Diet, coconut intake, and plasma cholesterol of the Minangkabau in West Sumatra, Indonesia: a case control study

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The Minangkabau of West Sumatra, Indonesia are high consumers of coconut. Metabolic studies suggest that coconut can cause hyperlipidemia and atherosclerosis (1,2). The objective of the study was to compare diet pattern, coconut consumption and lipid levels between coronary heart disease subjects and their age-sex matched controls of the Minangkabau in West Sumatra, Indonesia. This was a cross-sectional case-control study of 108 coronary heart disease cases and 220 of healthy age-sex matched controls.

Intakes of coconut milk were not significantly different between the cases and their controls, but intakes of coconut oil were higher in cases ($P<0.05$). Consumption of some herbs such as spring onion, celery, *Garcinia atroviridis* (a kind of condiments), and candle nut were significantly higher in controls whereas consumption of fat meat was higher in cases ($P<0.05$). The control group had significantly higher HDL cholesterol concentrations ($P<0.05$) and lower blood pressure ($P<0.0001$). Although the present BMI and skinfold fatness were not significantly different between the two groups, the cases weighed more when married and had a greater maximum weight compared to the controls ($P<0.05$ and $P<0.01$). Other CVD risk factors such as smoking and by popular belief sugar consumption were found not to be significantly different between the two groups, but the cases were less physically active ($P<0.0001$) and were easily stressed than the controls ($P<0.01$).

CVD risks	Cases (n = 108)		Controls (n = 220)	
	n	mean ± SD	n	mean ± SD
Food				
Coconut oil (g/d)*	105	42.1 ± 15.7	218	38.1 ± 12.4
Sugar (g/d)	94	9.5 ± 5.0	200	11.0 ± 6.5
Non food				
Cholesterol (mg/dL)	90	212.7 ± 56.2	190	207.5 ± 36.8
Triglyceride (mg/dL)	89	136.4 ± 67.4	190	123.0 ± 50.4
HDL (mg/dL)*	88	46.4 ± 10.1	190	50.2 ± 12.5
Glucose (mg/dL)	90	98.9 ± 34.8	189	92.5 ± 20.2
Body mass index (kg/m^2)	93	23.0 ± 3.3	192	22.9 ± 3.8
Maximum weight (kg)**	103	63.0 ± 10.1	206	59.8 ± 8.3
Minimum weight (kg)	95	48.1 ± 6.5	202	46.5 ± 6.5

Differences between cases and controls (*t*-tests): *, $P<0.05$; **, $P<0.01$.

The consumption of coconut milk does not appear to be important in relation to CVD risk, although coconut oil may play a role. CVD risk factors other than coconut seem to play a greater role in the increasing incidence of CVD in West Sumatra, Indonesia.

1. Castillo M, Hortal JH, et al. Coconut oil affects lipoprotein composition and structure of neonatal chicks. J Biochem 1996;119(4):610-6.
2. Mensink RP. Effects of the individual saturated fatty acids on serum lipids and lipoprotein concentrations. Am J Clin Nutr 1993; 57(5 Suppl):711S-4S.