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Discussion on Comprehensive Utilization Value of Scutellaria Baicalensis Flower

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Abstract. The chemical constituents of Scutellaria baicalensis flower are flavonoids, volatile oils and melanin, It has anti-tumor, anti-inflammatory, antioxidant, anti angiogenic and antithrombotic pharmacological effects, and it has the effect of clearing away heat and relieving lung fire. Scutellaria baicalensis flower is rich in resources, cheap, easy to obtain, accurate effect, With the prevention and treatment of a variety of diseases. In this paper, the ancient application, chemical constituents, pharmacological actions and comprehensive utilization of Scutellaria baicalensis flower were reviewed, The purpose of this study was to explore the value of its development and utilization, so as to provide reference for the comprehensive utilization of Scutellaria baicalensis flower.

1. Introduction
The root of Scutellaria baicalensis mainly as medicine, was contained in the "Shen Nong's herbal classic",as the product with heat dampness, tocolysis, detoxification. At present, studies have shown that anti-inflammatory, antipyretic, antihypertensive, diuretic and inhibition of influenza virus and other effects of [1].Scutellaria baicalensis commercial medicinal materials mainly from the wild in the past, with the increasing expansion of the scope of application and demand, a sharp decline in the artificial cultivation of wild resources, baicalin has become their main source of medicinal materials, but are also in short supply [2].

Flowers for herbal medicinal plants of Scutellaria baicalensis Labiates perennial flowers, racemose inflorescences, inflorescences piansheng on one side; lip, corolla blue purple, densely glandular hairy and pilose, flowering in 5-9 months. The Scutellaria baicalensis flower is not used as a medicine, and the growers of Scutellaria baicalensis generally do not pick the Scutellaria flower, but take it off, so as not to affect the accumulation of effective components in the root. Search for Scutellaria baicalensis flower in CNKI,Discovery of Scutellaria baicalensis flowers as a case of drug use, the flower of Scutellaria baicalensis is cold, bitter and light in Chinese medicine. It has the function of clearing away heat and relieving exterior and purging lung fire. It is used for cold have a fever, sore throat, cough, diarrhea and abdominal pain, for upper respiratory tract infection or acute gastroenteritis in the treatment of [3]. In this paper, the main chemical constituents, pharmacological action and comprehensive application of Scutellaria baicalensis flower were reviewed, in order to provide reference for the comprehensive utilization and development of Scutellaria baicalensis Georgi, its development and utilization value was discussed.

2. Ancient Application of Scutellaria Baicalensis Flower
Ancient physicians that Scutellaria flowers taste bitter, bitter to dampness, clearing heat and purging fire solution form, lung function, Just as Wu Jutong, a specialist in febrile diseases in Qing Dynasty, said "Treating Shang Jiao like feather, Not light but not rising". Therefore, take the spirit of flower clearing
spirit, It is good to treat the disease of ShangJiao, so that the flower of Scutellaria treatment muscle jiebiao, antipyretic purging lung fire better than Scutellaria root. Mr. Meng Linsheng in the clinical treatment summer cold caused by heat evil attacking lung with Scutellaria flower as tea drink, and received good results. Including himself with the flower of Scutellaria baikalensis instead of tea, since its drinking, it has been reported to be very busy, but it has little cold and fever. It can be seen, that it is a precedent that Scutellaria flower is used as a traditional Chinese Medicine.

3. A modern study on Scutellaria baikalensis flower

3.1. Chemical constituents of Scutellaria baikalensis flowers

3.1.1. Flavonoids. The study found that flower of Scutellaria baikalensis (and other parts of the stem) also mainly contains flavonoids, baicalin, baicalein, wogonoside, wogonin, scutellarin, 7-O- beta -D chrysyl glucuronic acid and apigenin eight components[1]. The results showed that the content of effective components was related to the drying method and harvest time, and the content of each component varied with different drying methods.

3.1.2. volatile Essential Oils. Scutellaria baikalensis flower contains a large amount of volatile components. Accounting for 91.16% of the total volatile oil content, For example, germacrene -D (17.82%); beta caryophyllene (14.94%); bornyl acetate (8.81%); 2 '- methylene bis (6- (1,1- two -4- methyl ethyl methyl) phenol (7.06%); twenty-two (4.42%); two alkanoic acid aniline (4.21%) [5] and so on.

3.1.3. Other Ingredients. The melanin was also found in Scutellaria baikalensis flowers [4].

3.2. Scutellaria Baicalensis flowers Pharmacological action

3.2.1 Antitumor. Baicalin, the main active component of Scutellaria baikalensis flower, can effectively inhibit the proliferation of tumor cells, and has no toxicity to normal epithelium, peripheral blood and bone marrow cells[6]. It is believed that the mechanism is related to the expression of phospholipid turnover enzyme -1 (PLSCR-1), B cell lymphoma -2 (Bcl-2) and apoptosis protein Bax expression related to [7]. Baicalein can significantly reduce the expression of vascular endothelial growth factor in human ovarian cancer cells[8].

