

## Compositional and thermal characteristics of palm olein-based diacylglycerol in blends with palm super olein

### ABSTRACT

Palm olein-based diacylglycerol (POL-DAG) was blended with palm super olein (PO<sub>oo</sub>) in various concentrations (10–90%), with increments of 10% (wt/wt) POL-DAG. The physical and chemical characteristics, i.e., iodine value, acylglycerol content, fatty acid composition, melting and crystallization profiles and solid fat content, for POL-DAG, PO<sub>oo</sub> and their binary blends were evaluated. The mid-infrared FTIR was used to determine the absorption bands of the different concentrations of the oil blends. Only slight differences of FAC and IV were observed. POL-DAG:PO<sub>oo</sub> blends showed significant changes ( $p < 0.05$ ) in DAG content and decreases in TAG content with increasing POL-DAG content. The DSC thermograms showed that the addition of different concentrations of POL-DAG changed the melting and crystallization behavior of the oil blends (POL-DAG:PO<sub>oo</sub>). The crystallization onset point increased ( $p < 0.05$ ) with an increasing POL-DAG concentration (10–90%). POL-DAG has the same absorption bands as PO<sub>oo</sub>, with the exception of several minor peaks that appeared at (I) 2954  $\text{cm}^{-1}$ , (II) 1267  $\text{cm}^{-1}$ , (III) 1199  $\text{cm}^{-1}$ , (IV) 1222  $\text{cm}^{-1}$  and (V) 966  $\text{cm}^{-1}$ . This study will provide essential information for the palm oil industry to identify the most suitable POL-DAG blends with desirable physicochemical properties for food application purposes.

**Keyword:** Fat blends; Melting and crystallization; Palm olein-based diacylglycerol; Palm super olein; Acylglycerol