

# The intake of omega-3 fatty acids in Sri Lankans and its effect on serum lipid patterns and platelet aggregation

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## Abstract:

The aim of this study was to establish the dietary intake among Sri Lankans of fatty fish rich in omega 3 (n-3) fatty acids and to assess the effect of dietary n-3 fatty acids on serum lipids and blood pressure while allowing for the effect of other variables viz. the intake of calories, polyunsaturated fat, cholesterol and saturated fat and body mass index (BMI) and age. The dietary survey of 72 families living on estate in Deraniyagala, 66 families living in coastal areas and 73 families from Colombo revealed that the n-3 fatty acid intake of adult males from the three areas was on an average  $0.24 \pm 0.12$  g/day,  $1.48 \pm 0.32$  g/day and  $0.36 \pm 0.04$  g/day respectively. The intake by adult males in Deraniyagala and Colombo was significantly lower than that in coastal areas. ( $p < .001$  and  $p < .01$  respectively). 244 healthy subjects whose diet particulars were obtained provided blood samples for serum lipid estimates. The results of multiple regression analysis showed that in males, serum total cholesterol was significantly associated with dietary cholesterol, BMI, calories /Kg body weight, polyunsaturated fat, saturated fat and dietary n-3 fatty acid ( $p < 0.001$ ). Serum total cholesterol in females was significantly associated with dietary cholesterol, BMI, Calories/Kg body weight, dietary n-3 fatty acid and polyunsaturated fat and saturated fat ( $p < 0.001$ ). Serum LDL cholesterol in males was significantly associated with dietary cholesterol, n-3 fatty acids, and polyunsaturated fat and saturated fat ( $p < 0.001$ ). Serum LDL cholesterol in females was significantly associated with dietary cholesterol, saturated fat, polyunsaturated fat ( $p < 0.001$ ), and dietary n-3 fatty acids was not significantly associated. Serum triglycerides in males was significantly associated with BMI and dietary n-3 fatty acids ( $p < 0.001$ ). In females, serum triglycerides was correlated with BMI ( $p < 0.001$ ) but was not significantly associated with n-3 fatty acids. In males, systolic blood pressure was significantly associated with BMI and age ( $p < 0.001$ ) and diastolic BP was associated with BMI ( $p < 0.001$ ). No correlation with n-3 fatty acid intake was found. In females, systolic and diastolic BP were not significantly correlated with any of the independent variables selected. In feeding study<sup>1</sup>, a dietary increment of fatty fish supplied 1.0g/day of n-3 fatty acids in an isocaloric diet for 6 weeks. The paired t test showed that mean post-increment (4 and 6

weeks) serum total cholesterol and LDL cholesterol were significantly lower than the mean serum values obtained while the subjects were on the nasal diet. ( $p < .05$ ,  $p < .01$ ). there were small non-significant increases in serum triglycerides and HDL cholesterol. Systolic and diastolic blood pressures were not significantly altered. In feeding study 11, a dietary increment of fatty fish supplied 2.0g/day on n-3 fatty acids in an isocaloric diet for 8 weeks. Mean post-increment (5,6 and 8 weeks) serum total cholesterol, LDL cholesterol and triglycerides were significantly lower than the mean serum values obtained while the subjects were on the basal diet ( $p < .001$ ,  $p < .001$  and  $p < .001$  respectively). There was a non-significant increase of HDL cholesterol and a significant decrease of ADP induced platelet aggregation ( $p < .01$ ). Systolic and diastolic blood pressures were not significantly altered.

Key words : DIETARY INTAKE