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Palm Oil – New Age



Utilizing Palm Oil in Trans Free Foods

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Palm Oil Use in America

Post 1990, in order to reduce the use of saturated fats, mass re-formulation of food products takes place:

- most of the palm oil taken out of foods
- replaced by use of hydrogenated domestic, or soft oils
- selective hydrogenation allowing build up of trans fatty acids

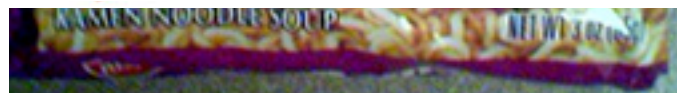
Why?

- *to increase functionality*
- *to increase stability*
- *but could never achieve the same superior flavor of palm oil products*



Utilizing Palm Oil in Trans Free Foods

- Palm oil almost disappeared from food labels, except in:
 - *Baby formula (!?)*
 - *Oriental Noodles*
 - *Confectionary*
 - *Margarine*



Today

Americans receive 3-13g /person/day, or up to 6% (Craig-Schmidt, 2001) of daily energy from trans fats

- coming primarily from hydrogenated soybean oil, but also, canola and cottonseed oils in:
- baked goods, fried foods, cereals, processed cheese, margarines..



Epidemiological Studies since 1990

point towards dramatic increase of LDL cholesterol caused by consumption of trans fats and leading to CHD

- Nurses Health Study (Willett et al, 1993)
- EURAMIC study (Aro et al, 1995)
- Health Professionals Follow-up Study (Ascherio et al, 1996)
- Alpha-Tocopherol beta-Carotene Study (Pietinen et al, 1997)
- Margarine intake - Framingham study (Gillman et al, 1997)
- Zutphen Elderly study (Oomen et al, 2001)



Hence

- Food and Nutrition Board of the Institute of Medicine as part of its report on : *Dietary Reference Intakes for Energy, Carbohydrates, Fiber, Fat, Fatty Acids, Cholesterol, Protein and Amino Acids*
- prepared and published a letter report on *trans* fatty acids
-summary “ There is a positive linear trend between *trans* fatty acid intake and total and LDL cholesterol concentration, and therefore increased risk of CHD, thus suggesting a Tolerable Upper Intake Level (UL) of zero”

(courtesy of Dr. Khosla)



Hence

July 9, 2003

FDA releases new trans fat labeling rule



What now?

How do we re-formulate our products to lower, or eliminate Trans Fatty Acids?

It would be impossible without employing the benefits of (semi-solid) palm and palm kernel oils (and their fractions) containing saturated fatty acids!



Palm Oil

Unique characteristics - versatile uses

- semi - saturated oil
- approx. 50% sat.; 40% monounsatur.; 10% polyunsatur. (linoleic acid - essential)
- mixture of solid and liquid
- large range of functional fractions:
 - from liquid (IV 67) oleine
 - through mid-fractions (IV 33)
 - to hard (IV 12) stearine



Option I Trans Free, but Hydrogenated

Blending fully hydrogenated fats with liquid oils:

- *Require further modification – enzymatic or chemical, and or fractionation*
- *Label : “0” trans, hydrogenated*



Option 2

Trans Free, not Hydrogenated, but Highly Saturated

Utilizing Palm oil – (saturated, mono and poly unsaturated fatty acids)

- *and its fractions*
- *Blended among themselves and/or with liquid oil*
- *Label : “0” trans, increased saturated content*



What about saturates?

Nutritional Facts	
Serving Size 27 crackers (30 g)	
Servings per Container about 15	
<hr/>	
Amount Per Serving	
Calories 160	Calories from fat 80
	% Daily Value *
Total Fat 8 g	12%
Saturated Fat 2 g	10%
Cholesterol 0mg	0%
Sodium 240mg	10%
Total Carbohydrate 16g	5%
Dietary Fiber less than 1 g	3%
Sugars less than 1 g	
Protein 4g	
<hr/>	
Vitamin A 0%	Vitamin C 0%
Calcium 4%	Iron 6%
* Percent Daily Values based on a 2,000 calorie diet. Your dai val may be higher or low er depending on calorie needs.	
	Calories: 2,000 2,500
Total Fat	Less than 65 g 80 g
Sat Fat	Less than 20 g 25 g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300 g 375 g
Dietary Fiber	25 g 30 g

