Study on Microwave Drying Technology of Rapeseed Flowers

ABSTRACT: The application of rapeseed flowers has attracted more and more attention. However, little research has been done on the drying of rapeseed flowers, especially the microwave drying equipment of rapeseed flowers. The effects of power density on the drying speed and quality of rapeseed flower were studied. It was concluded that microwave drying had faster drying speed, better quality and brighter color than hot air drying. Because rapeseed petals are small, the power density of microwave drying is much higher than that of peony petals. The upper limit of power density is 31.4 W/g.

Key words: rapeseed microwave drying; power density; drying quality; color; power density upper limit

Rapeseed is one of the main oil crops in China, which is widely planted throughout the country. Every year in March and April, rapeseed flowers blossom. Beautiful scenery not only forms excellent tourism resources, but also provides a large number of raw materials for food, medical and other industries.

Rapeseed flower is rich in polysaccharides, carbohydrates, vitamins, amino acids and trace elements such as calcium, iron, zinc and selenium. Among them, pollen polysaccharide has a strong immune enhancement, has a significant anti-cancer effect, trace element selenium has anti-aging effect. Therefore, rapeseed flower has high nutritional value and is a good health food, which has been paid more and more attention.

However, rapeseed flowers have short flowering period, high water content and small petals. Fresh rapeseed flowers are very vulnerable to mildew and deterioration if there is no proper treatment after harvesting. Low temperature refrigeration consumes energy and occupies a large area, so it is not easy to transport. Therefore, it is particularly important to study the drying technology of rapeseed flowers.

At present, there are few studies on the drying technology of rapeseed flowers, especially the application of microwave drying technology to the drying of rapeseed flowers. There is no paper on this aspect. Microwave drying is fast, efficient, selective heating, easy to achieve automatic control, can be shut down at any time according to the actual production, especially suitable for seasonal agricultural products. Starting with microwave drying technology, this study provides a beneficial attempt for the drying of rapeseed flowers, especially for the microwave drying of rapeseed flowers.

The drying power of rape petals is much greater than that of peony petals. The reason is that rapeseed petals are much smaller than peony petals. They are laid flat in the material tray, with a larger stacking density, a smaller gap between petals and petals, and the effect of ventilation and air convection is not obvious. Therefore, rapeseed petals bear much more power.

When microwave drying, the energy distribution in the drying chamber can be determined by the radiation energy distribution of antenna petals, so the temperature measurement of rapeseed flower only needs to measure a certain position, so the highest temperature of this heating can be obtained.