

The Extraction and Estimation of Effectively Medicinal Ingredients of Different *Ganoderma* P. Karst. of Mountain Tai in China

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After a study on the main chemical ingredients and content of different *Ganoderma* strains from major production zones of Shangdong province, the medicinal ingredients can be divided into water soluble and ethanol soluble types. A positive intersection method was applied using extraction conditions and technology. Based on morphological structure and physical and chemical properties of those ingredients, together with the analysis of extraction purity, a systematic extraction route of different medicinal ingredients was reasonably designed. This route with all the materials specified provided the foundation for isolation, purification, and analysis of physical and chemical characteristics and structure of the chemical components of different *Ganoderma* strains.

Crude polysaccharide of *Ganoderma* was ex-

tracted from *G. lucidum* (Curt.: Fr.) P. Karst. No. 1 (provided by Edible Fungi Center of Huaiyin district, Duandian, Jina) and *G. lucidum* No. 2, *G. tsugae* Murr., *G. sinense* Zhao, Xu et Zhang (all provided by Integrated Exploitation Office, Linqu). The content of polysaccharide was determined by analysis of Anthrone C.P. SOD. The four *Ganoderma* strains were immersed in water under certain conditions, crushed into a defined powder from a crude powder, then extracted three times with the appropriate extractant, filtered three times, and the liquid combined and remains preserved for later use. The combined filtered liquid was condensed and purified by certain means, then precipitated, isolated, and dried, after which crude polysaccharide was obtained. The results are shown in the following table.

Strains	Raw material weight (g)	Crude polysaccharide weight (g)	Crude extraction rate (%)	Crude polypurity (%)	Pure polysaccharide extraction rate (%)
<i>G. lucidum</i> No.1	500	18.150	3.63	18.92	13.74
<i>G. tsugae</i>	450	8.6994	1.933	19.87	7.68
<i>G. lucidum</i> No.2	450	17.2426	3.832	16.55	12.68
<i>G. sinense</i>	450	27.1312	5.423	24.77	25.07

After a positive intersection method of crude polysaccharide production technology and conditions, under the same conditions, the four *Ganoderma* extraction rates of crude polysaccharide were ordered as follows: *G. sinense* > *G. lucidum* No. 2 > *G. lucidum* No. 1 > *G. tsugae*. The content of the pure polysaccharide order was: *G. sinense* > *G. tsugae* > *G. lucidum* No.1 > *G. lucidum* No. 2, and the pure polysaccharide extraction rate was *G. sinense* > *G. lucidum* No. 1 > *G. lucidum* No. 2 > *G. tsugae*.

After the water-soluble materials are filtered, the remains are dissolved with ethanol under the specified conditions, and the filter liquid from the three extractions is combined and condensed, impurities eliminated, and washed with dehydrated EtOH. Ethanol-soluble ingredients were obtained

after condensation, drying, and weighing. The results were as follows:

Strains	Raw material (g)	Yield (g)	Extraction rate (%)
<i>G. lucidum</i> No.1	500	4.4957	0.899
<i>G. tsugae</i>	450	4.286	0.952
<i>G. lucidum</i> No.2	450	3.825	0.850
<i>G. sinense</i>	450	9.257	2.507

From the results, we can see that the extraction rate order of ethanol-soluble ingredients of different *Ganoderma* strains was *G. lucidum* No. 1 > *G. sinense* > *G. lucidum* No.2 > *G. tsugae*.