EFFECTS OF ANTIOXIDANT SUPPLEMENTATION ON MARKERS OF OXIDATIVE STRESS AND IMMUNITY IN TRAINED MEN
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Background: Several oxidative stress related exercise studies report antioxidant supplementation influences markers of oxidative stress such as carbonyl proteins (CP)(1), and immune markers such as tumor necrosis factor-alpha (TNF-alpha)(2) in trained and untrained subjects.

Objective: The objective of this study was to evaluate any effects of an encapsulated Juice Powder Concentrate (JPC, Juice Plus+, NSA, Collierville, TN, USA), compared to placebo, on blood concentrations of oxidative stress and immune biomarkers in a homogeneous cohort of men. Additionally duty days lost to illness and working hours over an extended period of time (seven mo) were analyzed. These subjects were a trained and disciplined cohort living in a group environment following a standardized diet and training regimen (police special anti terrorism forces Cobra).

Design: Trained men (n=41, 34±5 y, VO2max 55±7 mL/kg/min) were randomly assigned in a double blind manner to either JPC (n=21) or placebo (n=20). The JPC capsules provided approximately 9.5 mg ß-carotene, 200 mg vitamin C, 60 mg vitamin E, 600 ug folate and about 63 kJ per d. All subjects took six capsules daily with meals for 28 wk. Multiple 7-d food records monitored dietary intake. Blood samples were collected at baseline and study wk 4, 8, 16 and 28, then analyzed for CP and TNF-alpha. The group physician documented illnesses, training, working hours and other stressors, for example circadian imbalance.

Results: Both groups had inadequate fruit and non-starchy vegetable intake. From wk 8-28, the placebo group reported 50 % more illness days than the JPC group. From week 16 to 28 working hours increased 45% in both groups due to the Austrian chairmanship of the European Union from January to June 06. Concentrations of CP after 16 and 28 wk were significantly lower in JPC compared to placebo group (p<0.001) and lower than baseline in JPC group (p<0.05). Concentrations of TNF-alpha increased in both groups during the first eight wk (p<0.05) possibly due to a common upper respiratory tract infection in the cohort at this time point. Thereafter TNF-alpha concentrations showed a significant decrease in both groups, more pronounced in the JPC group for the next 20 wk (p<0.0001).

Conclusions: These data suggest that JPC led to fewer illness days after 8 wk, despite increased working hours. The nutraceutical reduced CP and TNF-alpha values compared to placebo over seven mo and can be recommended for people with similar intense stress and training lifestyle.

References:

Keywords: Oxidative Stress, Cytokines, Training

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