3.2.2 Antiangiogenesis. Studies have shown that baicalin has an antiangiogenic effect, and its mechanism may be to inhibit the activation of mitogen activated protein kinase (MAPKs) in Toll like receptor 4 to play an antiangiogenesis effect [9]. Baicalein can significantly eliminate retinal neovascularization [10].

3.2.3 Anti-inflammatory effect. Studies show that inflammation wogonoside can inhibit macrophage RAW264.7, by inhibiting nitric oxide (NO), E2 (PGE2) and prostatic proinflammatory cytokines tumor necrosis factor alpha (TNF- alpha), interleukin 6 (IL-6) release at the same time, it can block the gene expression to exert its anti-inflammatory activity[11]. The combination of baicalin and geniposide can protect the brain by inhibiting the release of inflammatory factors during cerebral ischemia[12]. Baicalein also has a significant anti-inflammatory effect. It has been found that baicalein can inhibit the activity of nuclear factor and the secretion and release of inflammatory factors by interfering with the signaling pathways such as NF-kappaB and MAPK signaling pathways [13-14].

3.2.4 Antithrombotic effect. Baicalin has a significant antithrombotic effect. Studies have shown that it plays an antithrombotic role mainly by inhibiting the intrinsic and extrinsic pathway of blood coagulation and reducing platelet aggregation. In addition, antithrombotic effect can be achieved by inhibiting the production of heparin (FXa) and thrombin (Thrombin) in umbilical vein endothelial cells[15].
3.2.5 Antioxidation. Baicalin can increase the ability of liver cells to resist oxidative damage and show the protective effect on liver [16]. It was found that apigenin could produce antioxidant effects by scavenging free radicals, chelating metal ions, inhibiting NO production, inhibiting DNA damage, and inhibiting lipid peroxidation. [17]. Baicalin can indirectly exert antioxidant effects, such as anti-tumor, anti-inflammatory and cardiovascular protective effects, and so on[18].

3.3. Volatile oils
Borneol acetate has antidiarrheal and analgesic effects on experimental animals, and its mechanism may be by inhibiting the smooth muscle movement of small intestine[21]. There was almost no relaxant effect on the tracheal smooth muscle in vitro, but it had significant antiasthmatic effect after oral administration [22].

3.4. Melanin
Scutellaria baicalensis flower contains melatonin, and the content is higher. Melatonin can play a role in antioxidation and scavenging free radicals in plants [19]. In vitro experiments showed that melatonin can directly remove hydroxyl radicals, hydrogen peroxide, nitric oxide, nitrogen oxide and other anion toxicity, and by increasing glutathione peroxidase, enzyme, superoxide dismutase activity, to enhance the efficiency of removal of peroxides, free radical[20]. The researchers speculate that melatonin is probably the defense mechanism of plants because flowers are the reproductive organs of plants and are more susceptible to the attack of oxid.

4. Comprehensive Application of Scutellaria Baicalensis Flowers
Scutellaria flower is rich in resources, huge output, cheap, and has high use value, but at present in the market lack of baicalin of Scutellaria flower products, in order to further comprehensive utilization of resources, We have summed up it. Scutellaria flower contains rich flavonoids, flavonoids have extensive pharmacological activity, especially in the cardiovascular aspect, it can be considered a health food, such as Scutellaria tea, Scutellaria flower food additives, oral liquid, for the prevention of cardiovascular and cerebrovascular diseases; In addition, there are flowers of Scutellaria melatonin, melatonin has antioxidant effects, the cells from free radical damage, aging and so on, we can make its cosmetic products for skin, delay skin aging; In addition, the main active ingredients of Scutellaria baicalensis Georgi flavonoids have powerful anti-inflammatory effect, and we can also use it as an anti-inflammatory drug for external use. To sum up, we expect to guide the development of related industries of Scutellaria baicalensis flower, and make due contributions to the people's life and health.

5. Outlook
The traditional view that picking buds of Scutellaria is not timely, it will cause the late effects of scutellaria root growth (root) of medicinal materials yield greater impact, so to protect the root yield and quality of medicinal materials, should be timely removal of Scutellaria flowers, avoid waste, we need a reasonable development and utilization. The chemical constituents of Scutellaria baicalensis flowers are similar to those of Scutellaria baicalensis root, so they have similar efficacy with Scutellaria baicalensis root. At present, they are mainly used in eczema, cerebral infarction, infantile diarrhea and other [23]. Scutellaria baicalensis flower can supplement the deficiency of Scutellaria baicalensis in clinical application because of its convenience of taking. Scutellaria flowers either from its chemical composition, pharmacological action and clinical application of traditional Chinese medicine point of view has its worth developing and research value, and the existing large-scale planting specification of Scutellaria baicalensis flowers, abundant resources, cheap, exact efficacy, the treatment of muscle jiebiao, antipyretic purging lung fire has been clinically proved. However, there are no products related to Scutellaria baicalensis flower in the market, leading to the good effect of Scutellaria baicalensis Georgi, but it can not be widely used. In order to promote the development of Scutellaria baicalensis flower industry, guide the production and use of Scutellaria baicalensis flower in related industries, the comprehensive utilization of Scutellaria baicalensis resources, to avoid waste of Scutellaria baicalensis resources.
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7. References
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