

# Nonhypercholesterolemic Effects Of A Palm-oil Diet In Malaysian Volunteers

Ng TK, Hassan K et al. (1991). Non-hypercholesterolemic effects of a palm-oil diet in Malaysian volunteers. *AJCN* 53 (4 Suppl):1015S-1020S.

**ABSTRACT:** The effects on serum lipids of diets prepared with palm olein, corn oil, and coconut oil supplying approximately 75% of the fat calories were compared in three matched groups of healthy volunteers (61 males, 22 females, aged 20-34 y). Group I received a coconut-palm-coconut dietary sequence; group II, coconut-corn-coconut; and group III, coconut oil during all three 5-wk dietary periods.

Compared with entry-level values, coconut oil raised the serum total cholesterol concentration greater than 10% in all three groups. Subsequent feeding of palm olein or corn oil significantly reduced the total cholesterol (-19%, -36%), the LDL cholesterol (-20%, -42%) and the HDL cholesterol (-20%, -26%) concentrations, respectively. Whereas the entry level of the ratio of LDL to HDL was not appreciably altered by coconut oil, this ratio was decreased 8% by palm olein and 25% by corn oil. Serum triglycerides were unaffected during the palm-olein period but were significantly reduced during the corn-oil period.

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# Characteristics of Subjects

Group	Age	Body weight at entry (kg)	BMI (kg/m <sup>2</sup> )
I (CO-PO-CO)			
Male (n = 20)	24.1 ± 3.5	56.7 ± 6.6	19.8 ± 2.0
Female (n = 7)	23.4 ± 1.4	46.3 ± 6.3	18.4 ± 1.6
Total (n = 27)	24.0 ± 3.1	53.4 ± 8.7	19.5 ± 2.0
II (CO-Corn-CO)			
Male (n = 19)	24.1 ± 4.2	53.8 ± 7.9	19.7 ± 2.5
Female (n = 7)	22.7 ± 1.4	46.4 ± 4.8	18.7 ± 1.5
Total (n = 26)	23.7 ± 3.7	51.9 ± 7.8	19.4 ± 2.3
III (CO-CO-CO)			
Male (n = 19)	24.8 ± 3.4	56.7 ± 7.3	20.1 ± 2.0
Female (n = 8)	22.6 ± 1.7	40.6 ± 3.5	17.0 ± 1.0
Total (n = 27)	24.2 ± 3.2	52.1 ± 9.8	19.3 ± 2.3

