

Physico-chemical properties of Moringa oleifera seed oil enzymatically interesterified with palm stearin and palm kernel oil and its potential application in food

ABSTRACT

Background: High oleic acid Moringa oleifera seed oil (MoO) has been rarely applied in food products due to the low melting point and lack of plasticity. Enzymatic interesterification (EIE) of MoO with palm stearin (PS) and palm kernel oil (PKO) could yield harder fat stocks that may impart desirable nutritional and physical properties. Results: Blends of MoO and PS or PKO were examined for triacylglycerol (TAG) composition, thermal properties and solid fat content (SFC). EIE caused rearrangement of TAGs, reduction of U3 and increase of U2 S in MoO/PS blends while reduction of U3 and S3 following increase of S2 U and U2 S in MoO/PKO blends (U, unsaturated and S, saturated fatty acids). SFC measurements revealed a wide range of plasticity, enhancements of spreadability, mouthfeel and cooling effect for interesterified MoO/PS, indicating the possible application of these blends in margarines. However, interesterified MoO/PKO was not suitable in margarine application, while ice-cream may be formulated from these blends. A soft margarine formulated from MoO/PS 70:30 revealed high oxidative stability during 8 weeks storage with no significant changes in peroxide and p-anisidine values. Conclusion: EIE of fats with MoO allowed nutritional and oxidative stable plastic fats to be obtained, suitable for possible use in industrial food applications.

Keyword: Moringa oleifera seed oil; Enzymatic interesterification; Oleic acid; Palm kernel oil; Palm stearin; Plastic fats