of growth and development, the proliferation and renewal of cells are inseparable from protein, and also provide the energy for human survival, the basic activities of life. Peony flowers crude protein content as high as 6.125 % ~ 10.638 %, amino acid variety is complete, high nutritional value, pollen protein content is generally higher in plants, peony pollen protein content of about 39.3 %[3], different strains of peony flowers protein content is also different.

Flavonoids

Flavonoids are often combined with sugar in plants to form glycosides, and a small number of them exist in free form. flavonoids have important effects on plant growth, disease prevention and disease-resistant microorganisms[4]. Studies have shown that there are abundant flavonoid polyphenols and paeoniflorin monoterpene glycosides in the petals of Peony flowers[5]. At present, there are many methods for extracting flavonoids from peony flowers, such as traditional solvent extraction, ultrasonic assisted extraction, enzymatic hydrolysis, flash extraction and the corresponding surface method to optimize the ethanol extraction of total flavonoids[6-7]. Ultrasonic extraction is widely used in the extraction and separation of effective components in Chinese herbal medicine in recent years because of its simple operation and biological effect.

Volatile Oil

At present, there are few reports on the volatile compounds of peony flowers. the volatile compounds in different flowering periods are different, and the chemical components in blooming period are the most. Most studies have focused on the active components of peony, such as gallic acid, paeonol and paeoniflorin. Some scholars used the water vapour distillation method to extract the aromatic alcohols and other substances from the volatile oil of peony flower petals. Other scholars will solid-phase microextraction and gas chromatography - mass spectrometry combined with, from the volatile oil identified 38 kinds of compounds, including 14 kinds of alkanes, 2 kinds of ethers material, 7 kinds of ester compounds, etc.; The content of citronol, ethyl acetate, propionate, propionate, z-7-tetradecene and phytane was high[8]. It is because of the ester, ether, citronellol and other compounds of the structure and content of different varieties of peony flowers are also different. These natural volatile substances can be further processed and used in daily necessities such as food and perfume[9].

Trace Elements

Although the content of trace elements in plants is low, it plays a key role in the growth and development of plants. Studies have shown that the content of potassium, magnesium, iron and phosphorus in peony is higher than that of dehydrated ferns and dehydrated cabbage. The contents of trace elements in peony flowers were determined by Liu Jianhua et al. the content of potassium was 26.1μg / g, magnesium was 0.80μg / g, iron was 0.33μg / g, phosphorus was 4.30μg / g, the ratio of K / Na was relatively high, which was helpful to maintain acid-base balance in vivo. In addition, potassium had the function of preventing and treating hypertension. There are many mineral elements in peony pollen, and the mineral elements in different strains of peony pollen are different[10]. In addition, peony flowers also contains rich thiamine, riboflavin, carotene and other vitamins.

The Pharmacological Action of Peony Flowers

The peony flower contains a plurality of flavone and polyphenol compounds, has a plurality of pharmacological activities, can reduce blood pressure, reduce fat, prevent arteriosclerosis, resist aging and the like, wherein the anthocyanin compounds have strong antioxidant activity, and can prevent cancer, cancer and tumor.

Oxidation Resistance

Polyphenol compounds are widely existed in plants and have strong antioxidant and anti-aging properties [11]. At present, polyphenols, a natural antioxidant, is a hot spot in the study of natural compounds, which can be extracted from many medicinal plants and their flowers [12-13]. The water extract of peony flower has a good scavenging effect on hydroxyl radical, and the higher the concentration, the better the scavenging effect of hydroxyl radical [14]. The scavenging rate of 1,1-diphenyl-2- trinitrobenzylhydrazine(DPPH) extracted from peony polyphenols showed a concentration-dependent increase. The scavenging rate of DPPH reached 79.6% when the concentration reached 0.5mg/mL. Meanwhile, the antioxidant vitamin c ascorbic acid and BHT were used as positive control. The results showed that the DPPH scavenging rate of peony polyphenols was higher than BHT and lower than vitamin C, indicating that peony polyphenols had stronger antioxidant activity [15]. Proanthocyanidins in peony flowers are the most antioxidant substances known in the world. The antioxidant capacity of proanthocyanidins is 10 times as high as vitamin E and 20 times as high as vitamin C.

Bacteriostatic

Peony flowers extract to bacteria, yeast and mold all have strong inhibition effect, inhibition of bacteria had a better effect than the yeast and mold, in bacteria of escherichia coli, salmonella and the single strongest liszt bacteria antibacterial effect. Polyphenols in the extract can affect the permeability of microbial membrane structure, make microbial cell fluid leakage, resulting in microbial death. The antibacterial effect of the extracts showed a reverse trend with the change of temperature, which may be related to polyphenols, flavonoids, anthocyanins and organic acids. the proteins of these substances could be denatured or volatilized under the condition of higher temperature, which caused the deactivation of effective components in the extracts of Paeonia suffruticosa[16-17].