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Amount Per Serving	
Calories 160	Calories from fat 80
	% Daily Value *
Total Fat 8 g	12%
Saturated Fat 2 g	20%
Trans Fat 0 gr.	
Cholesterol 0mg	0%
Sodium 240mg	10%
Total Carbohydrate 16g	5%
Dietary Fiber less than 1 g	3%
Sugars less than 1 g	
Protein 4g	
<hr/>	
Vitamin A 0%	Vitamin C 0%
Calcium 4%	Iron 6%
* Percent Daily Values based on a 2,000 calorie diet. Your dai val may be higher or low er depending on calorie needs.	
	Calories: 2,000 2,500
Total Fat	Less than 65 g 80 g
Sat Fat	Less than 20 g 25 g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300 g 375 g
Dietary Fiber	25 g 30 g



Option 3

Trans Free, not Hydrogenated, Low Saturated

*Use of palm & palm kernel oils
and their fractions*

- *blend with liquid oils, generously*
- *may or may not require further modification*
- *Label: “0” trans , no hydrogenation, low / unchanged saturates (Voortman Cookies, Canada – all products labeled “Zero Trans Fats” and contain 2g saturates per 30g serving)*



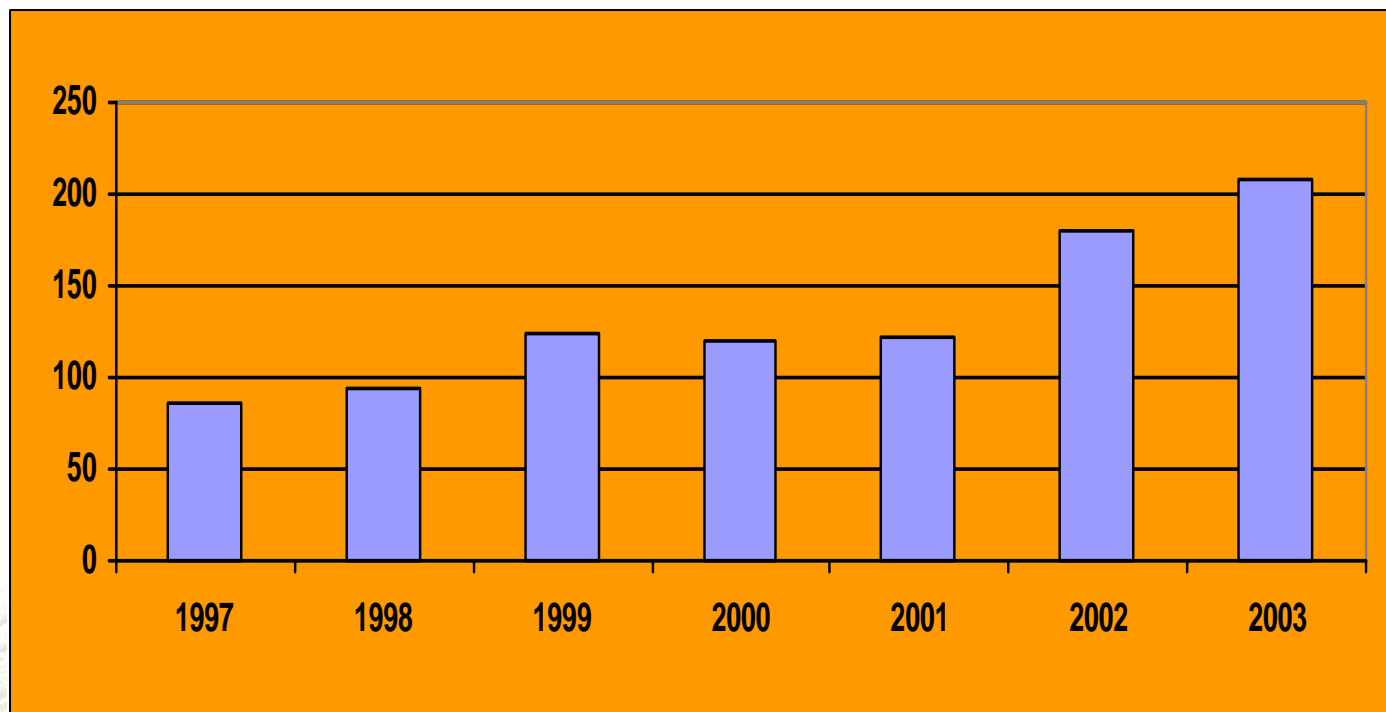
Option 4

Trans free, not Hydrogenated, low saturated

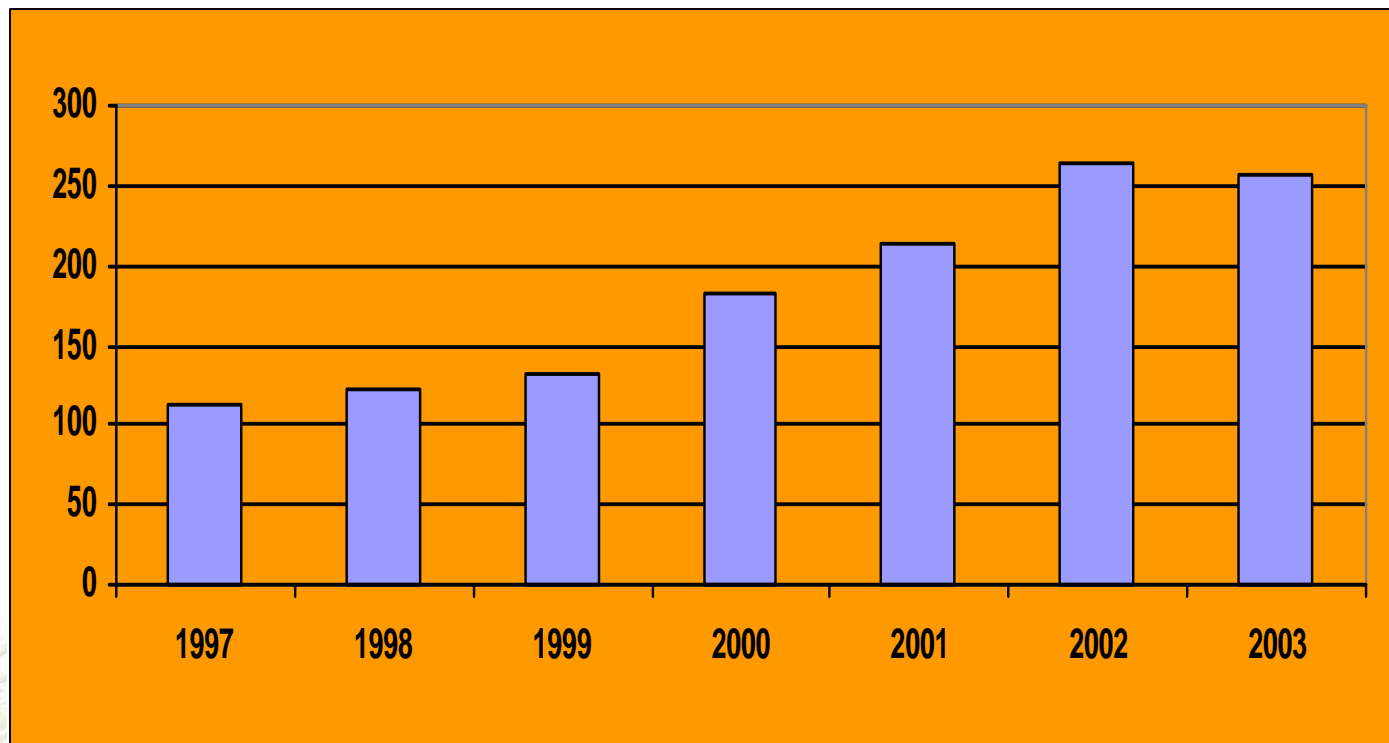
- Applicable only to liquid and touch hardened shortenings:
for spraying, fraying, liquid shortenings, not suitable for baked goods or confectionery
- Enzymatically interesterified soft oils
- Genetically modified soft oils designed to increase stability
also to extend stability of Option 3 products where applicable



