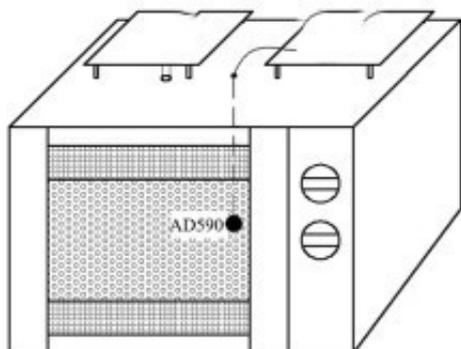


# Application of Microwave Technology in the Production and Research of Traditional Chinese Medicine



Schematic diagram of microwave drying temperature control system

Abstract: [Microwave drying equipment](#) is widely used in the production and scientific research of traditional Chinese medicine. In the extraction of bioactive components, it has involved volatile oil, glycosides, polysaccharides, flavonoids and other natural compounds. In addition, microwave has been introduced to drying, sterilization, processing, Decoction and other aspects of traditional Chinese medicine. It has many advantages, such as fast speed, uniform effect, energy saving, less pollution, good Decoction effect, easy to realize automatic control and good product quality.

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



Microwave has good penetration ability and selectivity. It can penetrate plastics, but it has reflectivity to metals and can not penetrate. It can be used as a shielding device. Microwave only selectively heats polar molecules, the stronger the polarity of molecules, the higher the selectivity.

Microwave has an abiotic effect on organisms, which can make proteins and physiological active substances in microorganisms change qualitatively and lose their biological activity or death. Therefore, microwave has been widely studied and applied in chemical synthesis, production of traditional Chinese medicine, food and other fields.

Microwave drying and sterilization technology were introduced into the production of traditional Chinese medicine, and they were also effectively applied in the drying and sterilization of

traditional Chinese medicine. Microwave drying is different from external heating methods such as hot air, steam and electric heating. Traditional drying is due to the thermal conduction of the internal and external temperature difference. The internal temperature is lower than the external one, and the drying effect is worse than the external one. The drying process is slow and uneven. In microwave drying, water molecules inside and outside the material are gasified together, and the direction of heat conduction is the same as that of water diffusion. It has the advantages of small negative effect of internal and external temperature gradient, fast drying speed, uniform drying effect, energy saving, easy to realize automatic control and good product quality.

Microwave technology is gradually applied in the processing of traditional Chinese medicine. It is mainly used in stir-frying, roasting and calcining methods. It has the advantages of fast speed, short time, uniform heating, good product quality and high thermal efficiency. Chen Xinpei and others used microwave technology to prepare traditional Chinese medicine. The operation of stir-frying method and stir-frying method were explored. The processing results under different microwave power and irradiation time were studied by means of stir-frying method, stir-frying method with supplementary materials and stir-frying method. The results show that the microwave stir-frying method has the advantages of accurate operation, easy control of firepower and time.

Compared with the traditional method, the microwave method saves time and effort, has beautiful color, uniform swelling, crisp texture, and is clean, and the microwave method is conducive to the dissolution of active ingredients in medicinal materials. Yu Jinxi et al. made an experimental study on pharmacodynamics of microwave processed products of amaranth. The main pharmacodynamics of microwave processed products of amaranth were observed from three aspects: antitussive, expectorant and diuretic, and compared with traditional fried products.

The results showed that the microwave processed products of Amaranth could significantly prolong the latent period of cough in mice, reduce the number of coughs, promote the excretion of phenol red and increase the urine output of rats. There was no significant difference between the processed products and the stir-fried products. It could replace the traditional stir-fried products.