

Effects of fractionation technique on triacylglycerols, melting and crystallisation and the polymorphic behavior of bambangan kernel fat as cocoa butter improver

ABSTRACT

Cocoa butter improver (CBI) is typically composed of high melting symmetrical triacylglycerols (TAGs) that aid in the hardness of chocolate products in tropical/subtropical regions. High-melting symmetrical TAG (1,3-di-stearoyl-2-oleoyl-glycerol, SOS) rich fats were produced by two-stage acetone fractionation. Different chromatographic and thermal techniques were used to determine TAGs, thermal properties, and polymorphic behavior of each bambangan kernel fat (BKF) fraction. The first (S-1) and second (S-2) stearins composed of 55.83% and 64.70% symmetrical SOS were the valuable CBIs produced from the fractionated BKF. The stearin fractions also melted and crystallised rapidly at high temperatures with one maximum peak starting at 20.30–21.74 °C and ending at 38.72–42.45 °C (melting), and another starting at 17.05–18.46 °C and ended at 5.63–8.20 °C (crystallisation). In comparison with pure BKF and commercial cocoa butter (CB), the stearins showed sharper melting curves and higher melting properties. The stearins also exhibited β -polymorphic form which was similar to that of CB. Results suggested that the stearins were suitable to be applied as CBI to improve the melting properties and the availability of confectionery products in tropical/subtropical countries.