

**Carotenoids and Cardiovascular Disease Risks in Japanese Elderly and Adolescents –  
Implication for Risk Reduction**

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**Background:** Various antioxidants were proven in 1990's to prevent stroke in SHRSP, which showed increased urinary 8-OHdG excretion as oxidative stress markers. Concomitantly WHO-coordinated CARDIAC Study demonstrated increased 24 hour urinary (24U) 8-OHdG excretion in hypertensive and /or diabetic Africans without medication, indicating the involvement of oxidative stress in the pathogenesis of lifestyle-related diseases.

**Design:** To prove the association of antioxidants with cardiovascular diseases (CVD) risks, health survey similar to CARDIAC Study was conducted in 43 male and female Japanese elderly aged 56-83 and 49 male and female adolescents aged 18-22 and total carotenoids (TC) including lutein, beta-cryptoxanthin, alpha and beta-carotene and lycopene in the blood were assayed .Elderly and adolescents were randomized into 2 groups, recommended to eat vegetables with or without 200ml of vegetable juice daily for 2 months.

**Results:** Baseline CVD risks such as systolic blood pressure, triglycerides, insulin resistance (HOMA-IR) were significantly inversely related with TC in the elderly and significantly positively related with HDL in the adolescents. Two month intervention significantly increased TC particularly in vegetable juice plus groups in the elderly and adolescents, and significantly decreased CVD risks in the elderly with higher baselines of triglycerides and HOMA-IR, and significantly reduced LDL cholesterol and abdominal circumference in the adolescents.

**Conclusion:** Blood TC was significantly associated with CVD risks in Japanese elderly and adolescents, and 2 month interventions to increase vegetables with or without vegetable juice significantly increased TC, concomitantly with significant CVD risk reduction.