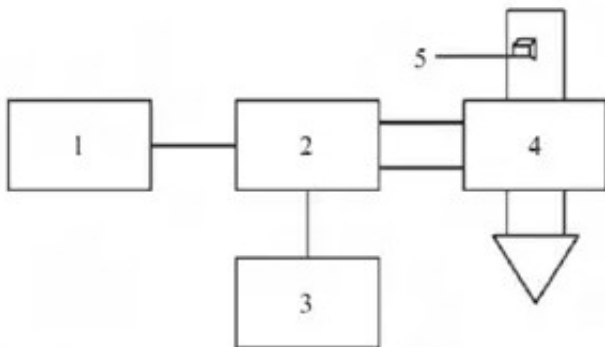
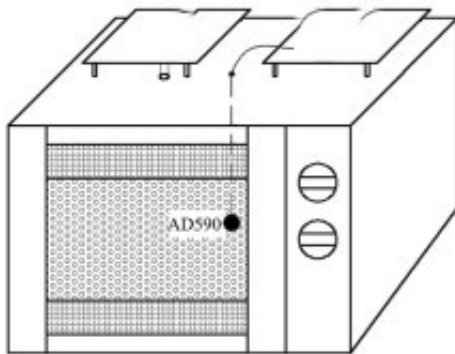


Effect of Different Drying Methods on the Quality of Lotus Seeds

Abstract: Five different drying methods of hot air drying, vacuum microwave drying, vacuum freeze drying, hot air-vacuum microwave drying and hot air-air puffing drying of lotus seeds and their effects on physical properties, main nutrients and microstructure of lotus seed dry products were studied. .



The results show that the order of total color difference is vacuum freeze-drying>hot air-air puffing drying>hot air drying>vacuum microwave drying>hot air-vacuum microwave drying; hardness order is hot air drying>vacuum microwave drying>hot air-vacuum microwave drying> Hot air-air puffing and drying>vacuum freeze-drying, and the order of brittleness is vacuum freeze-drying hot air drying; rehydration order is vacuum freeze drying>hot air-air puffing drying>hot air-vacuum microwave drying>vacuum microwave drying>hot air drying



Schematic diagram of microwave drying temperature control system

The content of protein and crude fiber in the five products was not much different; the microstructure of vacuum freeze-drying, hot air-vacuum microwave drying and hot air-air-expansion drying products was observed, and the hot air drying product was still dense. Only a small amount of voids appear in the [microwave drying equipment](#). In general, hot air-air puffing and drying can be used as a suitable processing method for developing lotus seed snack food.

Key words: [lotus seed microwave drying](#);

quality characteristics, lotus seed is the fruit of the seed of *Nelumbo nucifera* Gaertn., which is a

special aquatic vegetable widely cultivated in China. It is also a traditional nutrition. Nourishing good products. Lotus seeds are rich in nutrients. In addition to protein, carbohydrates, vitamins, various essential amino acids and a large number of trace elements such as calcium, phosphorus, iron and zinc, they also contain biological activities such as flavonoids, water-soluble polysaccharides and superoxide dismutase. Ingredients, listed by the Ministry of Health of China as the first list of items that are both food and medicine, have broad prospects for development and utilization in functional foods, pharmaceuticals and cosmetics.

In addition to fresh food, lotus seeds have always existed in the form of dry products. At present, most of the lotus seeds are still processed by traditional drying or hot air drying. Although the process is simple, it takes a long time and consumes a lot of losses. At the same time, dried lotus seeds also have many defects such as inconvenient eating and large nutrient loss. With the advent of new drying processing technologies such as microwave drying, vacuum freeze drying, and air-expansion, traditional dry products have given new vitality, which not only greatly improves drying efficiency, but also increases the retention of nutrients, and also makes the products available. The new texture and taste make it a new leisure product that is convenient to eat. The above new drying technologies have their own characteristics, and their adaptability is different when applied to different raw materials, especially for lotus seeds, which are unique raw materials that need to maintain their intact form. In this study, a variety of drying methods were used to dry and compare lotus seeds, which provided a reference for the development of new processing techniques for lotus seeds.