

Pharmacological Effects of Baicalin in Inflammatory Diseases: A Commentary

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DESCRIPTION

Chinese herbs have long been of interest, not only because of their diverse pharmacological effects but also because most are naturally occurring and economically less expensive than Western medicines. One of the main sources of Chinese herbs is flavonoids, which are widely distributed in nature and are secondary plant metabolites study by Atanasov, et al. [1]. Flavonoids are a class of yellow pigments derived from flavanone (2-phenyl chromone) as the parent nucleus, which includes tautomers of flavonoids and their hydrogenation and reduction products, i.e. a series of compounds with C6-C3-C6 as the basic carbon skeleton Butun, et al. [2]. Flavonoids are widespread in the plant kingdom and are mostly found in plants as glycosides or carbon glycosyl groups in combination with sugars, but also in free form Cartea et al. [3].

There are many compounds in flavonoids with medicinal value that are used to prevent cardiovascular disease by Ciumarnean et al. such as reducing vascular fragility, improving vascular permeability, lowering blood lipids and cholesterol, preventing hypertension in the elderly, cerebral hemorrhage, coronary heart disease, angina pectoris, dilating coronary arteries and increasing coronary blood flow [4]. Many flavonoids have cough suppressant, expectorant, asthma calming, antibacterial, hepatoprotective, hepatotoxicity, antifungal, treatment of acute and chronic hepatitis, liver cirrhosis, anti-free radical, and antioxidant activities Gao, et al [5]. In addition, flavonoids have the same effects as phytoestrogens Cos, et al [6]. In animal production, the use of flavonoids can significantly improve animal production performance, increase the body's resistance to disease and improve the body's immune function Zhou, et al [7].

Scutellaria baicalensis Georgi is a perennial herb of the genus *Scutellaria* in the family Labiatae, widely distributed in northern, northwestern, and southwestern China Chakrabarty, et al. [8] it is also found in the Soviet Union, Mongolia, Korea, and Japan Zhao, et al [9]. *Scutellaria baicalensis* Georgi is a bitter, mild, non-toxic herb used to treat fever, yellow pox, edema, malignant wounds, and fire ulcers.

The roots of *Scutellaria baicalensis* Georgi are rich in the active ingredient baicalin, which is also commonly used in clinical medicine. I have previously discussed the pharmacological mechanisms of baicalin in inflammatory diseases. These functions are only a small part of the functions of baicalin that I will probably show in future articles. Nevertheless, baicalin has many functions such as anti-inflammatory, it can play an anti-inflammatory role by reducing the phosphorylation of nuclear factor- κ b and p38 in *S.aureus*-induced mastitis Guo et al. antioxidant, anti-tumor, anti-aging, and lipid-lowering Wang, et al. [10,11], but it has its limitations in terms of bioavailability Zhang, et al. [12]. Many studies have shown that baicalin has low bioavailability, both orally and by gavage, and is converted by microorganisms in the small intestine to baicalein, which is then absorbed by the body into the bloodstream. Therefore, improving the bioavailability of baicalin and other similar glycosides is a study that deserves further investigation Pi, et al [13]. At present, baicalin has been prepared into various preparations to improve its bioavailability, mainly in the

form of nanoparticles Han, et al. [14], nanoemulsions Wu, et al. [15], phospholipid complexes Chen, et al. [16], and liposomes Zhang et al. [17].

Here, I will briefly summarize the previous review on baicalin inflammation. These inflammatory diseases include steatohepatitis, rheumatoid arthritis, obesity and diabetes, inflammatory enteritis, and chronic inflammation from cardiovascular disease. The anti-inflammatory pathway mediated by baicalin is mainly through NF- κ B. Inhibition of this pathway down-regulates the expression of inflammatory genes regulated by it, and regulates ROS production through Nrf2 translocation into the nucleus. In conclusion, inflammation is very important for the health of the body, and baicalin has a positive regulatory effect on these inflammations. baicalin is a potential drug in the treatment of clinical diseases.

The purpose of my previous review is to provide a clearer understanding of the value of the Chinese herb baicalin. In addition, there are many similar herbs whose value and pharmacological efficacy deserve further investigation. In short, these compounds have the advantages of being multi-potent, low-cost, and green, and are potential research and development drugs for the treatment of a wide range of diseases.

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