

Effect of solvent pre-treatment on the physicochemical, thermal profiles and morphological behavior of mangifera pajang seed fat

ABSTRACT

In this work, the effect of solvent pre-treatment (hexane, petroleum ether and ethanol) on the physicochemical, thermal and morphology behavior of Mangifera pajang seed fat (MPSF) were investigated. The results showed that the yield, physicochemical, and crystalline structures of the MPSF were significantly ($p < 0.05$) influenced by the extraction solvents. Hexane gave the highest fat yield (7.67%) with low unsaturation value (52.13 g iodine/g) compared with petroleum ether and ethanol. Hexane MPSF also had low oxidation rate (peroxide value of 1.1 mEq/g). Both non-stabilized and stabilized hexane MPSF showed a single melting endothermic peak at high temperature with onset, maximum peak and offset temperature of 16.23 °C-18.21 °C, 28.22 °C-31.25 °C and 34.85 °C-39.58 °C, respectively. Hexane MPSF crystallized rapidly at high temperature with single maximum peak starting at 16.51 °C-16.68 °C and ending at 0.23 °C-1.13 °C. In comparison with ethanol extract, hexane MPSF demonstrated a compact crystalline structure with a large densely packed center. MPSF exhibited similar melting and morphological behavior to mango kernel fat and commercial cocoa butter. These results suggested that hexane was the best solvent for the extraction of MPSF. This fat also has the potential to be applied as a cocoa butter alternative fat.