

Palm Oil/Palm Olein Effects on Blood Lipids

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INTRODUCTION

Saturated fatty acids have long been a bone of contention among the health pundits. From the early sixties, they have been portrayed as a risk factor for coronary heart disease by increasing total cholesterol (TC) and low density lipo-protein cholesterol (LDL-C). This label has stuck on to such an extent that consumption of saturated fats is frowned upon. Yet, there is no running away from the use of saturated fats since they occur in many of the commonly consumed foods today. Faced with this dilemma, there has been a strong movement among lipid nutritionists to better understand saturates and to assign a rating system that could assign a cholesterolemic potency score for the dif-

ferent saturates. The classical Key and Hegsted equations are actually fine examples of such efforts. Unfortunately, they too tend to lump all saturated fatty acids together.

Fearful of the perceived cholesterol raising potential resulting from its fatty acid composition containing 50% saturates, palm oil has similarly attracted much adverse publicity. During the past fifteen years, a concerted research effort has been spearheaded by PORIM to decipher the true effects of the commonly occurring fatty acids in the human diet. These research efforts have been highlighted at a number of conferences and in a number of peer-reviewed publications in biomedical journals. The salient findings are summarized below.

FATTY ACID COMPOSITION (%) OF COMMON DIETARY OILS

- Palm oil/palm olein, contain both saturated palmitic and monounsaturated oleic acids as major components of its fatty acid composition. These oils basically lack the shorter chain lauric and myristic (LM) saturated fatty acids present in coconut oil, palm kernel oil and butterfat.

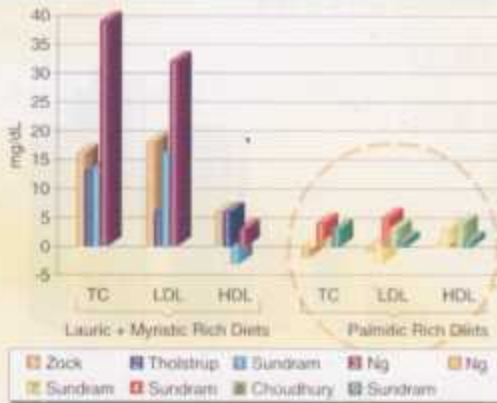
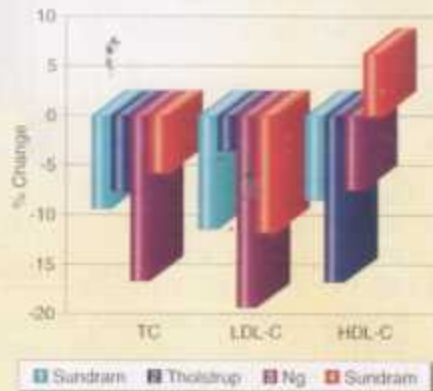
	SATS					MONOS 18:1	POLYS	
	<10:0	12:0	14:0	16:0	18:0		18:2	18:3
Lauric & Myristic-Rich								
Palm Kernel Oil	8	48	16	8	2	15	3	-
Coconut Oil	16	48	16	9	2	5	2	-
Butter Fat	9	3	10	26	15	30	3	1
Palmitic & Oleic-Rich								
Palm Olein	-	0.3	1.0	38	4	44	12	0.3
Oleic-Rich								
Olive	-	-	1	11	3	77	7	0.6
Canola	-	-	-	5	3	61	22	8
Linoleic-Rich								
Soya	-	-	-	11	1	22	54	7
Sunflower	-	-	-	7	5	21	66	-

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CHOLESTEROLEMIC EFFECTS OF SATURATED FATS
 (% CHANGE IN LIPIDS: 16:0 VS 12:0 + 14:0)

- LM diets significantly increase blood TC and LDL-C compared to palmitic acid rich diets.
- Palmitic acid the major saturated fatty acid in the human diet (and in palm oil/palm olein) is relatively neutral.

