

Thesis Title Effects of Dielectric Heating on Quantity and Quality of Oil from
Perilla frutescens Seeds

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ABSTRACT

Dielectric heating is the generated heat due to the vibration of dipolar molecule surrounded of electromagnetic field. This study, microwave was used as the representative of electromagnetic. The controllable temperature microwave oven was used in comparison to hot air oven at the temperatures of 40, 50 and 60 °C. Sesame (*Perilla frutescens*) seeds was the sample to study the effects of dielectric heating. The moisture content of the sample was reduced from 23 to 7% (wb). The extracted oil from dried product was analyzed. The water was removed after heating process by different techniques. The result was determined for drying time, seeds properties (final moisture content, water activity and color), extracted oil content, physical properties (viscosity, specific gravity and color) and chemical properties (iodine number, saponification value, acidity value, volatile (%), peroxide value and beta-carotene) of extracted oil. The results showed that the dielectric heating decreased drying time but increased oil content rather than hot air drying. In addition, the dielectric heating technique provided less influenced on physical the properties of sesame seeds and reduced physical and chemical changes compared to hot air drying at the same temperature.

Key words: *Perilla frutescens* seeds, drying, oil properties

