

Antioxidant vitamins in coronary heart disease

Vitamin C and vitamin E (Alpha tocopherol) are antioxidants that are essential free radical scavengers. We investigated the association between plasma vitamin C and E status and coronary heart disease (CHD).

We recruited 60 consecutive patients with CHD from the Teaching Hospital Peradeniya. All of them had definite angina pectoris and/ or ECG changes of CHD. Control group consisted of 58 age and sex matched healthy subjects from an ongoing population study in a suburban area. Informed consent was obtained from all participants. Fasting blood samples were obtained for assay of serum lipids, vitamin C and vitamin E.

Appropriate measures were taken to prevent degradation of vitamin C. Serum cholesterol was assayed by enzymatic calorimetric methods using commercial kits. Plasma vitamin C was measured by 2,4-dinitrophenyl hydrazine method. Serum vitamin E was measured by alpha dipyridyl method which uses the Emmeric Engel reaction.

Comparison of means of plasma vitamin levels was done by Mann-Whitney U test: The mean age of patients and controls were 57.8 (SD 10.5) and 57.7 (SD 10.5) years. The mean vitamin C level of patients (45.2 $\mu\text{mol/L}$ SD 27.7) was significantly lower compared to control subjects (mean 69.6 $\mu\text{mol/L}$ SD 30.5) $P < 0.001$. Mean plasma vitamin E level of patients and controls were 19.7 SD 13.2) and 23.0 (SD 8.7) $\mu\text{mol/L}$

Mean plasma cholesterol level was significantly higher in patients compared to controls ($p < 0.01$). There was no significant difference ($p = 0.2$) in plasma vitamin E levels adjusted to serum lipids ($3.9 \mu\text{mol}$ alpha tocopherol/ mol cholesterol in patients and $4.9 \mu\text{mol/L}$ alpha tocopherol/ mol cholesterol). Plasma vitamin C levels are significantly lower in patients in coronary heart disease and may contribute to its pathogenesis. No association was found between plasma vitamin E levels and CHD in this study.