



## TOMATO POWDER IS MORE EFFECTIVE THAN LYCOPENE TO ALLEVIATE EXERCISE-INDUCED LIPID PEROXIDATION IN WELL-TRAINED MALE ATHLETES: RANDOMIZED, DOUBLE-BLINDED CROSS-OVER STUDY.

Gholami, F ; Antonio, J ; Evans, C ; Cheraghi, K ; Rahmani, L ; Amirnezhad, F  
Journal of the International Society of Sports Nutrition. 2021;(1):17

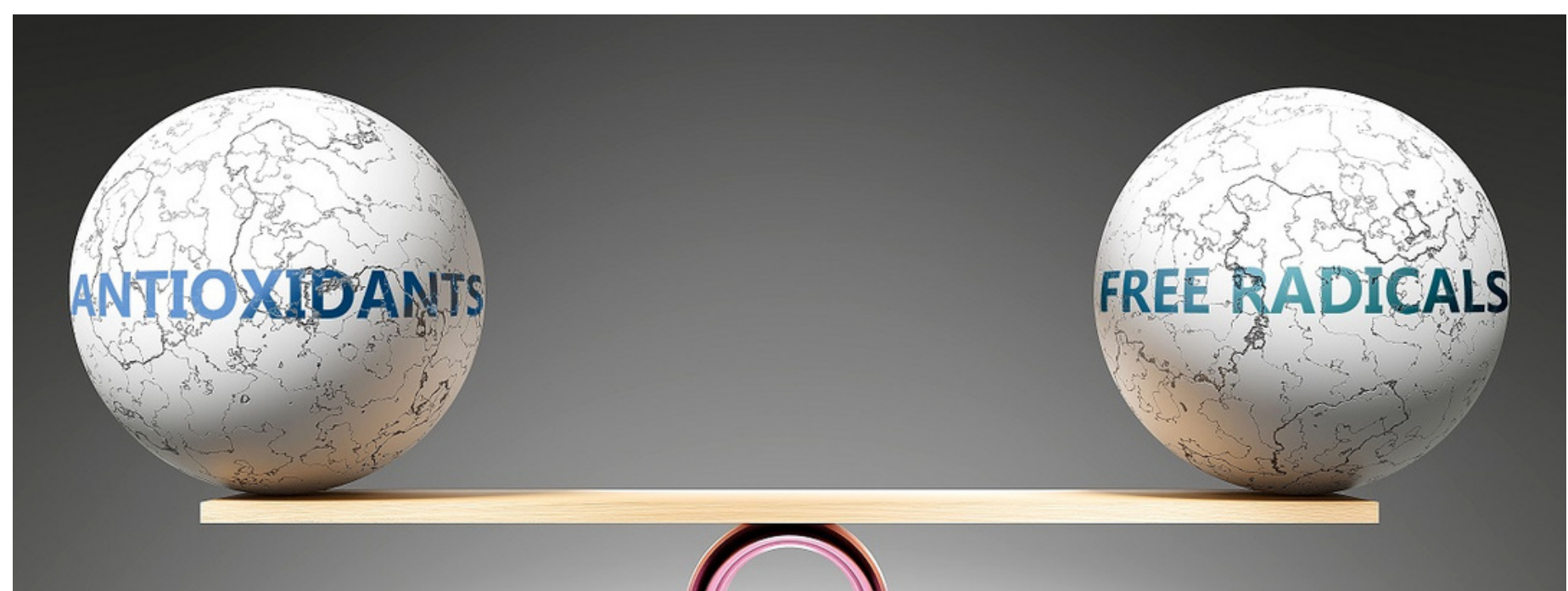
Consumption of nutritional supplements to optimize recovery is gaining popularity among athletes. Tomatoes contain micronutrients and various bioactive components with antioxidant properties. Many of the health benefits of tomatoes have been attributed to lycopene encouraging athletes to consume pure lycopene supplements. The aim of this study was to compare the effect of tomato powder and lycopene supplement on lipid peroxidation induced by exhaustive exercise in well-trained male athletes. Eleven well-trained male athletes participated in a randomized, double-blinded, crossover study. Each subject underwent three exhaustive exercise tests after 1-week supplementation of tomato powder (each serving contained 30 mg lycopene, 5.38 mg beta-carotene, 22.32 mg phytoene, 9.84 mg phytofluene), manufactured lycopene supplement (30 mg lycopene), or placebo. Three blood samples (baseline, post-ingestion and post-exercise) were collected to assess total anti-oxidant capacity. Tomato powder enhanced total antioxidant capacity by 12% compared to placebo. The authors conclude that the beneficial effects of tomato powder on antioxidant capacity and exercise-induced lipid peroxidation may be brought about by a synergistic interaction of lycopene with other bioactive nutrients rather than singular lycopene.

