Effect of fractional crystallization on composition and thermal properties of engkabang (Shorea macrophylla) seed fat and cocoa butter

ABSTRACT

The fractional crystallization behaviors of cocoa butter (CB) and enkabang fat (EF) in acetone were investigated. Melted samples of CB and EF were mixed separately with acetone in 1:2 a (w/v) ratio and partitioned into solid and liquid fractions under controlled temperature conditions. The isolated fractions were compared to their respective native samples with respect to various physico-chemical parameters using standard chemical methods as well as instrumental techniques such as gas liquid chromatography (GLC), reversed-phase high performance liquid chromatography (RP-HPLC), and differential scanning calorimetry (DSC). According to the results, partitioning of either CB or EF under solvent assisted crystallization conditions yielded a major solid and a minor liquid fraction. The solid and liquid fractions of both fats were found to display many similarities, but few differences with regard to their composition and thermal properties. While the solid fractions may be useful as a hard stock in hard margarine and cosmetic product formulation, the liquid fraction would be useful as an ingredient for food applications.

Keyword: Cocoa butter; Cocoa stearin; Engkabang fat; Fractional crystallization; Thermal analysis