

Effect of Microwave Drying on Volatile Oil Content of *Zanthoxylum bungeanum*

ABSTRACT: The effects of [microwave drying equipment](#), spreading amount and intermittent microwave time on volatile oil content of *Zanthoxylum bungeanum* L. after steam deactivation were studied.

On the basis of single factor experiment and Box Behnken central combination experiment design principle, the optimum experiment design was carried out with the volatile oil content of *Zanthoxylum bungeanum* as the response value, and the regression model of microwave drying of *Zanthoxylum bungeanum* was established.

The results showed that the optimum conditions for microwave drying of green pepper were microwave power 354.26W, spreading amount 211.93g and microwave time 51.4s. Under this condition, the volatile oil content of green pepper was 0.0877485mL/g after drying, and the error between the experimental results and the optimum results was 0.85%. The optimum results were reliable.

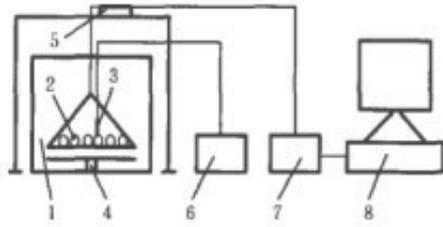
Key words: [green pepper microwave drying](#); volatile oil



Zanthoxylum bungeanum, native to China, belongs to the genus *Zanthoxylum* of Rutaceae. It is now distributed all over the world with about 250 species. It has the functions of killing insects, relieving itching, dispelling wind and dampness, and warming and stopping pain.

The volatile oil of *Zanthoxylum bungeanum* contains many components, which have strong inhibitory effects on parasites, bacteria and fungi. It can scavenge hydroxyl radicals and has antioxidant effects. Therefore, the content of volatile oil of *Zanthoxylum bungeanum* has become one of the important evaluation indexes of *Zanthoxylum bungeanum*.

The volatile oil of green pepper is easily lost when it is heated in the drying process, so it is very important to study the volatile oil retention of fresh pepper in the drying process for the quality of dry pepper. At present, pepper drying mainly includes hot air drying, microwave drying, microwave vacuum drying and so on.



Microwave drying has the characteristics of uniform heating, fast speed, high efficiency and easy to industrialize and apply. It has application value in industrial drying production of *Zanthoxylum bungeanum*. At present, the research on microwave drying of *Zanthoxylum bungeanum* mainly focuses 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.

In order to provide theoretical basis for industrial application of microwave drying technology of green pepper, the effects of microwave drying conditions on volatile oil content of green pepper were studied and optimized.