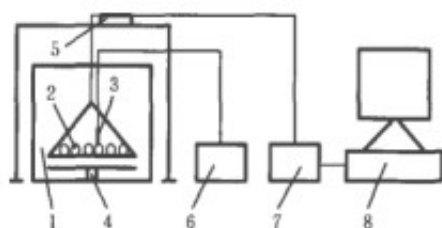


Drying rule and process optimization of microwave dried pumpkin slices

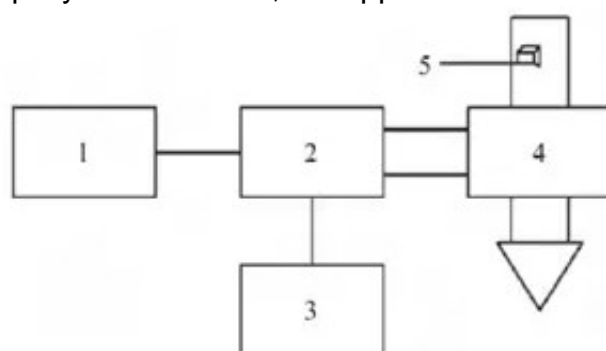


Abstract: Microwave drying of pumpkin slices was carried out in the experiment of dehydration and power consumption. The water loss characteristics and power consumption characteristics of [microwave drying equipment](#) were obtained, and the drying model of pumpkin slices was established. Quadratic orthogonal regression tests of four factors and four indexes were carried out, and the indexes (appearance quality, rehydration coefficient, precipitation rate per unit time) were obtained. The regression equation of unit power consumption is used to optimize the targets by non-linear programming, and the optimal combination of transmitting power, slice thickness, pre-period time and slow-down time of each objective function is obtained. The significance analysis and comprehensive optimization of the four factors affecting the four indexes are carried out, and the optimal combination of parameters is put forward.

Key words: [microwave drying pumpkin](#); characteristics; Technology

Quote

Microwave drying originated in 1940s and was not applied abroad until 60s. Microwave drying has many unique advantages, such as fast drying speed, high thermal efficiency, uniform heating, pollution-free and non-destructive to the nutritional components of food, which makes it develop rapidly. Since 1970s, the application of microwave drying abroad has continued to



expand.

At present, microwave drying has been widely used in light industry, food industry, agriculture and agricultural products processing abroad. Because of the selective heating characteristics of microwave water, water-containing substances such as grain, oil crops, tea, silkworm cocoon, wood, paper and tobacco can be dried by microwave. The application of microwave drying technology in China began in the early 1970s, and has been applied in light industry, chemical

industry and agricultural products processing, which is a promising technology.

At the same time, after more than 30 years of development, China has been fully able to localize microwave heating equipment, the life and quality of magnetron has been greatly improved, the production technology of the whole machine has passed the customs, and can be exported to foreign countries. Relatively speaking, the research of microwave drying lags behind. Therefore, only by speeding up the pace of research and development, can microwave energy be achieved. The application will achieve greater economic and social benefits.

In China, many scholars and experts have carried out experimental studies on microwave drying of mushrooms, preserved fruits and paddy. However, the drying law and process optimization of materials need to be further studied and explored. Pumpkins are rich in nutrition and have high practical value. In this paper, microwave drying of pumpkins is carried out to determine the microwave drying characteristics, rules and characteristics of microwave drying of pumpkins. The technology provides reference for future production.