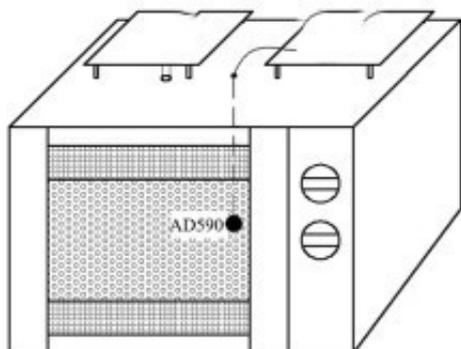


Application of heat pump combined with microwave drying in drying of medicinal materials



Schematic diagram of microwave drying temperature control system

ABSTRACT: There are abundant resources of Chinese herbal medicines in our country. Experiments show that Chinese herbal medicines have less side effects than synthetic medicines, so they are widely praised. However, the main problem facing Chinese herbal medicines market is the quality of medicinal materials. Traditional Chinese herbal medicines processed with traditional Chinese medicines will lead to deterioration of taste, loss of effective ingredients and insecurity. Problems such as being guaranteed,

Therefore, the drying technology of Chinese herbal medicines is coming out constantly. [Microwave drying equipment](#) and microwave drying are two widely used methods. They have the advantages of fast drying efficiency, uniform drying, good product quality, selective heating, sensitive reaction and high thermal efficiency. They have gradually become the main drying methods of Chinese herbal medicines.

Key words: [microwave drying of medicinal materials](#); heat pump; drying of medicinal materials



China is a country with a long history and vast land. The natural resources of Chinese herbal medicine are abundant. From ancient times, people have mastered the skills of using various Chinese herbal medicines to treat diseases, such as some herbs, Changshan can treat malaria. Birch bark has a pain-relieving effect, which has been proved to be a very effective Chinese herbal medicine. And through a large number of experiments, compared with synthetic drugs, the side effects of Chinese herbal medicine are much smaller than synthetic drugs. Therefore, traditional medicines, especially Chinese herbal medicine, are more and more valued in Europe,

Asia, America and so on.

Chinese herbal medicines have always occupied a very important position in international trade. Now Chinese herbal medicines have been sold in more than 130 countries and regions. By 2008, the total export sales of Chinese herbal medicines have reached more than 1.3 billion US dollars. It fully illustrates the huge market prospects of Chinese herbal medicines in China, and the export trade of Chinese herbal medicines is also expanding. However, in the face of such good opportunities, challenges come one after another. A variety of problems arise in the processing and marketing of Chinese herbal medicines.

Among them, the biggest challenge is how to ensure that the Chinese medicines sold have good enough quality. Quality problems have always been one of the difficulties in the sale of Chinese medicinal materials. The traditional drying process often results in the deterioration of the nature and taste of traditional Chinese medicines, the loss of the active ingredients of traditional Chinese medicines and the insufficient guarantee of their safety. This is also an urgent problem to be solved in the market of traditional Chinese medicines.

At present, the quality requirement of Chinese herbal medicine is becoming higher and higher in the international market, but there are a series of problems in the production of Chinese herbal medicine. For example, the production and processing operations are not standardized, the appearance of products can not be guaranteed, and more effective ingredients can not be retained in Chinese herbal medicine.

Therefore, the application of heat pump drying and microwave drying in the drying of Chinese medicinal materials has been continuously praised. This method can effectively improve the drying speed, and the drying uniformity can ensure the quality of products. At the same time, it can be selectively carried out when heating and drying. The reaction is more sensitive and the thermal efficiency is relatively high. The drying application of Chinese medicinal materials has gradually become the mainstream method.