

Low plasma levels of oxygenated carotenoids in patients with coronary artery disease.

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BACKGROUND AND AIMS: Low circulating levels of carotenoids have been associated with cardiovascular disease. The distribution of different carotenoids in blood may have an impact on the cardioprotective capacity. The aim of the present study was to determine the plasma levels of 6 major carotenoids in patients with coronary artery disease (CAD) and relate the findings to clinical, metabolic and immune parameters. **METHODS AND RESULTS:** Plasma levels of oxygenated carotenoids (lutein, zeaxanthin, beta-cryptoxanthin) and hydrocarbon carotenoids (alpha-carotene, beta-carotene, lycopene) were determined in 39 patients with acute coronary syndrome, 50 patients with stable CAD and 50 controls. Serological assays for inflammatory activity and flow cytometrical analysis of lymphocyte subsets were performed. Both patient groups had significantly lower plasma levels of oxygenated carotenoids, in particular lutein+zeaxanthin, compared to controls. Low levels of oxygenated carotenoids were associated with smoking, high body mass index (BMI), low high density lipoprotein (HDL) cholesterol and, to a minor degree, inflammatory activity. Plasma levels of lutein+zeaxanthin were independently associated with the proportions of natural killer (NK) cells, but not with other lymphocytes, in blood. **CONCLUSION:** Among carotenoids, lutein+zeaxanthin and beta-cryptoxanthin were significantly reduced in CAD patients independent of clinical setting. The levels were correlated to a number of established

cardiovascular risk factors. In addition, the relationship between NK cells and lutein+zeaxanthin may indicate a particular role for certain carotenoids in the immunological scenario of CAD.

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