

## **Physicochemical properties and potential food applications of *Moringa oleifera* seed oil blended with other vegetable oils**

### **ABSTRACT**

Blends (30:70, 50:50 and 70:30 w/w) of *Moringa oleifera* seed oil (MoO) with palm olein (PO), palm stearin (PS), palm kernel oil (PKO) and virgin coconut oil (VCO) were prepared. To determine the physicochemical properties of the blends, the iodine value (IV), saponification value (SV), fatty acid (FA) composition, triacylglycerol (TAG) composition, thermal behaviour (DSC) and solid fat content (SFC) tests were analysed. The incorporation of high oleic acid (81.73%) MoO into the blends resulted in the reduction of palmitic acid content of PO and PS from 36.38% to 17.17% and 54.66% to 14.39% and lauric acid content of PKO and VCO from 50.63% to 17.70% and 51.26% to 26.05% respectively while oleic acid and degree of unsaturation were increased in all blends. Changes in the FA composition and TAG profile have significantly affected the thermal behavior and solid fat content of the oil blends. In MoO/PO blends the melting temperature of MoO decreased while, in MoO/PS, MoO/PKO and MoO/VCO blends, it increased indicating produce of zero-trans harder oil blends without use of partial hydrogenation. The spreadability of PS, PKO and VCO in low temperatures was also increased due to incorporation of MoO. The melting point of PS significantly decreased in MoO/PS blends which proved to be suitable for high oleic bakery shortening and confectionary shortening formulation. The finding appears that blending of MoO with other vegetable oils would enable the initial properties of the oils to be modified or altered and provide functional and nutritional attributes for usage in various food applications, increasing the possibilities for the commercial use of these oils.

**Keyword:** *Moringa oleifera* seed oil; Blending; Physicochemical properties; Vegetable oils; Solid fat content