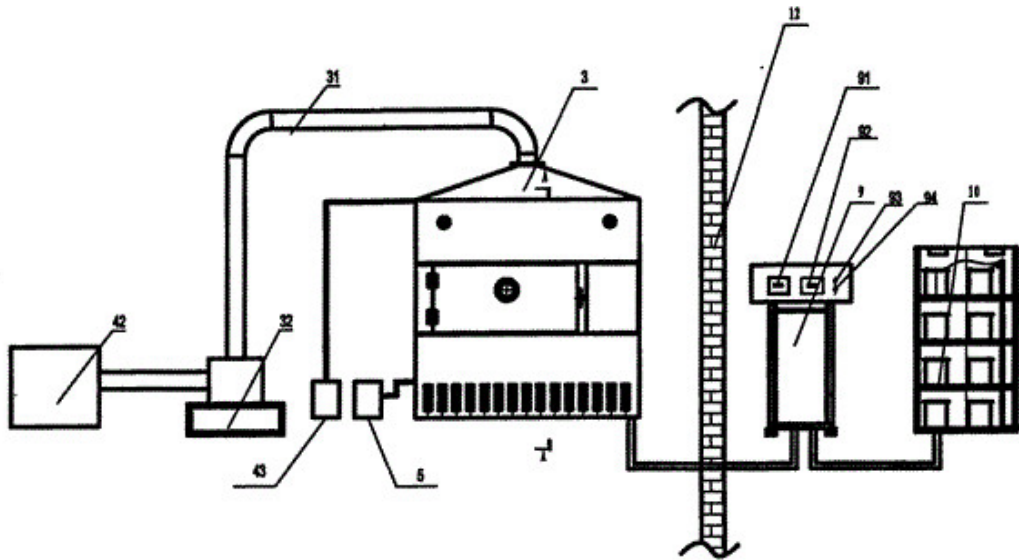


Study on Optimum Drying Method and Anti-inflammatory Effect of Baicalin Magnesium Salt



ABSTRACT: Objective: To compare the effects of different [microwave drying equipment](#) on the content of baicalin magnesium salt, to optimize the best drying method of baicalin magnesium salt and to study its anti-inflammatory effect. Methods: Freeze dryer, microwave dryer and drying box dryer were used to dry baicalin magnesium salt. The best drying method was to determine the content of baicalin magnesium salt after drying by HPLC. At the same time, animal inflammation model was constructed and the swelling degree was observed.

Result: The content of frozen dried baicalin magnesium salt was 69.2%, microwave dried baicalin magnesium salt was 65.3%, and drying box dried baicalin magnesium salt was 59.8%. The anti-inflammatory effect of baicalin magnesium salt was better than baicalin.

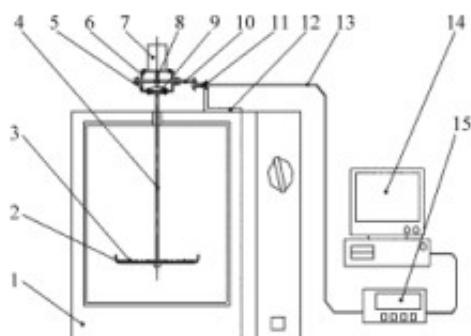
CONCLUSION: Freeze-drying method was used to dry Baicalin Magnesium Salt with high content.

High yield, easy operation, quick absorption of baicalin magnesium salt, higher anti-inflammatory effect than baicalin.

Key words: [baicalin microwave drying](#); baicalin magnesium salt; content determination; drying method; anti-inflammatory

Scutellaria baicalensis is a perennial herbaceous plant of labiatae. Its alias Camellia root and Tujin tea root are used as medicines by their dry roots. It was first recorded in Shennong Herbal Classic of more than 100 B.C. and is widely used in clinical medicine of traditional Chinese medicine. This product is bitter and cold in nature. It belongs to lung, gallbladder, spleen,

stomach, large intestine and small intestine meridians. It has the functions of clearing heat and drying dampness, purging fire and detoxifying, cooling blood and stopping bleeding, and



relieving fetus.

Mainly produced in Hebei, Heilongjiang, Liaoning, Inner Mongolia and other places, in history, Chengde, Hebei Province is the genuine production area of *Scutellaria baicalensis*, known as "Rehe *Scutellaria*" reputation. Baicalin is the main active ingredient extracted from *Scutellaria baicalensis*. It is a flavonoid compound with $C_{21}H_{18}O_{10}$ molecular formula. It has anti-viral, anti-inflammatory, anti-tumor and immunomodulatory effects. It has been widely used in clinic. Baicalin contained in Chinese Pharmacopoeia 2015 edition was obtained by water extraction and acid precipitation purification of Baicalin. Baicalin sold on the market is extracted by this method.

However, baicalin extracted by this method is almost insoluble in water and has low oral bioavailability. The original form of Baicalin in Baicalin is magnesium salt, which is water-soluble and can be extracted by water-soluble method. The original form of baicalin was destroyed by adding acid in Pharmacopoeia method, which made the water solubility of baicalin worse and the absorption rate slower.

After preliminary study, without changing the original existing form of Baicalin in *Scutellaria baicalensis*, we used acid-free extraction and refining method to extract baicalin magnesium salt from *Scutellaria baicalensis*, and also invented a method to synthesize baicalin magnesium salt from baicalin extracted by the method of Chinese Pharmacopoeia. The existing form of Baicalin in Baicalin was reduced.

After four spectroscopic tests, we can confirm that the magnesium salts of baicalin extracted without acid refining and the magnesium salts of baicalin synthesized by synthetic method are of the same structure, and have applied for the national invention patent.

In this experiment, three different drying methods were used to dry the synthesized magnesium salts of baicalin, and the best drying method was selected. Then the anti-inflammatory activity of the magnesium salts of baicalin was compared with that of the magnesium salts prepared by the best drying method through the establishment of animal inflammation model, so as to extract the magnesium salts of Baicalin for the production and application of the magnesium salts of baicalin. Theoretical basis