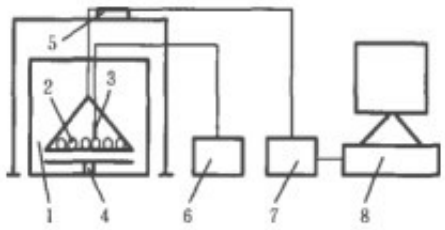
Study on Microwave Drying Technology of Preserved Ginger Fruit with Brown Sugar

ABSTRACT: The parameters of microwave drying equipment for brown sugar preserved ginger were preliminarily studied, which could provide reference for the development of ginger products, the full maintenance of nutritional and health value of products, the enrichment of ginger products and the application of microwave technology in industrialization.



The effects of different drying conditions on the dehydration rate and sensory quality of preserved ginger fruits with brown sugar were studied by single factor and orthogonal experiments. The optimum microwave drying parameters of preserved ginger fruits with brown sugar were obtained as follows: intermittent drying method, microwave power 320 W, loading 90 g and drying time 6 min. At this time, the sensory quality of the product samples obtained was better, showing translucency and translucency. It has mild puffing, no coking, uniform color, luster, full texture, toughness, pure taste, moderate spicy taste of ginger and fragrance of brown sugar.

Key words: brown sugar; ginger microwave drying; preserved fruit; microwave drying process parameters

Ginger is the rhizome of Ginger, an important cultivated plant in tropical and subtropical areas. It is widely cultivated in the central, southeastern and southwestern provinces of China, and is a widely used medicinal and edible plant.

The chemical composition of ginger is complex. More than one hundred chemical constituents have been found in ginger, which contains a small amount of volatile oil, fat oil, acridin, resin, protein, vitamins, pentosan, starch and minerals. Among them, starch content is the most abundant, accounting for 40%-60% of ginger dry weight.

Ginger is the fresh rhizome of ginger. It tastes pungent and slightly warm. It belongs to the

lungs, spleen, stomach and meridians. It can relieve cold, stop vomiting by warming and relieve phlegm and cough. It is good for expanding blood vessels, accelerating blood circulation, reducing blood cholesterol, inhibiting gallstones, diluting blood, preventing blood clots, arteriosclerosis and coronary heart disease, preventing motion sickness such as seasickness, carsickness and airsickness, stimulating gastric juice secretion, promoting intestinal peristalsis, enhancing digestive capacity, regulating physiological function, enhancing body vitality and improving immune capacity. Years of life, because gingerol can inhibit lipid peroxidation, with anti-aging, prevent the formation of senile plaque function. Ginger also has some antibiotic effects, especially against Salmonella.

Ginger preserved fruit is similar to sugar and ginger tablets. It is a common ginger sugar product. It can be used as a snack food and has a certain pharmacological effect. Sugar and ginger products can improve the spicy degree of ginger, which is more acceptable and broad-spectrum.

Sugar and ginger tablets produced by traditional technology use sugar as sweetener. Because of high osmotic pressure, they are full and flexible, but the products are prone to dark yellow and SO2 exceeding the standard.

Brown sugar is a kind of functional sugar, which is the best combination of raw ginger products. The composition and content of brown sugar and white sugar are different. Besides the nutritional components of sugar, brown sugar is also rich in vitamins and minerals. If the sweetener is replaced by brown sugar, it is produced by traditional technology, and the sugar permeation is not good. The resulting ginger tablets are shrunken, dim and uneven in color. Therefore, vacuum sugar permeation is adopted, but the drying technology of ginger tablets with brown sugar has not been studied at present.

Microwave drying has the unique advantages of uniform heating, fast drying speed, killing fungi and bacteria, and high energy utilization efficiency. Especially suitable for the drying of materials with low moisture content (less than 20%); while hot air drying can effectively discharge the free moisture on the surface of materials, but it is difficult to remove the internal moisture of materials in the later period. In recent years, the wide application of microwave drying in the field of food drying mainly concentrates on the drying of grain, oil crops, tea and fruits and vegetables.

Although the application in preserved fruits processing has also been concerned, there are few reports about it. At present, the drying methods of candied ginger slices and other preserved fruits are still based on traditional heating, hot air drying or sun drying. There are some shortcomings such as long drying time, high energy consumption, unstable color and low production efficiency. Microwave drying can solve these problems better.

This experiment was designed on the basis of previous research on different preserved fruits processing and functional characteristics of ginger. In view of the blank of the research on the drying technology of preserved ginger fruits with brown sugar, this experiment also adopted some characteristics different from the traditional processing of ginger slices. On the basis of using brown sugar to process ginger and drying with microwave, the effects of drying methods, microwave power, loading and drying time on the drying effect were compared in order to obtain

microwave drying in the processing technology of ginger slices with brown sugar. The best way.