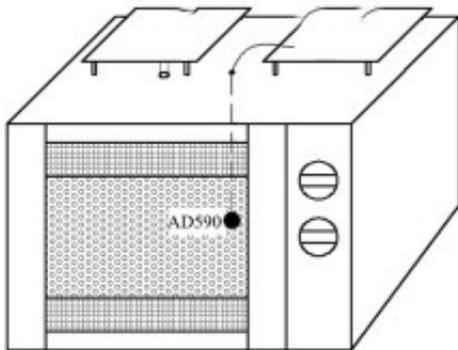


# Effect of Microwave Drying on Volatile Oil Content of Green Pepper and Process Optimization



Schematic diagram of microwave drying temperature control system

Abstract: The effect of microwave power, deposition amount and intermittent microwave time on the volatile oil content of microwave dried safflower was studied by steam-enzymed kiwi pepper. On the basis of the single factor experiment, the volatile oil content of the green pepper was used as the response value. According to the design principle of the Box-Behnken center combination test, the optimized experimental design was carried out, and the microwave drying regression model of the green pepper was established.

The results showed that the optimization conditions of the [microwave drying equipment](#) for the green pepper were microwave power 354.26 W, deposition amount 211.93 g, microwave time 51.4 s. Under this condition, the volatile oil content of the green pepper was 0.0877485 mL/g, microwave. The error between the dry verification experiment result and the optimization result is 0.85%, and the optimization result is reliable.

Key words: [green pepper microwave drying](#); volatile oil

Prickly ash is native to China and belongs to the genus *Zanthoxylum*. It is now found in around the world and has about 250 species. It has the functions of killing insects and relieving itching, removing wind and dehumidification, and relieving pain in warming. There are many components in the volatile oil of *Zanthoxylum bungeanum*, which have strong inhibitory effects on parasites, bacilli and fungi; it can scavenge hydroxyl radicals and have anti-oxidation effects. Therefore, the volatile oil content of *Zanthoxylum bungeanum* has become one of the important evaluation indexes of *Zanthoxylum bungeanum*.

The hot volatile oil is easily lost during the drying process. Therefore, it is very important to study the volatile oil retention of the dried pepper in the drying process. At present, dried pepper mainly has hot air drying, microwave drying, microwave vacuum drying and the like. Microwave drying has the characteristics of uniform heating, high speed, high efficiency and easy industrialization and application. It has application value in the industrial drying production of pepper.

At present, the research on microwave drying of pepper is mainly focused on mathematical model, microwave drying characteristics and the effect of microwave drying on quality. However, the effect of microwave drying conditions on the volatile oil content of *Zanthoxylum bungeanum* has not been reported.

This experiment is to study the effect of microwave drying conditions on the volatile oil content of green pepper, and carry out optimization experiments to provide a theoretical basis for the industrial application of green pepper microwave drying technology.

In this study, the effect of microwave drying conditions on the volatile oil content was analyzed by single factor experiment. It was found that the microwave drying condition had a great influence on the volatile oil content of dried pepper. Further, using Design-Expert8.0.6 software to optimize the optimization process of pepper microwave drying, the optimized condition of the index is microwave work.

The rate was 354.26 W, the deposition amount was 211.93 g, and the intermittent microwave time was 51.4 s. Under this condition, the volatile oil content was 0.0877485 mL/g. This study can provide a theoretical basis for the industrial application of microwave dried green pepper. However, the mechanism of the influence of microwave drying conditions on the volatile oil content needs further study.