**Analysis of physical behavior and structure of a complex fat system.**

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Model fat blends of different coconut fat fractions were prepared in order to study their physical properties and microstructure. These blends were prepared by mixing a coconut oil with hard coconut fat with 25:75, 50:50, 75:25 (w/w). Slip melting point of two fat samples and their blends were measured according to AOCS Method. The oxidative stability of pure fats and their blends were measured by a rancimat method. The microstructure of samples was determined by using polarised light microscope at room temperature. The results showed a significant difference in melting points of invistigated samples. The Rancimat method showed the changes in Induction Periods (IP) of fat blends as affected by its fatty acid composition. Microstructure of the pure coconut oil differed from the hard fat sample, performing larger crystal clusters. The complex fat system showed needle-like, opaque framed and tightly packed crystals. The microstructure network of fat blends were denser than that of coconut oil due to the interaction between the pure fats.

Keywords: Complex fat, Slip melting point (SMP), Polarised light microscope, Crystal structure and Rancidity.