

ASSOCIATION BETWEEN COCONUT CONSUMPTION AND
CARDIOVASCULAR DISEASE RISK FACTORS OF HEALTHY ADULTS

By

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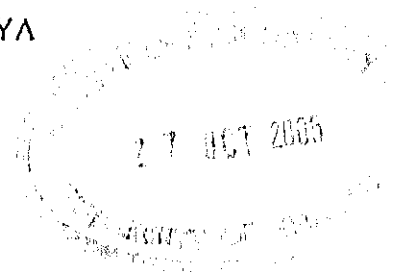
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ABSTRACT

The recent estimates for mortality from cardiovascular disease (CVD) in Sri Lanka (524 deaths per 100,000) is higher than that observed in many western industrial nations. High fat diets containing large quantities of saturated fatty acids (SFA) predispose individuals to CVD. Coconut fat (CF), which is rich in SFA, is the major source of fat in the Sri Lankan diet. For many years there has been a controversy whether CF contributes to the high prevalence of CVD in Sri Lankans.

This cross sectional study was conducted to determine the association between CF intake and CVD risk of healthy adults living in a coconut growing area. Randomly selected healthy adults (males=148 and females=160) between 25-55 y of age, living in two Grama sevaka (GS) divisions (Meegahakotuwa and Dandagamuwa) in Kuliyaipitiya divisional secretariat were the participants. A range of biological risk markers of CVD including serum total cholesterol (TC), high density lipoprotein cholesterol (HDL-C), low density lipoprotein cholesterol (LDL-C), glucose and blood pressure as well as anthropometry (weight, height, waist circumference, hip circumference) of the subjects were determined. Dietary intakes of the healthy adults were calculated from two 24 h dietary recalls. A recipe survey was conducted to determine the amount of scraped coconut (SC), coconut milk (CM) and coconut oil (CO) used in food preparation. Statistical analysis of data was conducted using SPSS (version 10.00 for windows).

Mean CF intake of the study population was 37.6 ± 18.9 g/d (Males: 41.6 ± 21.9 g/d, Females: 33.8 ± 15 g/d) and it contributed 58.9% of the total daily fat consumption. Mean

intakes of scraped coconut (SC), coconut milk (CM) and coconut oil (CO) were 15.7 ± 15.8 g/d, 123.6 ± 72.0 g/d and 2.5 ± 3.6 g/d respectively. For the comparison purpose, the subjects were divided into groups according to the median of % daily energy derived from CF (low $\leq 16\%$, high $> 16\%$), CM (low $\leq 13.5\%$, high $> 13.5\%$), CO (low $\leq 0.6\%$, high $> 0.6\%$), SC (low $\leq 2\%$, high $> 2\%$) and % daily SFA derived from CF (low $\leq 81\%$, high $> 81\%$). Females and the whole group with high CF intake had significantly higher ($P < 0.05$) HDL-C levels, and waist: height ratio, whereas females with high CF intake had significantly lower ($P < 0.05$) body mass index (BMI) and waist circumference compared to their counterparts consuming low CF. High CF intake and prevalence of low HDL-C showed a significant ($P < 0.05$) negative association in females (OR=0.31; CI=0.14-0.69) and the whole group (OR=0.39, CI=0.23-0.66). In females, % SFA from CF was found to be significant positive predictors for HDL-C ($\beta = 0.16$, $P = 0.03$) whereas % energy from CF was a significant negative independent predictor of waist-to height ratio ($\beta = -0.02$, $P = 0.001$).

Out of the different forms of coconut, intake of high level of CM showed significant negative association with prevalence of elevated TAG in males (OR=0.35; CI=0.12-0.97). High CM intake also had an inverse association with prevalence of elevated serum glucose in males (OR=0.21; CI= 0.07-0.67) and in whole group (OR=0.40, CI=0.16-0.98). Percentage energy from CM was a significant negative predictor of waist circumference in females ($\beta = -0.19$, $P = 0.001$). The % energy derived from CO showed a significant positive association with prevalence of elevated TC: HDL-C in females (OR= 3.08; CI=1.41-6.72) and in whole group (OR=1.85, CI=1.04-3.31). A significant negative

association was found between CO intake and elevated TAG in the whole group (OR=0.41; CI= 0.18-0.89). In contrast to CM, high SC intake had a significant positive association with prevalence of elevated serum glucose in the whole group (OR=2.52, CI= 1.14-9.10). In males and in the whole group, % energy from SC intake was a significant positive predictor of serum glucose ($\beta=0.32$, $P<0.001$ and $\beta =0.15$, $P=0.006$ respectively). The results suggest that high CF consumption which is mainly from CM has inverse association with certain CVD risk factors in physically active healthy adults and is cardio protective.