

Comparison of Palmolein and Olive Oil: Effects on Plasma Lipids and Vitamin E in Young Adults

Choudhury N, Tan L, Truswell AS (1995).” Comparison of Palmolein and Olive Oil: Effects on Plasma Lipids and Vitamin E in Young Adults” *Am J Clin Nutr*; 61:1043-51

ABSTRACT : Twenty-one healthy normocholesterolemic young adults, men and women, completed a randomized 30-d/30-d crossover comparison of the effect of palmolein and olive oil on plasma lipids. The subjects were free-living volunteers who changed to low-fat diets to which one of the test oils was added (used as a spread, for baking, or for frying) in turn. Complete food records were kept throughout: the test oils were compared at 17% of total dietary energy. Under the conditions of this experiment plasma total and low density-lipoprotein (LDL) cholesterol were almost identical with the two oils, so that when the palmitic acid (16:0) in palm oil replaced oleic acid (18:1) in olive oil the expected increase in LDL cholesterol was not seen. These results indicate that 16:0, though saturated, is not always a plasma cholesterol-raising fatty acid. Palmolein is rich in vitamin E, alpha tocopherol, and especially tocotrienols, but the latter were barely detectable in plasma.

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Characteristics of Subjects*

Age and weight of the 21 subjects (11 women and 10 men)

Variable	Value (mean)
Age (y)	
Women	27.7
Men	27.9
Weight (kg)	
Women	65.3
Men	66.9
BMI(kg/m²)	
Women	23.9
Men	24.2

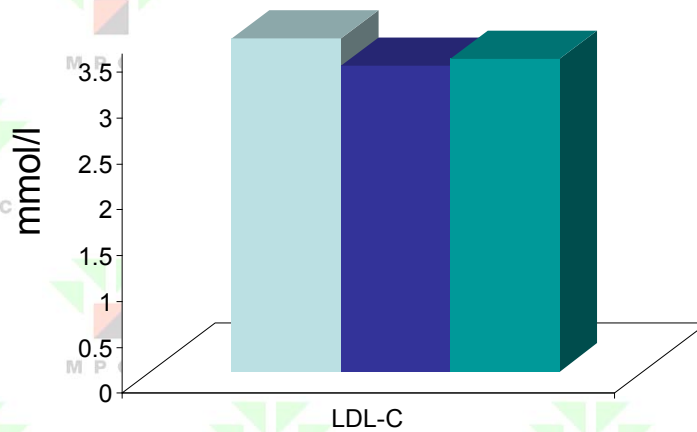
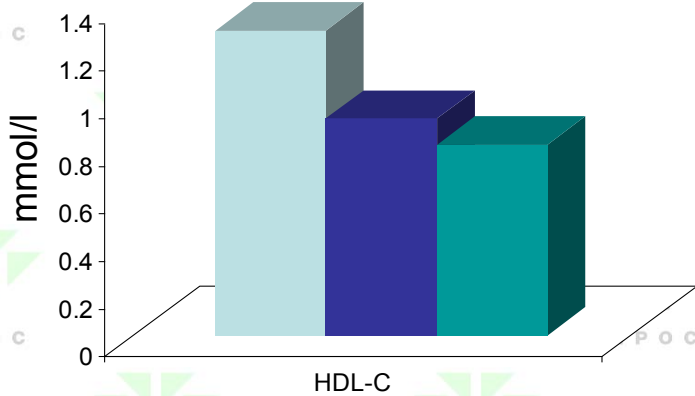
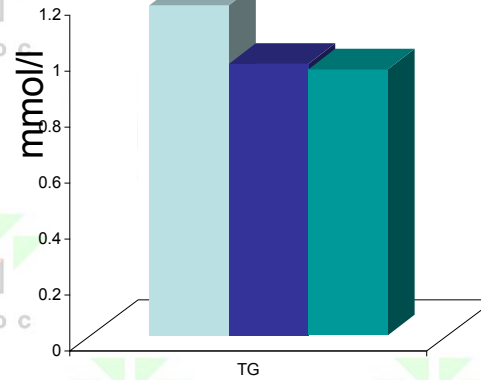
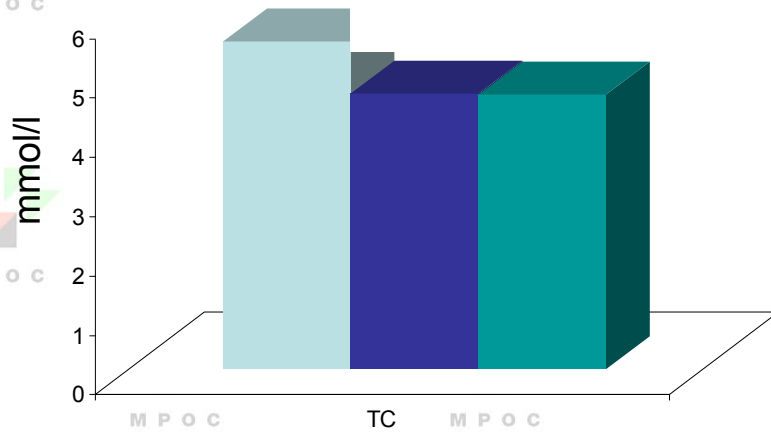
*nonsmokers,taking no medications(except 2 women taking oral contraceptives pills,healthy by medical history and free metabolic disorders

Fatty Acid Composition of the Test Oil

Fatty acids (% of total fatty acid)	Palmolein (mean)	Olive oil (mean)
14:0	1.02	0.68
14:1	-	-
16:0	40.13	10.52
16:1	0.16	0.68
18:0	4.25	2.49
18:1	42.98	77.26
18:2	10.52	6.51
18:3	0.20	0.66
20:0	0.36	0.42
20:1	0.13	0.30
20:2	-	0.21
22:6	-	0.17
24:0	0.25	0.11
Total	99.07	100

Plasma Lipids during Usual Diet Period and at the End of the Combined Palmolein and Olive Oil Periods

Usual Australian Diet



TC and LDL-C were resulting almost similar affects

Credit: Dr. K. Sundram, 2013

Vitamin E Concentration in Palm Oil, Olive Oil and Plasma of the Subjects on the Usual Diet and Palm Oil and Olive Oils Diets

Test Samples	α - Tocopherol	γ - Tocopherol	δ -Tocopherol	α -Tocotrienol	γ -Tocotrienol
	$\mu\text{mol/l}$				
Palm Oil	627	132	8	951	1485
Olive Oil	146	31	103	2	5
Plasma On Usual Diet	17.61	0.65	0.24	0.02	0.05
Plasma On Palmolein Diet	21.56*	0.80	0.11	0.08*	0.08
Plasma On Olive Diet	18.77	0.75	0.10	0.04	0.05

*significantly different from usual diet

Conclusion

Under the conditions of this experiment plasma total and low density-lipoprotein (LDL) cholesterol were almost identical with the two oils, so that when the palmitic acid (16:0) in palm oil replaced oleic acid (18:1) in olive oil the expected increase in LDL cholesterol was not seen.

These results indicate that 16:0, though saturated, is not always a plasma cholesterol-raising fatty acid.

Palmolein and Olive Oil have similar effects on plasma lipid but only palmolein increases significantly plasma α -tocopherol and α -tocotrienol.

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