

## **Enzymatic interesterification on the physicochemical properties of *Moringa oleifera* seed oil blended with palm olein and virgin coconut oil**

### **ABSTRACT**

The enzymatic interesterification (IE) of palm olein (PO) and virgin coconut oil (VCO) with the high oleic acid (86%) *Moringa oleifera* seed oil (MoO) could yield a good source of oleic acid fat stock that may contain desirable nutritional and physical properties. Lipozyme RMIM resulted in different functionalities for the MoO/PO and MoO/VCO blends due to inherent changes in triacylglycerol (TAG) compositions which, in turn, led to different trends in DSC thermograms and solid fat contents (SFC). The enzymatic IE of MoO/VCO increased U2S and S2U (up to 20% medium and long chain, MLCT) while it decreased U3 (triunsaturated) and S3 (trisaturated) TAGs. The IE of the MoO/PO blends increased U2S and S3 (MMP, myristic, myristic, palmitic) and decreased S2U, resulting in a lowering of melting points and SFC for MoO/VCO, while showing an increase in them for MoO/PO. A 2.55% increase in S3 after 24 h MoO/PO 30:70 IE revealed a 6.5% harder oil at 10 °C which may imply a wider application compared to the original liquid oils. Novel MLCTs with improved nutritional and physical properties were generated in the MoO/VCO blends after IE due to the incorporation of oleic acid and medium chain fatty acids. MoO/PO 50:50 and 70:30 w/w after 12 h IE and MoO/VCO 30:70 are suitable for incorporation into the fat phase in ice-cream formulations while, the spreadability and plasticity of MoO/VCO 70:30 improved at low temperatures. Both interesterified blends could be used as high oleic acid frying oils.

**Keyword:** Interesterification; Lipozyme RMIM; *Moringa oleifera* seed oil; Physicochemical properties; Structured lipids