

# HIGH OLEIC PALM-BASED PRODUCTS

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The benefits of monounsaturated and polyunsaturated fatty acids in reducing blood cholesterol are well known. Unsurprisingly, the present trend is towards less saturated and higher monounsaturated fatty acids in the fats consumed. Based on Steps I and II of the American Heart Association (AHA) diet, a composition of < 7% saturated, up to 10% polyunsaturated and up to 15% monounsaturated fatty acids is recommended. According to Dupont (1989), many health associations recommend an average diet with 30% of the calorie intake as fat, made up of less than 10% saturated, 8%-10% polyunsaturated and the remainder monounsaturated. The major monounsaturated fat in diet is oleic acid. Palm oil contains about 40% oleic acid. Therefore, to promote palm products, increasing its oleic acid content is advantageous. This transfer of technology is about the production of high oleic palm oil (HOPO) and its fractionated products, high oleic palm olein (HOPOo) and high oleic palm stearin (HOPOs). Increasing the unsaturated fatty acids would improve the physical properties as well as the nutritional aspects of these oils.

## PRODUCTS

HOPOo and HOPOs are produced from oleic-enhanced palm oil interesterified with high oleic

acid components, followed by fractionation using a patented MPOB process.

## UNIQUE CHARACTERISTICS AND APPLICATIONS OF HOPOo AND HOPOs

HOPOo contains high monounsaturated and low polyunsaturated fatty acids, such as linolenic acid. The low concentration of linolenic acid makes HOPOo more stable frying medium than other high monounsaturated oils, such as high oleic canola and high oleic soyabean as shown in *Table 1*. Apart from that, the physical properties of the olein are improved as well. It remains stable at 0°C for more than 10 hr, and the higher unsaturation makes the oil more liquid. The cloud point is improved to -1.5°C, making it suitable for use in temperate countries.

HOPOs has an identical solid fat profile as palm oil, and is very suitable for producing margarine and shortening (*Figure 1*). Direct use of the solid fat without any blending with other oils and fats to produce cake shortening gave good baking results and sensory evaluation. As the fat is high in monounsaturated fatty acids, it is soft in texture with a slip melting point of 38°C and an iodine value (IV) of 61. It can also be used for *trans*-free margarine.

TABLE 1. COMPOSITION OF HOPOo AND OTHER HIGH OLEIC OILS

Oil	Fatty acid composition (%)					IV
	C16-0	C18-0	C18-1	C18-2	C18-3	
HOPOo	17.3	4.5	60.5	16.0	0.3	80.5
High oleic safflower <sup>a</sup>	5.0	2.0	77.0	15.0	-	92.0
High oleic sunflower <sup>a</sup>	5.0	4.0	83.0	7.0	-	85.0
High oleic canola <sup>b</sup>	< 7	-	75.0	14.0	3.0	96.4
Olive <sup>b</sup>	14	-	75.0	8.0	< 1	80.9
High oleic soyabean <sup>c</sup>	6.3	3.7	84.0	1.6	2.4	80.4

Sources: <sup>a</sup> Oilseed International Ltd (2002).

<sup>b</sup> Corbett (2002).

<sup>c</sup> Warner (2002).

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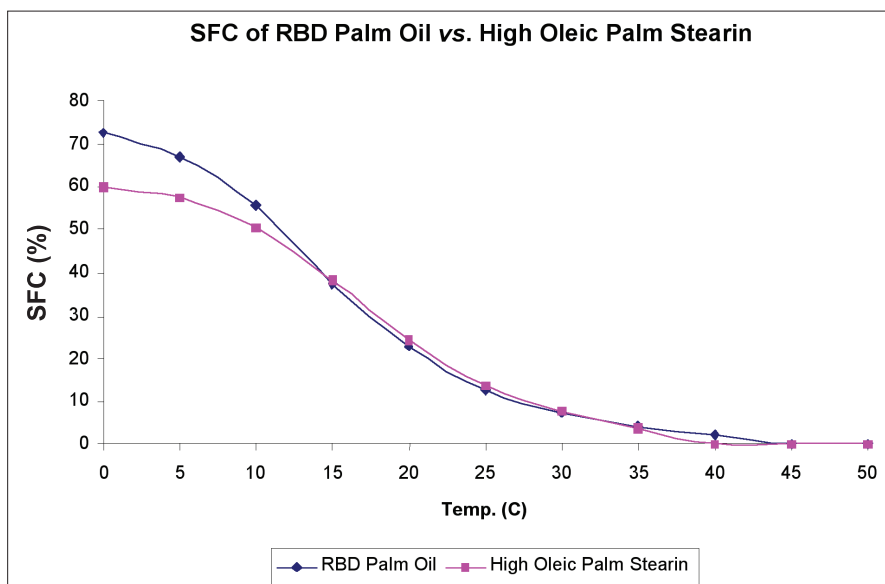


Figure 1. Solid fat profiles of high oleic palm stearin and palm oil.



Figure 2. High oleic palm olein (HOPOo) and high oleic palm stearin as cake shortening.

### ADVANTAGES

- (a) Oleic-enhanced palm oil before fractionation can be used as a frying medium.
- (b) The liquid fraction:
  - can be used for frying and as salad oil;
  - has improved cold stability; and
  - has similar properties as olive oil.
- (c) The solid fraction:
  - has a solid fat profile suitable for margarine and shortening; and
  - contains no *trans*-fatty acids.

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