



UMS  
UNIVERSITI MALAYSIA SABAH



ICFSN2022

INTERNATIONAL CONFERENCE ON FOOD SCIENCE AND NUTRITION 2022  
"Future Food: Emerging Trends, Health and Diversity"

## Fatty Acid, Triacylglycerol Compositions, and Crystalline Structure of Bambangan (*Mangifera pajang*) Seed Fat Extracted Using Different Solvent

Norazlina, M.R.<sup>1</sup>, Hasmadi, M.<sup>1</sup> and Jahurul, M.H.A.<sup>2</sup>

<sup>1</sup>Faculty of Food Science and Nutrition, University Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia, norazlina.ridhwan@gmail.com, idamsah@ums.edu.my

<sup>2</sup>Department of Agriculture, School of Agriculture, University of Arkansas, 1200 North University Drive, Mail Slot 4913, Pine Bluff, AR 7160, jahurulhaque@yahoo.com

**Abstract:** Nowadays, research on the bambangan fruit waste (seed) has become an interest 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 from hexane, petroleum ether, and ethanol. The total fat content (TFC), physicochemical properties, fatty acid profiles, triacylglycerol composition, and crystalline structure of the extracted BSF were all affected by the extraction solvents. The results showed that BSF has a high content of 1,3-distearoyl-2-oleoyl-glycerol (SOS) of 30.22 – 44.29 %. The solvent type significantly ( $p < 0.05$ ) impacts the stearic and oleic acids of the extracts, resulting in the apparent changes in the high melting symmetrical triacylglycerols such as the SOS. Petroleum ether extracted BSF has high stearic acid of 33.40 %, followed by the hexane and ethanol extracted BSF of 29.29 % and 27.84 % respectively. Moreover, the spherulitic microstructure with needle-like crystals of the extracts also ranging from 30 to 70  $\mu\text{m}$  diameters. Hexane extracted BSF illustrated a less dense spherulitic crystalline micro-structure with a less granular centre than those extracted using the other solvents. The results suggested that the quality of the extracted BSF obtained from non-polar solvent of hexane and petroleum ether is better than the polar solvent (ethanol).

**Keywords:** bambangan, extraction solvents, fatty acid, triacylglycerol, crystal micro-structure