

**PHYSICOCHEMICAL PROPERTIES OF REFINED, BLEACHED,
DEODOURISED (RBD) PALM STEARIN AND RBD PALM
KERNEL OIL BLEND**

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ABSTRACT

PHYSICOCHEMICAL PROPERTIES OF REFINED, BLEACHED, DEODOURISED (RBD) PALM STEARIN AND RBD PALM KERNEL OIL BLEND

Refined, bleached and deodourised Palm Stearin (RBDPS) and refined, bleached, and deodourised Palm Kernel Oil (RBDPKO) were blended in three different ratios of 70:30, 50:50, and 30:70. The physicochemical properties of the oil before and after blending were analysed. Among the properties that were investigated were the dropping point (DP), solid fat content (SFC), polymorphic form, microstructure, triacylglycerol (TAG), fatty acid (FA) composition and iodine value (IV). Blending of these two oils have resulted in alteration of the oil TAGs and FA composition thus lowers the oils dropping point, solid fat content, and iodine value. Blending has also resulted in low density of crystal network and caused β polymorphic form to dominate in the oil blend. Blends with 30% and 50% of PKO could be used for making shortening as they have high DP and SFC. While blend with 70% PKO could be used in making margarine as it has lower SFC and melts below body temperature.

CHAPTER 1

INTRODUCTION

Vegetables oils account for 75% annual world production (Gunstone, 1996). These oils are soy, cotton, corn, palm, palm kernel, coconut, olive, rapeseed, sunflower, groundnut and linseed oils. Among these vegetables oils, palm oil is the second largest vegetable oil produced and forecasted to replace the soybean oil as the largest produced oil (Gunstone, 1996). Malaysia is the world leading producer of palm oil. In 2007, Malaysia exported 13,734,752 tonnes to the entire world (MPOC, 2008). Other than being cholesterol-free, it is a very versatile oil that can be used in both food and non-food applications. About 80% of all the oil palm products are used for food purposes and the other 20% is for non-food purposes (MPOC, 2008). Among the food uses of the palm oil are frying oils, margarines, coatings, confectioneries and other fat-based products. Soaps, candles, cosmetics and pharmaceuticals are the examples of the non-food uses of palm oil.

The oil is pressed out from the fruits of the palm tree, *Elaeis guineensis*. The tree is originated from West Africa and brought to Malaysia in 1870 as an ornamental plant (MPOC, 2008). The palm fruit is the only fruits that give out two types of chemically different oil. The fibrous mesocarp of the fruit produces crude palm oil (CPO) while the core of the fruit produces crude palm kernel oil (CPKO). These oils will undergo refining process and can be fractionated to produce various physically different palm