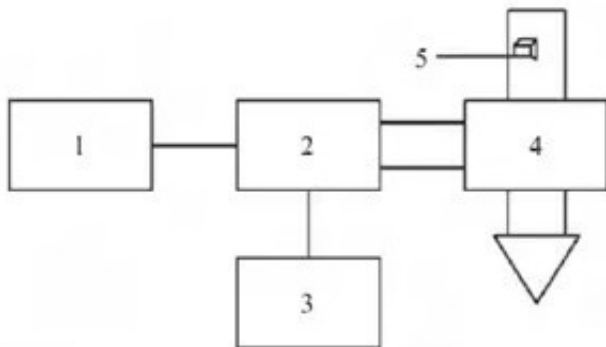


Effect of drying methods on quality characteristics of selenium-rich honeysuckle

Abstract: Hot air, hot air after steaming, infrared, [microwave drying equipment](#) and vacuum freezing were used to dry honeysuckle rich in selenium in Boshan, Shandong Province. The effects of different drying methods on sensory quality, dissolved matter, nutrients, active ingredients and selenium content of honeysuckle were compared.



The results showed that the sensory quality of honeysuckle dried by vacuum freeze-drying and hot-air drying after steaming had no obvious shrinkage, good color retention and poor sensory quality of hot-air drying and infrared drying; in nutrient composition, vacuum freeze-drying was significantly higher than other drying methods, followed by hot-air drying after steaming; in active ingredients, microwave drying technology was the best, followed by vacuum freeze-drying and infrared drying. The highest content of selenium in vacuum freeze-drying samples was 0.25 ug/g, followed by hot-air drying after steaming and infrared drying, which were 0.19 and 0.18 ug/g, respectively. The lowest content of selenium in microwave drying and drying samples was 0.17 ug/g.

Key words: [honeysuckle microwave drying](#); drying method; quality characteristics



Selenium is one of the essential trace elements in human body, which is closely related to human health. It has many physiological functions, such as anti-oxidation, anti-aging, improving human immunity, cancer prevention and anti-cancer. Selenium deficiency will lead to Keshan disease, Kashin-Beck disease and other diseases, and the human body can not store selenium for a long time. It must be continuously obtained from the diet to meet the body's needs for selenium.

Due to the lack of selenium in soil in most areas of China, selenium-rich agricultural products are being actively developed to ensure the intake of selenium in selenium-deficient areas. At present, there are more than 30 kinds of selenium-rich agricultural products on the market, including selenium-rich rice, selenium-rich vegetables, selenium-rich edible fungi and selenium-rich fruits.

Honeysuckle is a *Lonicera japonica* plant. It is a traditional Chinese medicine. Its main components include flavonoids, organic acids, triterpenes and inorganic salts. It has many physiological functions such as bacteriostasis, antiviral, anti-cancer, anti-inflammatory and antipyretic.

The industrialization of selenium-rich honeysuckle and the construction of intensive processing projects are not only the need for traditional Chinese medicine to enter the world, but also the need for promoting the entry of honeysuckle products into the international market. 26 kinds of agricultural products including honeysuckle were selected as the first selenium-enriched experimental varieties in Boshan Selenium-enriched Experimental and Demonstration Park of Shandong Province to promote the development of organic Selenium-enriched agriculture.

At present, the research of Se-enriched *Lonicera japonica* is mainly focused on cultivation management and technical specifications. There is no literature report on the quality changes, especially the loss of active ingredients and Se in the processing of Se-enriched *Lonicera japonica*. The moisture content of fresh honeysuckle is as high as 75%. It should be processed as soon as possible after harvest to prevent mildew, browning and loss of active ingredients during transportation and storage.

Drying is an effective initial processing method. The drying technology of Se-enriched *Lonicera japonica* is not only beneficial to retain more active ingredients, but also to maintain higher Se content and sensory quality.

In this study, five drying technologies, hot air drying, hot air drying after steaming, infrared drying, microwave drying and vacuum freeze drying, were selected to dry the Se-rich honeysuckle in Boshan, Shandong Province. The quality characteristics of the treated honeysuckle were evaluated and compared. The experimental results can provide some theoretical data for the actual processing and production of Se-rich honeysuckle.