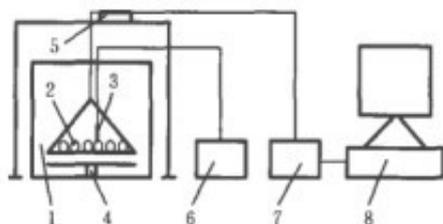


# Application of Microwave Technology in the Production of Traditional Chinese Medicine

Microwave technology has been widely used in the production and research of traditional Chinese medicine. In the extraction of bioactive components, it involves several main natural compounds, such as volatile oils, glycosides, polysaccharides and flavonoids.

In addition, microwave has been introduced into traditional Chinese medicine [microwave drying equipment](#), sterilization, processing, decoction, etc. It has many advantages, such as fast speed, uniform effect, energy saving, less pollution, good boiling effect, easy to realize automatic control and good product quality.

Key words: [microwave traditional Chinese medicine](#); application



Microwave refers to the frequency range of  $3.0 \times 10^2 \sim 3.0 \times 10^5$  MHz, very short wavelength (0.001-1.000 m) electromagnetic wave. Microwave has good penetration and penetration selectivity, it can penetrate plastics, but it has reflectivity to metal, it can not penetrate, it can use metal as shielding device; microwave can only selectively heat polar molecules, the stronger the polarity of molecules, the higher the selectivity; microwave and matter interact in high frequency. Frequency electric field with very short oscillation period.

Strong internal heat effect and high frequency can make solvent and solute molecules have no thermal resistance and thermal inertia at the same time. The ground is heated, the heating speed is 10-100 times faster than the traditional heating method, the heating thermal inertia is very low, and the process is easy to control. Microwave has abiotic effects on organisms, which can cause changes in the quality of proteins and physiological active substances in microorganisms, as well as loss or death of biological activities.

Therefore, microwave has been widely studied and applied in chemical synthesis, traditional Chinese medicine production, food and other fields. This paper introduces and summarizes the application of microwave in the production and research of traditional Chinese medicine.

Microwave drying sterilization technology was introduced into the production of traditional Chinese medicine, and it has been effectively applied in the drying sterilization of traditional Chinese medicine. Microwave drying is different from external heating methods, such as hot air, steam and electric heating.

Because of the temperature difference between inside and outside, the traditional drying method is heat conduction. The internal temperature is lower than the external, the drying effect is worse than the external, and the drying is slow and uneven. In microwave drying, water molecules inside and outside the material evaporate together, and the direction of heat conduction is the same as that of water diffusion. The internal and external temperature gradient has the characteristics of small negative effect, fast drying speed, uniform drying effect, energy saving, easy to realize automatic control and good product quality. .

Microwave drying sterilization technology has the characteristics of high energy utilization, short drying time, good uniformity, strong sterilization ability and high degree of automation control. It has broad application prospects in the production of traditional Chinese medicine and is worth popularizing. Because of the impermeability of packaging materials, it is difficult for some parts to volatilize water, which can hardly cause quality problems such as mildew. As a project promoted by the State Administration of Traditional Chinese Medicine, microwave drying and disinfection are used by some Chinese herbal medicine production enterprises. The technology has been applied to the production of small packaged Chinese herbal pieces.

The choice of wavelength, irradiation time and conveyor belt speed of different texture of Chinese herbal medicine should be further discussed. At present, there are no technical parameters for standard operation, and the physical and chemical properties and hygienic conditions of Chinese herbal medicines before and after microwave treatment are not perfect. Sex research.