

Effects of drying methods on the characteristics of rambutan (*nephelium lappaceum* L.) seed fat: An optimisation approach

ABSTRACT

The pre-treatment of oilseeds prior to extraction process may affect oil yield and quality. The aim of this study was to investigate the effects of two drying methods on rambutan seed fat (RSF) yield and their oxidative stability, physicochemical properties, and crystal morphology. Response surface methodology (RSM) was used in the optimisation and investigation of the effects of three process conditions: seed weight (g), extraction time (min), and solvent volume (ml) on RSF yield. Under optimal conditions, a maximum RSF yield of 44.14% was obtained. The differences between RSF pre-treated with oven-drying and RSF with freeze-drying methods in slip melting point (38.3°C to 39.7°C), free fatty acid (3.13 to 3.50 mg KOH/g fat), peroxide value (1.04 to 1.67 meq of O₂/kg of fat), p-anisidine value (1.10 to 1.56), and total oxidation value (4.21 to 5.67) were significant ($p < 0.05$). Both fats showed needle-like shaped crystals. Our results provide useful information in the pre-treatment of RSF, which has potential to be used as blending component with palm oil for cocoa butter equivalent formulation in chocolate and confectionery industries.