

Application of Microwave Drying in the Production of Wumei Rendan

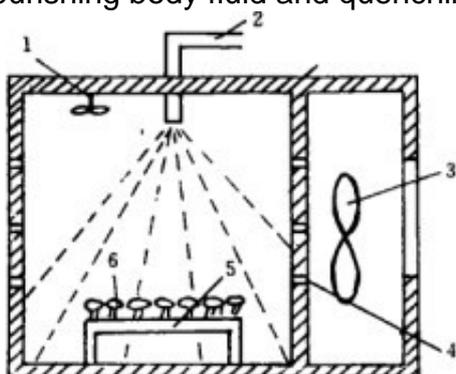
Objective: To compare the effects of oven drying and microwave drying of Wumei Rendan.

METHODS: The dissolution time, water content, menthol content and glycyrrhizic acid content were used as indexes to compare their effects.

RESULTS AND CONCLUSION: [Microwave drying equipment](#) can improve product quality, increase production capacity and reduce energy consumption, which is superior to oven drying.

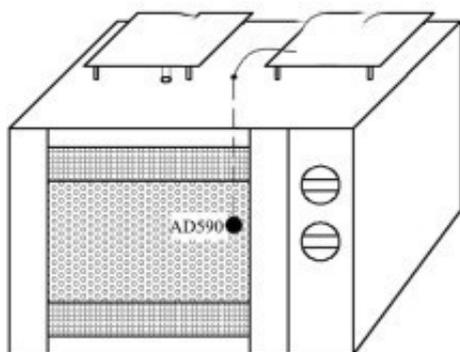
Key words: [Wumei Rendan microwave drying](#); menthol; glycyrrhizic acid; drying

Wumei Rendan is a red concentrated water pill made of liquorice, menthol, menthol oil, Wumei extract, vitamin C, citric acid and other medicinal materials. It is partially extracted and partially crushed into fine powder, and then pan-pilled, dried and coated. It has the functions of nourishing body fluid and quenching thirst, cooling and moistening throat.



It can be used for halitosis, dry mouth, sore throat, etc. It can also be used as an adjuvant treatment for laryngopharyngitis and tonsillitis. Microwave drying has the characteristics of fast heating, uniform heating, energy saving and high efficiency. The principle is that under the action of microwave electromagnetic field, the violent vibration and collision friction of water molecule in the material produce heat, so as to achieve the purpose of drying.

At present, there are few reports about microwave drying for concentrated water pills with high sugar content. In this paper, two different drying methods of Wumei Rendan, oven drying and microwave drying, were compared in terms of dissolution time, moisture content, menthol content and glycyrrhizic acid content, and their production cycle and labor intensity.



Schematic diagram of microwave drying temperature control system

Compared with oven drying, the dissolution time of microwave drying was shortened by 10.25 minutes on average. The shortening of dissolution time is conducive to the absorption and distribution of pills, improving the bioavailability of pills and promoting the curative effect; the average decrease of water content is 9.47%, which is conducive to speeding up the dissolution time of pills; the content of glycyrrhizic acid remains basically unchanged; the content of menthol, a volatile component, is increased by 128.65%, which is conducive to the improvement of drug availability. Effectiveness, so as to improve the quality of products.

In actual production, the average drying time of microwave drying was shortened from 31.5 h to 17.15 h, and 14.35 h, which greatly shortened the drying time and shortened the production cycle. At the same time, because the microwave dryer is controlled automatically by computer, the operation is simple, the labor intensity is reduced, and the automation of production is beneficial.

In conclusion, microwave drying is superior to oven drying in the production of Wumei Rendan, which is worth popularizing and applying in production.