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 (POoo) 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, POoo 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:POoo 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:POoo). The crystallization onset point increased ($p < 0.05$) with an increasing POL-DAG concentration (10–90%). POL-DAG has the same absorption bands as POoo, with the exception of several minor peaks that appeared at (I) 2954 cm− 1, (II) 1267 cm− 1, (III) 1199 cm− 1, (IV) 1222 cm− 1 and (V) 966 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