

# NOVEL OIL COMPOSITIONS

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It is interesting to note that natural oils and fats have saturated:monounsaturated:polyunsaturated fatty acid ratios which vary tremendously from one extreme to another as shown in *Table 1*. When keeping the monounsaturations level at 1.0, highly unsaturated oils are tilted towards the

polyunsaturated, while highly saturated oils such as coconut and palm kernel oils are tilted towards the saturated end. Palm and palm oil products have ratios close towards 1:1:0.3, while olive oils have 0.1:1:0.1.

## PRODUCTS

The technology in this information series results in oils with fatty acid ratios having several interesting possibilities, depending upon the conditions undertaken. These compositions are having generally balanced fatty acid ratios which are close to 1:1:1 (*Table 2*). Although

**TABLE 1. SATURATED:MONOUNSATURATED: POLYUNSATURATED FATTY ACID RATIOS OF OILS AND FATS**

Unsaturated oils	0.4-0.8	:	1	:	2.3-3.7
Highly saturated oils	5-18.5	:	1	:	0.1-0.6
Palm oil	1.2-1.5	:	1	:	0.2-0.3
Palm olein 56	1.0	:	1	:	0.3
Palm olein 60	0.9	:	1	:	0.3
Palm olein 65	0.8	:	1	:	0.3
High oleic oils	0.1-0.2	:	1	:	0.05-0.15
Olive oil	0.1	:	1	:	0.1



Figure 1. Novel oils.

**TABLE 2. FATTY ACID RATIOS OF NEW PALM-BASED OLEIN PRODUCTS**

Sample	C14	C16	C18	C18-1	C18-2	C18-3	Sat.	Mono.	Poly.
1	0.7	26.8	3.4	37.6	30.5	1.0	0.8	1.0	0.9
2	0.7	29.1	3.8	36.1	28.0	2.2	0.9	1.0	0.8
3	0.6	29.2	3.9	33.1	29.4	3.0	1.0	1.0	1.0



**TABLE 3. PRODUCT WITH COMPOSITION CLOSE TO OLIVE OIL**

	<b>% Saturated</b>	<b>% Monounsaturated</b>	<b>% Polyunsaturated</b>
Product	23	59	17
Olive 1	16	66	16
Olive 2	13	75	9

blending with unsaturated oils may produce the same fatty acid ratios, a larger proportion of unsaturated oils is however required. In this range of liquid oils, iodine values stretch from 70 to 95. Furthermore, excellent cold stability can be achieved from some of these oils, having one month clarity at 10°C. In contrast, an oil with similar iodine value, but obtained through mere blending of palm olein with an unsaturated oil was found to remain clear only for several hours. It is noted that by this process, the oleins obtained may have similar fatty acid ratios, but are different in crystallization properties. Thus, it is possible to vary product range for different markets.

Another type of product has the composition ratios close to that of some olive oils, for example as shown in *Table 3*. Although the proportion of oleic acid is not as high as that of

olive oil, nevertheless, the combination of saturated and polyunsaturated fatty acids are more balanced.

Other products obtained from the same process can be directly utilized as margarines or shortenings.

### **ADVANTAGES**

- i. Multiple product range.
- ii. Palm-based liquid oils with cold stability for temperate regions.
- iii. Solid fats suitable for margarines and shortenings.
- iv. Oil with balanced compositions.
- v. Simple process.

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