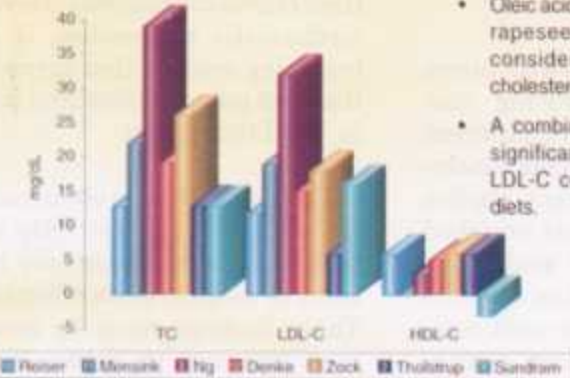


EFFECTS OF SATURATES VERSUS OLEIC

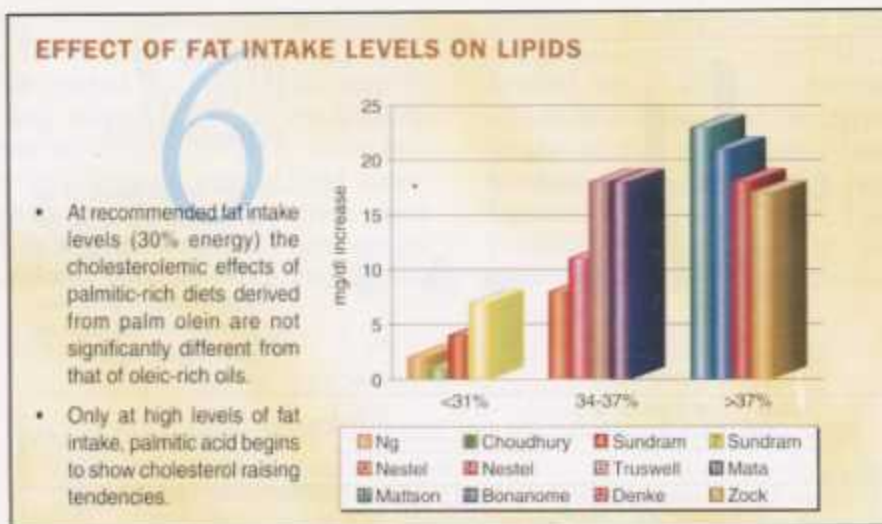
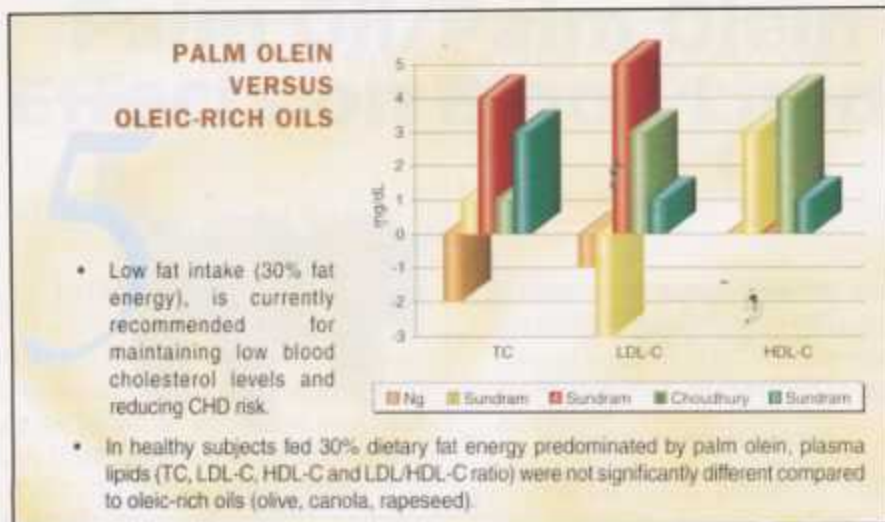
- Even at low levels of fat intake (30% energy) the cholesterolemic effects of LM-rich fats are significantly higher than palmitic-rich oils such as palm oil/palm olein.

Please refer to Chart 5

LAURIC-MYRISTIC VERSUS OLEIC



- Oleic acid rich oils (olive, canola, rapeseed) are generally considered neutral in their cholesterolemic effects.
- A combination of LM-rich fats significantly increase TC and LDL-C compared to oleic-rich diets.



CONCLUSION

The human dietary trials reviewed above have been instrumental in proving that dietary saturated fatty acids are different in their cholesterolemic effects. This conclusion is supported by the different studies that have directly compared diets enriched with lauric and myristic fatty acids with palmitic acid. From these studies too it is obvious that a lauric + myristic acid combination increases coronary heart disease risk by increasing total and LDL-cholesterol. Since both lauric and myristic acids co-occur in most natural fats it is difficult to separate

their effects conclusively. Nevertheless, using mechanistic approaches, it is increasingly becoming evident that myristic acid may be the most potent cholesterol raising fatty acid in the human diet.

Palm oil and palm olein (containing palmitic, oleic and linoleic fatty acids as major fatty acid components) are hypocholesterolemic or neutral in its effects on blood lipids. These findings must be considered important advances in enhancing the image of palm oil and palm olein as neutral fats. Thus, at recommended levels of fat intake, there should be no reservations about palm

oil/palm olein since they have blood lipid effects that are comparable to olive, canola rapeseed oils.

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