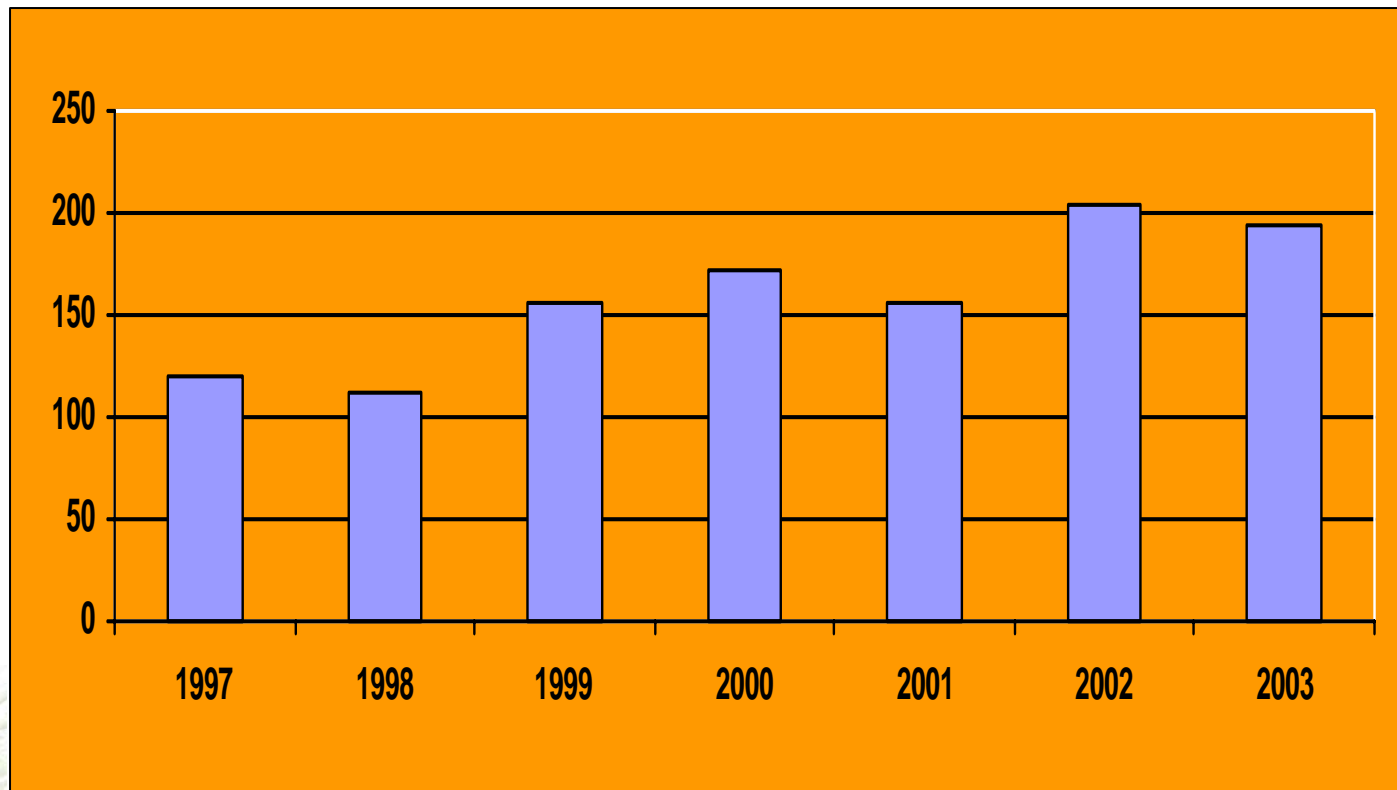
Malaysian PKO Exports to the US : 1997 – 2003 ('000 tonnes)



MPO Exports to the US : 1997 – 2003 ('000 tonnes)



Malaysian Oleochemicals Exports to the US : 1997 - 2003 ('000 tonnes)



USA

Imports from Malaysia in recent years ('000 mt)

	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>
<i>PO pdts</i>	114	122	133	182	214	263	258
<i>PKO pdts</i>	87	94	124	121	122	180	208
<i>OC pdts</i>	121	112	157	173	156	205	195
<i>Total</i>	322	328	414	476	495	648	661



**EXAMPLES OF PALM OIL PRODUCTS EXPORTED TO
THE US IN 2003**

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RBD PALM OIL	RBD PALM STEARIN
RBD PALM OLEIN	P FATTY ACID DIST.
DOUBLE OLEIN	P MID FRACTION
H. PALM OLEIN	H. PFAD
PALM STEARIN FLAKES	COOKING OIL

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EXAMPLES OF PALM BASED OLEOCHEMICAL PRODUCTS EXPORTED TO THE US IN 2003

Oleic acid	Palmitic acid	Lauric acid
Stearic acid	H. Po fatty aids	Metallic soaps
Myristic acid	Capric acid	Soap noodles
Glycerine	Myristyl alcohol	H. Fatty acids
Mixed PO FA	Mixed PKO FA	Methyl esters
Iso propyl myristate	Cetyl Stearyl Acid	Caprylic-capric acid



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