

Effects of two microwave drying methods on the quality of *Prunus mume*

Objective To study the effects of two microwave drying methods on the contents of alcohol-soluble extracts, chlorogenic acid and total flavonoids in *Prunus mume*, and to provide basis for the establishment of new processing methods in *Prunus mume*.

Methods Fresh green calyx plum was processed by [microwave drying equipment](#) and microwave drying after "killing green" method. Alcohol-soluble extracts, chlorogenic acid and total flavonoids were used as evaluation indexes. The effects of different microwave drying methods on the quality of green calyx plum were investigated by determining its content, and compared with the samples processed by local technology.

Results There were significant differences between the two microwave drying methods on the quality of *Prunus mume*. Among them, the microwave drying method after "killing green" was better. The finished calyx was yellow-green in color and had better appearance, and the content of chlorogenic acid and total flavonoids was higher than that of microwave direct drying.

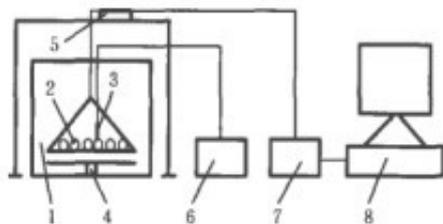
The optimum microwave drying process was as follows: Put green calyx plum in microwave tray, film is sealed, microwave drying at 90 °C for 2 minutes, take off the film, air it for 2 minutes, spread it on the microwave tray at 50 °C and microwave drying for 10 minutes.

Conclusion Different microwave drying methods have great influence on the content of active ingredients in *Prunus mume*.

[Key words] [Microwave drying of *Prunus calycifolia*](#); Cyanide; Chlorogenic acid; Total Flavonoids



Plum calyx is a dry flower bud of Rosaceae Plum. It has the effects of depression, phlegm elimination and detoxification. It is mainly produced in Anhui, Zhejiang and Hubei provinces. Plum blossom mainly contains volatile oil, flavonoids, ester glycosides, phenolic glycosides and other chemical constituents. Among them, phenylpropanoids represented by chlorogenic acid and flavonoids represented by rutin have higher content.



Literature studies have shown that total flavonoid extracts from Plum Blossom can scavenge free radicals and interfere with melanin synthesis by inhibiting tyrosinase activity, thus alleviating skin pigmentation. In addition, flavonoids can inhibit aldose reductase and platelet aggregation. Chlorogenic acid has antimicrobial, antiviral, anti-inflammatory, anti-cancer, cardiovascular protection, lipid and glucose reduction, immune regulation and anti-platelet aggregation. Oxidation, anti-ultraviolet and anti-radiation effects.

According to the investigation of producing area, the main method of drying green calyx plum is air blast drying. The process from fresh flowers to dried flowers usually takes 1 to 2 days, and farmers process them separately, resulting in uneven quality of products. Traditional heating and drying is to make the surface of the object heated first, and then through heat conduction, so that the internal temperature rises, water dispersal is slow, easy to cause uneven heating of the material.

Microwave drying, because of its special heating method, belongs to penetrating heating, which can make the material dry and heat evenly in a short time, so as to improve the color and quality of the product. Therefore, microwave drying has incomparable advantages over traditional drying methods. In addition, microwave is a pollution-free energy source. The drying process is easy to automate, efficient, environmentally friendly and energy-saving, and suitable for large-scale production.

In this experiment, two microwave drying methods were used to process *Prunus mume*. Alcohol-soluble extracts, chlorogenic acid and total flavonoids were taken as evaluation indexes, and combined with appearance characteristics, comprehensive quality evaluation was carried out. The results were compared with the collected samples of local technology, in order to provide technical basis for the optimization of microwave drying technology and industrialization of *Prunus mume*.