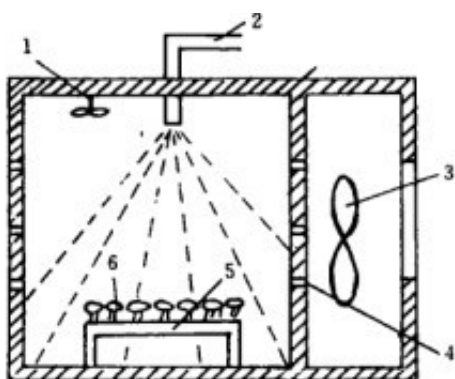


## Study on drying method of Shujin Tongluo extract

Objective: To optimize the drying process of Shujin Tongluo extract. Methods drying method, decompression drying method, microwave drying method and spray drying method were used to dry the extract of Shu Jin Tong Luo. The yield of dry paste, the solubility of the granules, naringin and gastrodin content were measured. The percentage of moisture absorption of the granules was measured, and the hygroscopic time curve was drawn to compare the suction of 4 particles. Wetness.

Results the relative moisture absorption rate and the equilibrium moisture absorption volume of the 4 kinds of drying methods were from decompression to drying, microwave drying, spray drying and drying. Conclusion The best drying method of Shujin Tongluo extract is [microwave drying equipment](#).

Key words: Shujin Tongluo granules; drying method; solubility; hygroscopicity; [microwave drying of traditional Chinese medicine](#)



Shujin Tongluo Granule is a new Chinese medicine developed by Xiyuan Hospital of Chinese Academy of Traditional Chinese Medicine and Shenwei Pharmaceutical Group Co., Ltd. It is composed of 9 kinds of Chinese medicines, such as Rhizoma Drynariae, Achyranthes bidentata, Ligusticum Chuanxiong and Gastrodia elata. It has the functions of tonifying liver and kidney, activating blood circulation and relaxing tendons, and is mainly used to treat cervical



The preparation technology of Shujin Tongluo granules requires that Shujin Tongluo extract be

dried, crushed, and properly prepared into granules with dextrin and modifier. The drying method, decompression drying method, microwave drying method and spray drying method were used in 4 ways to dry the extract of Shu Jin Tong Luo. The effects of 4 drying methods on the solubility and hygroscopicity of the granules were investigated, so as to screen the best drying method for the extract of Shu Jin Tong Luo.

There are many drying methods for Chinese medicine extract, including drying method, vacuum drying method, spray drying method, vacuum freeze drying method, microwave vacuum drying method and so on. In accordance with the characteristics of traditional Chinese medicine, reasonable drying methods should be chosen reasonably. Through comparing the 4 drying methods of drying method, decompression drying method, microwave drying method and spray drying method, the influence of different drying methods on the solubility and hygroscopicity of particles was investigated, so as to provide data support for production.

The drying methods of extracts of traditional Chinese medicine not only affect the solubility of granules, but also affect the hygroscopicity of granules. Different extracts use different drying methods. Because of different drying principles, the extract powder after drying also shows different hygroscopicity characteristics. Because the properties and specific surface area of extract powders obtained by different drying methods are quite different, it is not suitable to investigate the moisture absorption of extract powders directly.

In this study, Shujin Tongluo granules with the same granularity were prepared from four different extract powders and the same excipients. The hygroscopicity of the granules was investigated to reduce the experimental error.

The experimental results show that vacuum drying and microwave drying can significantly improve the hygroscopicity of Shujin Tongluo granules, which is similar to the results of Yang Xu et al. Compared with vacuum drying, vacuum drying is slower, but the material treatment is milder and the yield is higher. In the process of microwave drying, unstable temperature control will lead to excessive local temperature and gelatinization of extract, resulting in unqualified particle solubility. Therefore, the best drying method of Shujin Tongluo extract is vacuum drying