

# **Palm-based Diacylglycerol Margarine Systems: Physicochemical Properties, Crystallization and Emulsifying behavior**

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A ternary fat system for margarine consisting of palm diacylglycerol (PDG), palm olein (POo) and palm stearin (PS IV44) were developed based on physicochemical properties, phase, melting and crystallization behavior that were similar to those of commercial palm-based table margarine. PDG, POo and PS IV44 were found to have high structural complementarity. At different compositions, PDG/POo/PS IV44 at  $X_{PS} = 0.1$  had high amounts of oleic acid (42.2%), followed by palmitic acid (40.52%) and linoleic acid (11.75%). It had a low slip melting point (SMP) of 36°C. At room temperature, the % SFC was 10% and PDG/POo/PS IV44 at  $X_{PS} = 0.7$  appeared as plastic-like fat that was neither solid nor liquid at room temperature. It had only 4% of SFC at body temperature; hence, reasonably good melting in the mouth. It crystallized in a mixture of  $\beta'$  and  $\beta$  form and was composed of small structures which ensure good texture and palatability. PDG/POo/PS IV44 at  $X_{PS} = 0.7$  has good emulsifying properties and can be used as table margarine without the addition of emulsifiers.