

Using Dietary Polyphenols to Manage Post Exercise Inflammation

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ABSTRACT

Individuals participating in prolonged exercise sessions and associated training experience regular inflammation and muscle soreness. Natural products with known anti-inflammatory and/or oxidative stress blocking effects represent attractive options to traditional NSAID treatments. **PURPOSE:** To investigate the effect of combined curcumin (500-1000 mg/d; Longvida®), pomegranate extract (500-1000 mg/d; Pomella®), and Methylsulfonylmethane (500-1000 mg/d; OptiMSM®) supplement for 30-days on protein inflammatory biomarkers, inflammation-associated RNA, and oxidative. **METHODS:** All protocols were approved by the University IRB committee and participants gave written informed consent. Subjects were supplemented for 30-d prior to the half marathon race. Venous blood samples were collected for serum or RNA (Paxgene® tube) 24-h pre-race, 4-h, and 24-h after a half marathon race. Samples were analyzed in duplicate using separate bead-based protein assays to measure cytokines, soluble cytokine receptors, and myokines (Milliplex®; Millipore-Sigma). Paxgene® treated blood was analyzed using a custom, bead-based RNA assay (Quantigene®; ThermoFisher). Bead-based analysis was conducted using an automated analyzer (Luminex FM3D). Oxidative stress was measured using enzymatic assays (Cell Biolabs, Aviva Systems Biology). Fold change from PRE was calculated for the various outcome variables to allow for better comparison and model creation. **RESULTS:** Fold changes of in RNA and proteins exhibited a trend toward reduced inflammation while showcasing the soluble cytokine receptor's increased ability to tolerate inflammation with supplementation post-race. Reduced Oxidative stress (via TAC and AGE) was observed post-race with the supplement compared to placebo. **CONCLUSION:** These data support the notion that the combined use of curcumin, pomegranate and MSM prior to and after a race may result in reduced systemic inflammation and oxidative stress. More research is needed in order to understand how to use these effects to improve the effectiveness of a long-term training program.

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