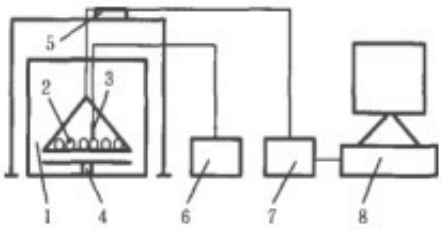
Effect of Different Drying Processing Methods on Quality of Gastrodia elata

[abstract] Gastrodia elata was dried by sun drying, sulfur fumigation, hot air drying, microwave drying equipment, infrared drying and various combined technologies. The effects of different drying methods on the quality of Gastrodia elata were investigated by comparing the properties, extracts and active ingredients of each sample.

The results showed that the samples obtained by sulfur fumigation, hot air drying and hot air microwave drying had better characteristics; different drying methods had little effect on the extracts, and the content of the extracts after hot air drying was higher; sulfur fumigation, microwave drying and infrared drying alone could cause the transformation of stilbene glycosides and the decrease of the content of Gastrodia cannabis polysaccharides.

Based on the comprehensive analysis of the characteristics, content of active ingredients and production cost of Gastrodia elata, hot air drying or combined hot air and microwave drying is the preferred method for the processing and drying of Gastrodia elata.

[Key words] Gastrodia elata microwave drying; Origin processing; Drying methods; Characters; Extracts; Content of active ingredients



Gastrodia elata Bl. is a dry tuber of orchid plant Gastrodia elata Bl. It has the functions of relieving wind and stopping spasm, calming liver-yang, dispelling wind and dredging collaterals. Fresh Gastrodia elata has a large moisture content after harvesting. It needs to be processed as soon as possible to avoid deterioration of medicinal materials. The traditional processing methods of Gastrodia elata origin are usually sun-drying, smoking, fire-drying, etc. The processing time is long and the operation is tedious.

Sulfur fumigation is currently the preferred processing method of Chinese medicinal materials at the grass-roots level because of its low cost and simple operation. Although the local problems can be solved by sulfur fumigation of traditional Chinese medicine, experimental studies show that sulfur fumigation of Gastrodia elata can cause changes in the active ingredients and

increase in the amount of SO2 residues. Therefore, searching for modern processing technology that can replace sulfur fumigation method will ensure the safety and effectiveness of Gastrodia elata in clinical use.

According to the different drying principles of modern advanced technology, Gastrodia elata medicinal materials were dried in one or two or more different equipment in turn. By comparing the properties, extracts and active ingredients of Gastrodia elata samples obtained by different drying methods, the optimum processing method was selected.

Taking the appearance character, extract content and active ingredient content of Gastrodia elata as the index, the nine drying processing technologies of Gastrodia elata were investigated, including sun drying, sulfur fumigation, hot air, microwave, infrared, hot air and microwave, hot air and infrared, microwave and infrared, hot air and microwave and infrared. Drying treatment had better appearance characteristics, higher contents of extracts and active ingredients, and better quality.

The traditional drying method is greatly influenced by the weather, the surface of the sample is mildewed and the content of leachate is low; the sulfur fumigation drying method can get better appearance of the sample, but it will cause the decrease of the effective components and the decrease of the residual SO2 content; microwave drying, infrared drying or microwave-infrared combination, because of the high temperature, the sample dehydrates rapidly in a short time, and comes out. Hollow phenomenon,

At the same time, the stilbene glycosides of Gastrodia elata changed and the polysaccharide content of Gastrodia elata decreased. It was found that when the water content was about 20%, the combination of hot air microwave and hot air infrared could not only improve the drying efficiency, but also avoid the hollow phenomenon of medicinal materials. The appearance color of hot air infrared combined with hot air was dark, and the characteristics of hot air microwave combined with hot air were better than that of hot air infrared combined with hot air. However, the triple use of hot air, microwave and infrared is time-consuming, but the operation steps are cumbersome and the energy consumption is relatively increased.

Therefore, comprehensive analysis shows that hot air drying or hot air microwave combined processing method has better drying effect on Gastrodia elata medicinal materials, which can not only ensure the safety and effectiveness of clinical use of Gastrodia elata medicinal materials, but also help to improve production efficiency and labor conditions, and can be used as an alternative processing method for processing sulfur fumigation in Gastrodia elata producing areas.