Mean ± SEM

CO = Coconut Oil, PO = Palm Oil

Each double-blind dietary trial = 5 weeks

# Experimental Diets

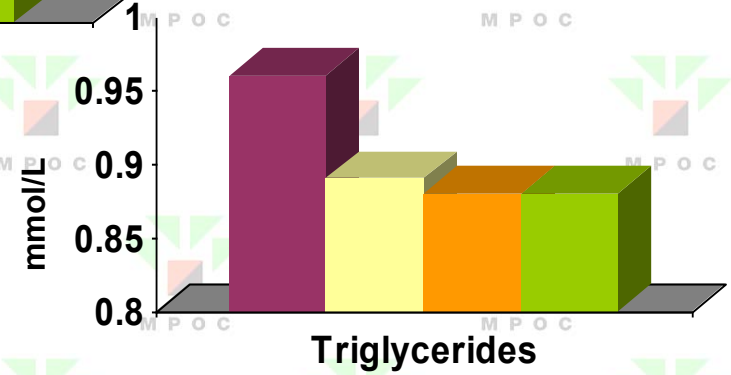
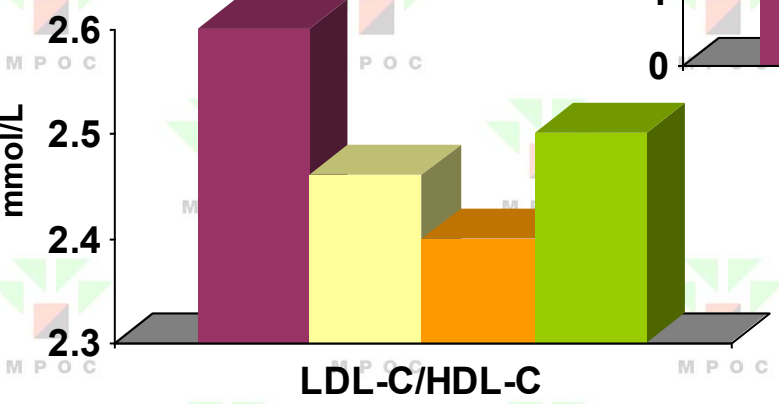
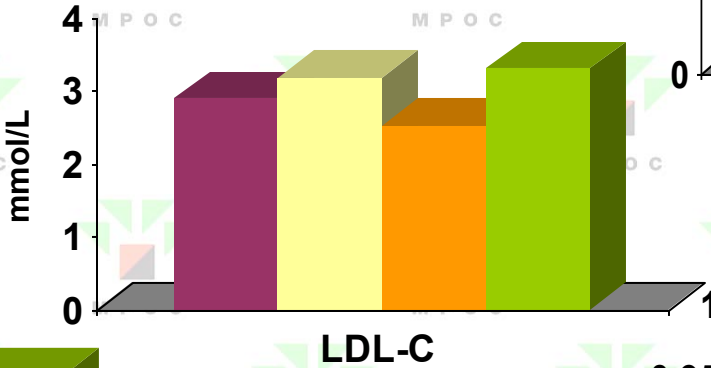
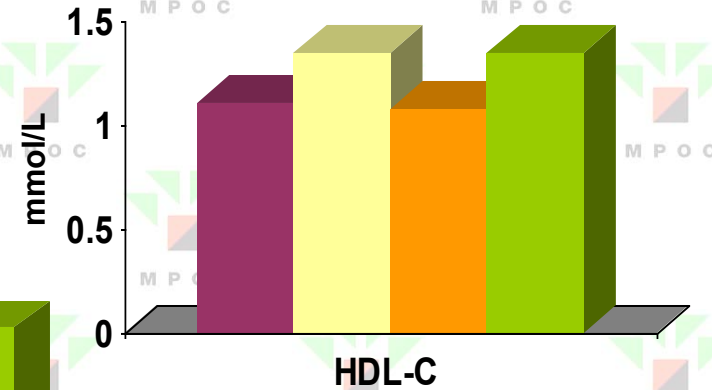
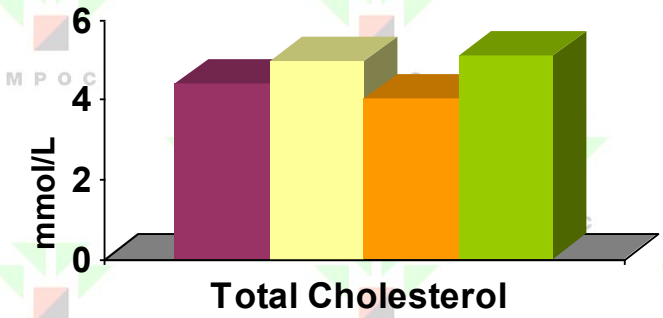
- Each test diet provided an average
  - ✓ 9.40 MJ Energy
  - ✓ 79g fat (32% of total calories)
  - ✓ 90g protein,
  - ✓ 293g carbohydrate
- The mean Energy and total Fat intake for
  - ✓ Males = 9.62 MJ and 72g per day
  - ✓ Females = 8.04 MJ and 68g per day
- Cooking oils in this study provided ~ 75% of the total dietary fat intake; mean fat energy was 30% calories)
- Cholesterol content of the experimental diets ~ 200mg

