

# Study on Optimization of microwave drying technology of shallot

Abstract: Fresh shallots were dried by [microwave drying equipment](#) in order to obtain high quality dry shallots. Through single factor and orthogonal test, the effects of quality, stacking thickness and microwave power on sensory quality and rehydration rate of dried onion were analyzed in order to find out the optimum drying process parameters.

The results showed that under the conditions of microwave power of 2 000 W, stacking thickness of 25 mm and mass of 130 g, the quality of dried onion was the best.

Key words: [onion microwave drying](#); process optimization; rehydration rate; sensory quality



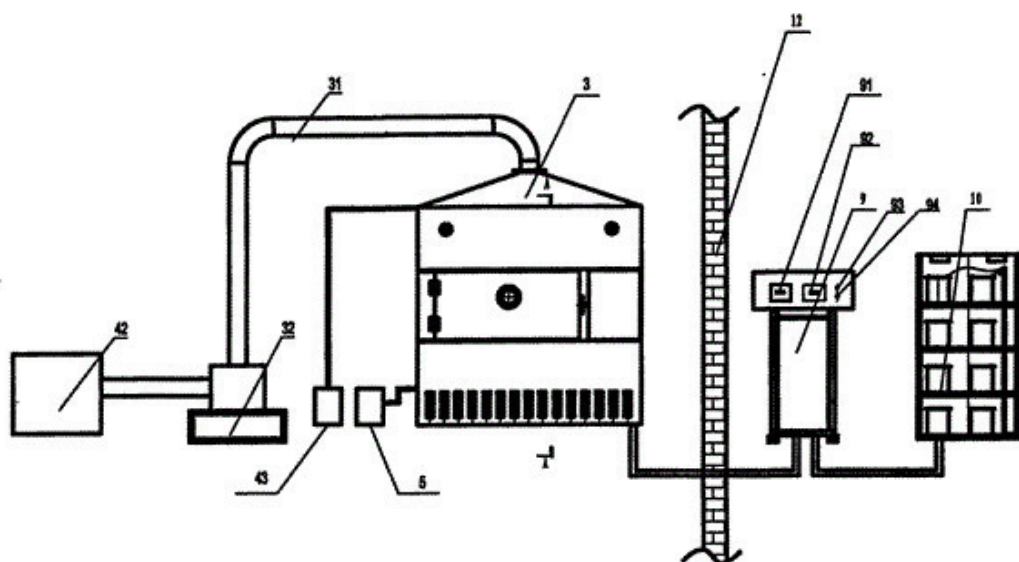
Onion is a kind of onion plant with aromatic odor growing in central Asia. It is a necessary ingredient and condiment in various convenient foods and dishes. Onion has a good physiological effect in human body. It is not only beneficial to digestion of intestine and stomach, but also has antipyretic effect.

Onion leaf is the key part of photosynthesis of onion, and it is also the main part that people eat. However, it is not easy to store for a long time because of its high water content, yellow leaves and decay. Even if it is kept fresh in a fresh-keeping cabinet, it is difficult to keep it for a long time.

In order to solve the problem of freshness preservation of onion, freeze-drying is one of the most efficient methods. Although freeze-drying technology solves the problem that onion is perishable and not easy to be preserved for a long time, this drying technology has high investment cost and is not easy to be widely popularized.

With the rapid development of national economy and technology, microwave drying technology has attracted much attention in the field of fruit and vegetable drying due to its advantages of pollution-free, high efficiency, energy-saving and environmental protection. In recent years, many researchers have done a lot of research on microwave drying technology of fruits and vegetables.

Zhou Xiaojian, Zhang Wenhui, Zhu Dequan, Han Tsinghua, Li Shengsheng, Zhou Wang, Zhou Weiwei, Jun Wang and other scholars have studied the microwave drying of different varieties of fruits and vegetables respectively. At the same time, many foreign scholars have also studied the microwave drying of grains and fruits and vegetables, and these studies have achieved certain results.



However, there are few reports about the use of microwave drying technology to drying onions. Therefore, this paper uses microwave drying technology to study the drying process parameters of onions, and analyze the effects of stacking thickness, microwave power, quality and other factors on the rehydration rate and sensory quality of onions. Through experimental observation and data analysis, the optimum combination of microwave drying process parameters for onion was determined, which provided a favorable scientific basis for the application of microwave drying technology in the field of agricultural products drying.

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