## EFFECTS OF ANTIOXIDANT-RICH FOODS ON ALTITUDE-INDUCED OXIDATIVE STRESS AND INFLAMMATION IN ELITE ENDURANCE ATHLETES: A RANDOMIZED CONTROLLED TRIAL.

Koivisto, AE ; Olsen, T ; Paur, I ; Paulsen, G ; Bastani, NE ; Garthe, I ; Raastad, T ; Matthews, J ; Blomhoff, R ; Bøhn, SK  
PloS one. 2019;(6):e0217895

Various altitude training regimes, systematically used to improve oxygen carrying capacity and sports performance, have been associated with increased oxidative stress and inflammation. This randomized controlled trial of 31 elite endurance athletes investigated whether increased intake of common antioxidant-rich foods attenuates these processes. The athletes were randomised into two groups and asked to consume either antioxidant-rich foods (double the usual intake) or eucaloric control foods during a 3-week altitude training camp at 2320 m. Fasting blood and urine samples were collected 7 days pre-altitude, after 5 and 18 days at altitude, and 7 days post-altitude.

Increased intake of antioxidant-rich foods elevated the antioxidant capacity and attenuated some of the altitude-induced systemic inflammatory biomarkers in elite athletes. The antioxidant intervention had no impact on the altitude-induced oxidative stress or changes in acute cytokine responses to exercise stress-tests.



## MITOCHONDRIA-TARGETED ANTIOXIDANT SUPPLEMENTATION IMPROVES 8 KM TIME TRIAL PERFORMANCE IN MIDDLE-AGED TRAINED MALE CYCLISTS.

Broome, SC ; Braakhuis, AJ ; Mitchell, CJ ; Merry, TL  
Journal of the International Society of Sports Nutrition. 2021;(1):58

Exercise increases skeletal muscle reactive oxygen species (ROS) production, which may contribute to the onset of muscular fatigue and impair athletic performance. Mitochondria-targeted antioxidants such as MitoQ, which contains a ubiquinone moiety and is targeted to mitochondria through the addition of a lipophilic triphenylphosphonium cation, are becoming popular amongst active individuals as they are designed to accumulate within mitochondria and may provide targeted protection against exercise-induced oxidative stress. However, the effect of MitoQ supplementation on cycling performance is currently unknown. This randomized, double-blind, placebo-controlled crossover study investigates whether MitoQ supplementation can improve cycling performance measured as time to complete an 8 km time trial. 19 middle-aged recreationally trained male cyclists completed 45 min cycling at 70% VO<sub>2</sub>peak followed by an 8 km time trial after 28 days of supplementation with MitoQ (20 mg-day<sup>-1</sup>) and a placebo.

Mean completion time for the time trial was 1.3% faster with MitoQ compared to placebo. The authors conclude that MitoQ supplementation may be an effective nutritional strategy to attenuate exercise-induced increases in oxidative damage to lipids and improve cycling performance.



## EFFECTS OF ANTIOXIDANT SUPPLEMENTATION ON OXIDATIVE STRESS BALANCE IN YOUNG FOOTBALLERS- A RANDOMIZED DOUBLE-BLIND TRIAL.

Stankiewicz, B ; Cieślicka, M ; Kujawski, S ; Piskorska, E ; Kowalik, T ; Korycka, J ; Skarpańska-Stejnborn, A  
Journal of the International Society of Sports Nutrition. 2021;(1):44

Intensive physical exercise that competitive sports athletes participate in can negatively affect their pro-oxidative-antioxidant balance. Compounds with high antioxidant potential, such as those present in chokeberry (*Aronia melanocarpa*), can prevent these adverse changes. This study investigates the effect of antioxidant supplementation on oxidative stress balance in young footballers.

In this double-blind randomized study the diet of a 20 young male football players was supplemented with 200 ml of chokeberry juice per day, for 7 weeks. The players were randomly assigned to the experimental and control groups. Chokeberry juice supplementation did not significantly affect the outcome of the beep test. The supplementation did not significantly affect any of the morphological, biochemical, or performance parameters analysed which may indicate insufficient antioxidant capacity of the juice.

