

# Application of heat pump and microwave combined drying in medicinal materials drying (2)

Research progress of heat pump microwave combined drying technology

The drying process requires a lot of time and a lot of energy, and reducing energy consumption and time during the drying process is a major issue for research. There are certain disadvantages when using the conventional drying method. First, it takes a long time to dry naturally or dry, and the efficiency is extremely low.



At present, hot air drying is widely used, but high temperature is required when drying. Chinese medicinal materials are heat-sensitive plants, which are prone to deterioration at high temperatures and affect their performance. With the increasing international status of Chinese medicinal materials, its storage and quality requirements are getting higher and higher. In order to improve the competitiveness of Chinese medicinal materials in the international market, it is imperative to study new drying technologies.

[Microwave drying machine](#)

Under normal circumstances, the content of water in Chinese herbal medicines is relatively high, and its heat sensitivity and degradability are also relatively high, so dehydration of Chinese herbal medicines is a very good way to improve their storage time.

The content of active ingredients such as carbohydrates and vitamins in herbal medicines is relatively high, and the effect of temperature on these ingredients is relatively large. If the drying temperature is high during the drying process, not only the loss of nutrients but also the loss will be caused. The efficacy, even some heat-sensitive Chinese herbal medicines will oxidize at high temperatures, changing their effects, seriously affecting the quality after drying.

The [heat pump drying](#) device is characterized by high efficiency and energy saving, low cost and good stability. It can be used for large-volume drying at one time, and the heating capacity is relatively strong. The drying process can be controlled and the temperature is dried. Not high, can guarantee the maximum effect of Chinese herbal medicine.

Use in the early stage is the best choice. In the late stage of drying, because the moisture has been removed in the drying process, the heat sensitivity of Chinese herbal medicines is not very strong, and the microwave drying technology can accelerate the drying speed, while ensuring that the efficacy is not lost and no deterioration occurs.

Because the oxidation in the medicinal material is mainly due to the presence of water, the use of heat pump drying technology in the early stage has removed a large amount of water, the remaining water is not enough to support its oxidation reaction, and the use of microwave for the drying of Chinese medicinal materials is mainly the use of microwave energy. Let the water in the Chinese herbal medicine vaporize.

The use of microwaves has a relatively strong penetrating power. It can ensure the uniform heating rate in the drying process table, can eliminate the common wrinkle atrophy on the surface of the dried medicinal material, and can guarantee the quality of the medicinal material to the greatest extent, and its advantages are very obvious.