

Fatty-Acid Profiles, Triacylglycerol Compositions, and Crystalline Structures of Bambangan-Seed Fat Extracted Using Different Solvents

ABSTRACT

Currently, research on the bambangan-fruit seed has become interesting because of its potential application as a cocoa butter alternative. This work aimed to determine the changes in the quality of the extracted bambangan-seed fat (BSF) obtained using hexane, petroleum ether, and ethanol. The extraction solvents affected the total fat content (TFC), physicochemical properties, fatty-acid profile, triacylglycerol composition, and crystalline structure of the extracted BSF. The results showed that BSF has a high content of 1,3-distreoyl-2-oleoyl-glycerol (SOS). The solvent-type significantly ($p < 0.05$) impacts the stearic and oleic acids of the extracts, resulting in apparent changes in the high-melting symmetrical triacylglycerols, such as SOS. Petroleum-ether-extracted BSF has a high stearic acid of 33.40%, followed by that of hexane- and ethanol-extracted BSF at 29.29% and 27.84%, respectively. Moreover, the spherulitic microstructure with needle-like crystals of the extracts also ranges from 30 to 70 μm in diameter. Hexane-extracted BSF illustrated a less-dense, spherulitic, crystalline microstructure with a less-granular centre than those extracted using the other solvents. The results suggested that the quality of the extracted BSF obtained from the nonpolar solvents of hexane and petroleum ether are better than that extracted using ethanol.