# Fatty Acid Composition of Test Diets

Fatty acid	Total fatty acids (%)		
	PO	Corn	CO
10:0	0.3	0.7	4.1
12:0	1.0	1.0	36.8
14:0	1.6	0.9	16.0
16:0	37.6	22.2	14.5
16:1	0.8	1.1	0.7
18:0	4.9	5.2	3.6
18:1	41.9	32.7	11.0
18:2	10.9	35.2	2.7
18:3	0.5	0.4	0.1
20:0	0.2	0.4	0.1
Others	0.3	0.2	10.4
Saturated (S)	45.6	30.4	75.1
Monounsaturated (M)	42.7	33.8	11.7
Polyunsaturated (P)	11.4	35.6	2.8
P:S ratio	0.25	1.17	0.04

# Palm Olein Reduces Serum Cholesterol Compared to Coconut Oil

■ At entry ■ CO (Period I) ■ PO (Period II) ■ CO (Period III)



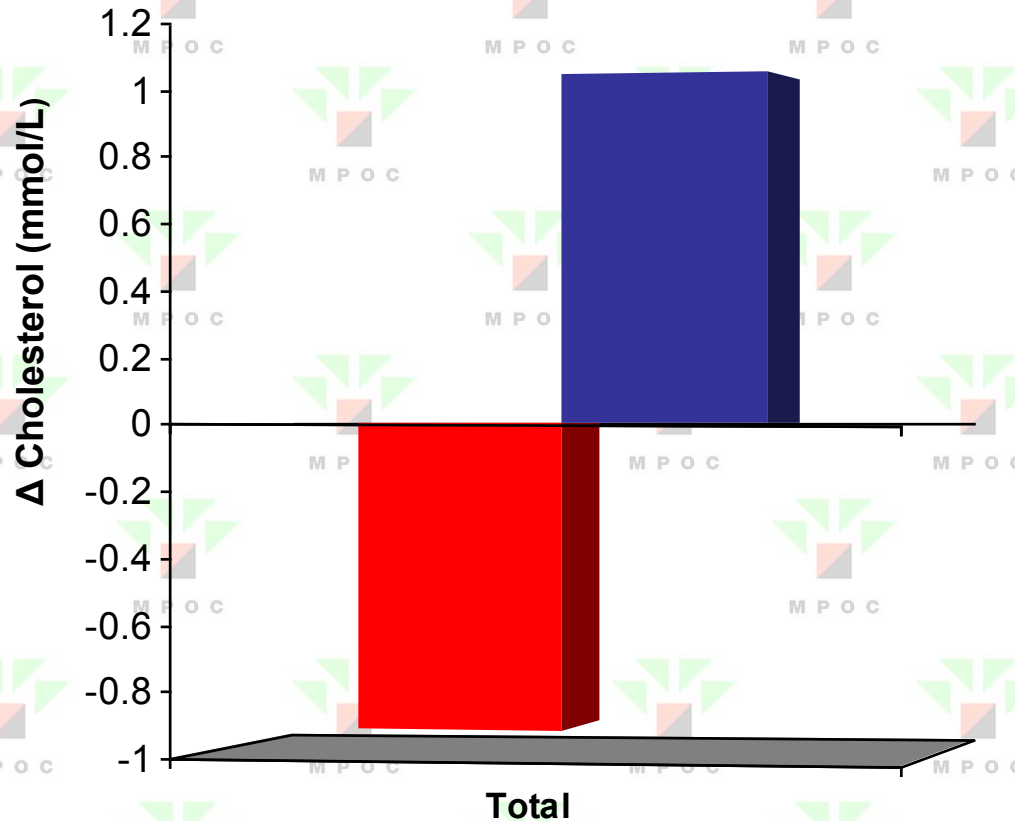
“At entry” palm olein lowered Total Cholesterol by 9%

Credit: Dr. K. Sundram, 2013

# Serum Total Cholesterol Responses at the End of Periods II and III

CO (Period I) - PO (Period II) – CO (Period III)

■ Period II - I ■ Period III - II



## Conclusion

Palm olein does not raise serum cholesterol compared to a coconut oil diet rich in C12:0 and C14:0 saturated fatty acids.



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