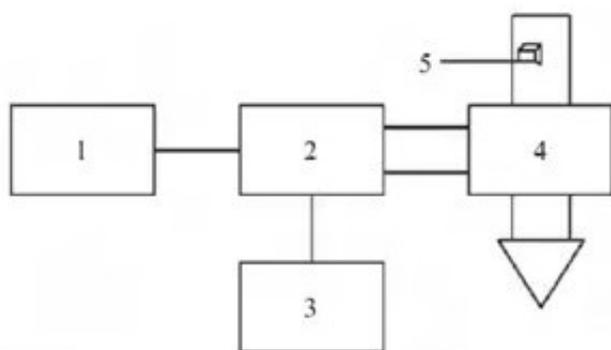


Optimization of Different Drying Methods for Zishen Capsule Thick Paste

ABSTRACT: OBJECTIVE To optimize the drying process of Zishen capsules and to provide basis for the determination of the production process of Zishen capsules. Methods the effects of hot air drying, vacuum drying, microwave drying and spray drying on the quality of dry extract were studied with the properties of extract, yield, hygroscopicity, pinocside and paeoniflorin as indicators.



Results: in the dry extract of hot air vacuum drying, [microwave drying equipment](#) and spray drying, the contents of spironicin were 0.0140%, 0.0220% and 0.0135% respectively. The paeoniflorin was 0.0475%, 0.0681% and 0.0700% respectively. Conclusion the yield and hygroscopicity of microwave drying dry extract are better than that of spray drying. The amount of index components is higher than that of vacuum drying and spray drying, and the best drying method is determined by microwave drying.

Key words: Purple ginseng capsule; vacuum drying; microwave drying; spray drying; spironicin; paeoniflorin; [microwave drying of Chinese Medicine](#)



Zishen Capsule is composed of ten traditional Chinese medicines, such as Ziheche, Radix Pseudostellariae, Paeonia lactiflora and Semen Ziziphi Spinosae. It has the function of warming kidney and filling essence, regulating yin and yang, and is mainly used to treat perimenopausal syndrome, amenorrhea and irregular menstruation.

The process of raw preparation was dried by hot air and vacuum drying. The dry extract had

gelatinization and burnt taste. In order to improve the preparation process and improve the quality of the preparation, hot air drying, microwave drying and spray drying were used to dry the thick capsule of the ginseng capsule. The properties, dry extract yield, hygroscopicity, pinocanin and paeoniflorin content were measured. To select the best drying technology of Zishen capsules for evaluation index.

The parameters of the three drying methods have been optimized and screened through experimental investigation, and all of them are the best technological parameters. The water extraction process of the preparation of thick paste was optimized through orthogonal test in the registration declaration process of the preparation, which ensured the quantity of the index components in the thick paste.

For each gram dry extract, the content of spironoside and paeoniflorin was higher, especially the spray drying paeoniflorin content was higher, especially the spray drying paeoniflorin content was significantly higher than that of vacuum drying and microwave drying. However, the preparation of the product was made with extract and excipient to make quantitative granules and then filled into capsules. The amount of the extract directly affected the content of the index components in the capsule contents. The method of calculating transfer rate was used to compare the effects of different drying methods on the index components, and the amount of the index components per gram of water-extracted medicinal materials was more intuitive.

When dry extract powder is prepared by small spray drying equipment, some small particles blow out of the outlet with hot air, which greatly affects the yield of dry extract.