

Enzymatic modification of flax seed oil and palm based blends in the preparation of table margarine formulation

ABSTRACT

Evaluation of ternary mixtures of palm stearin (PS), palm kernel oil (PKO) and flax seed oil (FS) for their suitability as base stocks for table margarine formulations were conducted. Transesterification of the oil blends was catalysed by Lipozyme IM lipase (Novozymes, Denmark) at 45 °C, 200 rpm for 6 h. The physical and chemical properties of the transesterified oil were evaluated by slip melting point (SMP), solid fat content (SFC), differential scanning calorimetry(DSC) and high performance liquid chromatography (HPLC). In comparison with non-transesterified products, the transesterified products reduced the SMP values between 12% and 20%. All transesterified blends gave no residual SFC at 35 °C. Transesterified PS:PKO:FS blend at 54:36:10 ratio had 32% SFC at 10 °C indicating that the products had good spreadability at refrigeration temperature. DSC and HPLC analysis showed that transesterification of PS:PKO:FS with Lipozyme IM lipase had significantly reduced the high melting glycerides of the blends. This is reflected in the SMP values and SFC profiles of transesterified blends.

Keyword: transesterification, slip melting point, solid fat content, heating and cooling thermogram, high melting glyceride