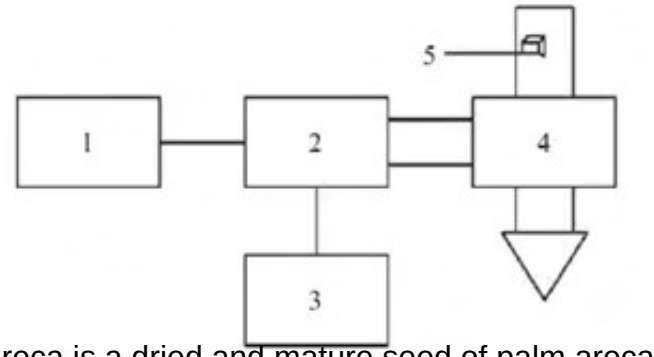
Effects of hot air and microwave drying on drying characteristics and quality of Areca

Absrtact: In order to explore the characteristics of microwave drying areca nut and its effect on quality, the drying curve and rehydration curve of areca nut were studied with fresh areca nut as test sample and hot air drying as control, and the effects of different drying methods on total acid, total sugar and polyphenol content of areca nut were compared.

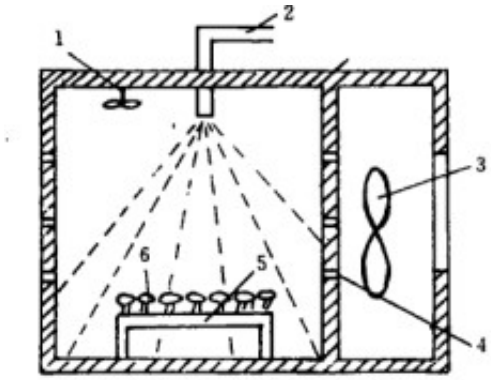
The results showed that the rehydration quality of P10 low-power microwave drying equipment was better than that of P30 high-power microwave drying equipment, and the nutrients were well preserved. Therefore, P10 low-power microwave drying could replace hot air drying method for betel nut in the future. The research results could provide theory and Practice for industrial microwave drying of betel nut. Practice guidance.

Key words: areca; hot air drying; microwave drying areca; drying characteristics; rehydration characteristics; quality

Introduction



Areca is a dried and mature seed of palm areca, belonging to areca, also known as "Ren", "bin men" and "Lang Yu". Hainan is a major province of areca in China. Areca industry is the first pillar industry in the province. Areca catechu is one of the four southern medicines in China. It has been mostly used as medicine since ancient times. However, at present, it is mainly processed into dried Areca catechu fruits in Hainan and then transported to Hunan for further processing. The dried areca nut in Hainan is processed by the traditional hot air drying method. The dried areca nut processed by this method is hard and hard. It is harmful to consumers'mouth when chewing, and easy to cause oral lesions.



Microwave drying can make the material heated uniformly, the drying rate is fast and stable, and has little influence on the structure of the material. By comparing the microwave drying and hot air drying characteristics of areca nut and the effects of different drying methods on chewing characteristics and nutritional quality of areca nut, this study provides theoretical and practical basis for industrialized microwave drying of areca nut.

The results show that the drying time of betel nut can be shortened by low power microwave drying (microwave output power 80W) compared with traditional hot air drying. The rehydration rate of betel nut is 65%, and the rehydration rate is good. It is easy to soften in later processing and guarantees the chewing taste of the product. In addition, the nutrient loss of areca nut dried by low power microwave was less, and the total sugar and acid content of areca nut pulp after drying were respectively higher than those after drying.

At the same time, the content of polyphenols can reach 3.48 mg/g, which is significantly different from the traditional hot air drying of betel nut at 3.27 mg/g and retains the active ingredients. Therefore, low power microwave drying can provide reference for the improvement of drying process of areca in Hainan.