Antitumor

Existing studies have shown that the effective components in peony flowers include astragalus sinicus, paeoniflorin, gallic acid, kaempferol, etc. Modern pharmacological studies have found that kaempferol has anti-tumor effect; Gallic acid can inhibit the metastasis of mast cell tumor, has anti - inflammatory, anti - mutation, antioxidant, anti-free radical and other biological activities, and can prolong the survival time of tumor patients[18]. In addition, in vitro studies show that the phenolic compounds in peony flowers can promote the apoptosis of breast cancer, liver cancer and other cancer cells in vitro, and have certain therapeutic effect on diabetic patients.

Analysis of Edible Value of Peony Flowers

The peony flower not only has the appreciation value and the medicinal value, but also has the high edible value, is the unique food raw material [19].From the beginning of the song dynasty, there was a record of making food from peonies, and it was further developed and perfected in the Ming and Qing dynasties. Peony petals and pollen can be used as raw materials for health food and beverage, and can also be used for preparing high-grade cosmetics.

Peony Flower Tea

Peony petals have the effect of moistening lung and clearing heat, so they are often made into herb tea drink. With peony as raw material, peony tea with effects of beautifying, nourishing blood, tranquilizing mind, regulating menstruation, lowering blood pressure, etc. has been developed and produced. it can nourish blood and liver, dispel depression and remove blood stasis, and can make qi and blood sufficient and face ruddy[20].

Peony tea production and processing technology is different, its efficacy is also very different. The black tea is sweet and warm, can generate heat and warm abdomen, and has the effects of antioxidation, beauty beauty, vasodilation and the like; White tea can reduce three highs, improve eyesight, prevent radiation, prolong life, etc.; Oolong tea is neutral, can reduce the harm to beauty and health of active oxygen, slimming, anti - tumor, anti-aging effect.” Three flower tea”, the peony flower is made with honeysuckle flower, can cool blood to stop the nose bleed;” sister tea”, peony flowers with peony production, soothing the liver to stop abdominal pain [21].

Peony Flower Wine

“Peony wine” made from the peony flowers, the color is monosodium, the fragrance is refreshing, has the effect of extending the life; Peony flowers, many kinds of fresh fruit as raw materials, with supplementary materials, can be fermented into peony fruit wine, also can be used for the peony extract, with pure grain to make a peony white wine. β-glucan rich in highland barley wine containing peony flowers, has a good medicinal value, can reduce blood sugar and cholesterol in the human body, can clear intestines and stomach, the treatment of diabetes and hepatitis, etc.; Rich amino acids have antioxidant and free radical scavenging effects; Rich in flavonoids can enhance the defense ability of the human body.

Peony Flower Food

The cake is prepare by taking peony flower as raw materials without adding substances such as essence, pigment and that like, and can be used for preparing a natural pastry product with

complete color, fragrance and taste by using the natural color and the natural fragrance of the peony flowers; the food prepared by taking the peony flowers as raw materials has pharmacological activity in aspects of germ resistance, aging resistance and the like; and the peony flowers can be used as food materials. The peony flower petal can be directly eaten or processed into peony moon cakes, cakes and the like which are often eaten during the mid - autumn festival by cleaning, draining water, kneading and other processing procedures, adding sugar, and fermenting; The bread prepared by taking peony petals and pollen extract as auxiliary materials not only can improve the taste of the bread, prolong the storage period, but also has high nutritional value and health care value.

In addition, the peony flower is rich in essential oil components, and can be processed into various cosmetics, oral preparations, soft capsules and the like after extraction and separation.

Outlook

At present, the research on the peony flowers mainly exists in the laboratory stage to explore its active ingredients and pharmacological action, and the clinical application of the treatment of disease without the use of peony flowers; Peony is a plant peony flowers, Chinese pharmacopoeia contains traditional Chinese medicinal materials and slices of peony root bark medicine with its dry, without peony flowers medicine records, nor peony flowers in its collection of proprietary Chinese medicine, it is a huge waste of resources; In addition, anthocyanins and other components in peony flowers are sensitive to light, heat, oxygen, metal and other substances, and have poor stability. In addition, the extraction process is difficult, and the active components are also easily affected, which has certain limitations on its application. Therefore, the future research on the peony flower can further explore its medicinal properties, and use the latest technology in modern science and technology to develop the medicine and new dosage forms of peony flowers, laying the foundation for clinical application. With the improvement of people's living standard, people begin to pay more attention to the rationality and diversity of diet structure, and attach great importance to the development and utilization of natural food. This has brought great opportunities to the development of peony food, advancing with The Times, with advanced production facilities, optimizing the processing technology, improve quality, and peony flowers will have great market potential and broad prospects for development.

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