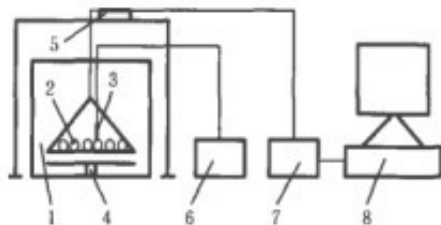


Microwave drying of wet starch from horseshoe

ABSTRACT: The effects of different power on moisture content and quality of wet starch from horseshoe during microwave drying were studied. The results showed that the microwave drying curve of horseshoe starch showed typical characteristics of fruit and vegetable drying curve. The moisture content of horseshoe starch decreased rapidly with the prolongation of microwave drying equipment.

With the prolongation of [microwave drying equipment](#) time, the whiteness and acidity of horseshoe starch showed an upward trend, while the iodine blue value decreased first and then increased, and the viscosity decreased. In a certain range of microwave power, the smaller the microwave power, the slower the drying rate, the lower the acidity, the bigger the iodine blue value and the viscosity, the higher the whiteness, but not significant.

Key words: [microwave drying horseshoe](#), microwave drying, quality



Horseshoe, also known as water chestnut, Chinese chestnut, konjac, Nutzi, Tongtiancao, is a shallow perennial herb of Cyperaceae and water chestnut. Our country now has more than 500,000 mu of horseshoe planting area. The production of horseshoe accounts for 95% of the world's total output, which is more than 800,000 tons per year, and 70% of the production is in northeastern Guangxi. In production, according to the composition and use of horseshoe, horseshoe is divided into powder horseshoe and fruit horseshoe.

The powder horseshoe contains a large amount of starch, oligosaccharides and monosaccharides, accounting for more than 86% of the dry weight. In addition, horseshoe is rich in vitamins, plant proteins, phosphorus and so on. It can be used as food adhesive, thickener, stabilizer, suspension agent and modifier. It can also be used as raw materials and auxiliary materials for industrial processing such as brewing, pharmaceuticals and modified starch. It can also be used as a granulating agent for improving some extruded food.

At present, in the process of dehydration and drying of horseshoe starch, most processing enterprises produce heat by burning wood and coal, heating air to realize the drying of horseshoe starch, and even a few enterprises still realize the drying of horseshoe wet starch by traditional natural drying. This production method is not only inefficient, but also difficult to meet the requirements of hygienic indicators, which further affects the drying of horseshoe starch. The quality of products, and coal combustion will cause serious environmental protection pressure.

Microwave drying is a kind of heating method that uses microwave as heat source and heating materials from inside and outside. It has unique heating characteristics, such as strong penetration, selective heating, small thermal inertia, fast drying speed, high thermal efficiency, high quality of products after drying, clean production meeting the requirements of environmental protection and easy to realize automatic control. Therefore, it should be applied in agricultural products processing and food industry. It is used more and more widely.

In the past ten years, there have been many studies on microwave drying of agricultural products at home and abroad. Microwave drying has been applied in the fields of Bighead carp, tilapia fillet, chili, lettuce, asparagus, okra, ginkgo pine pollen and chestnut starch, but it has not been studied and applied in the drying of horseshoe wet starch. In this paper, the drying curves and quality changes of horseshoe starch under different microwave power were studied, in order to provide theoretical basis for the application and popularization of microwave drying technology of horseshoe starch.