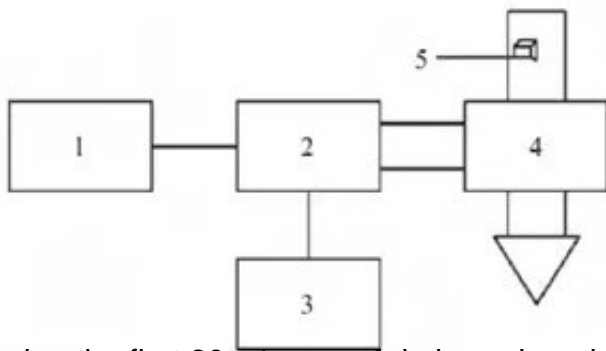


Effect of Microwave Drying on Quality Characteristics of Sesame

ABSTRACT: The effects of microwave drying temperature and drying time on moisture content, germination rate, acid value and peroxide value of sesame oil were studied. The volatile components of sesame treated were studied by solid phase microextraction-gas chromatography-mass spectrometry (SPME-GC-MS).

The results showed that the moisture content of sesame decreased rapidly within the first 20 minutes of drying at temperatures below 90 (?) C. With the prolongation of time over 20 minutes, the water loss rate of sesame gradually slowed down. [Microwave drying equipment](#) had a destructive effect on the germination rate of sesame.



During the first 20 minutes of drying, when the temperature was lower than 80 C, the effect of drying temperature on acid value and peroxide value of sesame oil was not significant ($p > 0.05$), but when the temperature was higher than 80 C, the acid value and peroxide value of sesame oil were significantly affected (p



Key words: [Sesame microwave drying](#), solid phase microextraction, gas chromatography-mass spectrometry, volatile components

Sesame is rich in nutrients and contains more than 50% oil. Besides fat and protein, it also contains lignans such as sesame phenol and sesamin, and unsaturated fatty acids such as oleic acid and linoleic acid, as well as vitamins such as VA, VB, VC, VD, VE and VK. Sesame is known as a food tonic and is also known as "Queen of Oil".

Sesame seed coat is crisp and thin, cotyledon is delicate, moisture content of newly harvested sesame is high, moisture absorption is easy but heat dissipation is not easy in the storage process, thus heating, rancidity and mildew must be quickly reduced through drying, sesame moisture must be effectively improved to ensure the quality of sesame.

Because of the consistency of heat transfer direction and vapor pressure migration direction in microwave drying, the interfacial layer of material surface and the moisture content of material interior vaporize simultaneously. Compared with traditional drying methods (hot air, fluidized bed drying, etc.), it has the characteristics of saving time and high efficiency. It has been applied in the field of food and oil drying such as rapeseed and peanut, showing good drying quality and efficiency, but the application of microwave drying in sesame drying is rarely reported in the literature.

Sesame seed coat is thin and permeable. Microwave drying can improve the drying efficiency and produce special volatile odor in the process of sesame drying. Therefore, this study will take the germination rate, moisture content, acid value, peroxide value and volatile odor components of sesame oil as the index to study the effect of microwave drying conditions on the quality of sesame, so as to provide theoretical and applied reference for the application of microwave drying in sesame drying.