

Poster presentation

The effects of prophylactic protease supplementation on markers of muscle damage prior to and following intense eccentric exercise: preliminary findings

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Background

A randomized, placebo controlled trial was performed to examine the effectiveness of 24 days of supplementation with an oral protease supplement on indices of inflammation, muscle damage, and soreness before and after a downhill running bout in aerobically-active males between the ages of 18–35.

Methods

20 aerobically-active (50.15 ± 6.16 ml/kg/min) male participants (22.05 ± 4.72 yr, 71.63 ± 2.51 in, 182.40 ± 26.89 lbs) consumed either a proteolytic enzyme combination ($N = 10$) or cellulose placebo ($N = 10$) for a total of 24 days. Supplement compliance was monitored via supplement logs indicating how many capsules were consumed each day during the period. During the supplement period, participants also agreed to limit consumption of antioxidant containing foods. Dietary compliance was monitored by the collection of food records for each day of the supplement period. After 21 days of supplementation, participants completed a 45-minute downhill run (60% VO_{2max} , -17.5% grade). Participants donated blood prior to, and for 48 hours following the run (total of 6 samples). Inflammation and muscle damage were assessed by whole blood analysis, serum creatine kinase (CK), ratings of perceived muscle soreness, and via muscle strength testing of the quadriceps. Whole blood and mus-

cle strength data were analyzed using multivariate analyses of variance (MANOVA) with repeated measures, while CK and muscle soreness were analyzed using separate one-way analyses of variance (ANOVA) with repeated measures. An alpha level of ≤ 0.05 was adopted for significance throughout.

Results

Systemic circulation of eosinophils was significantly ($p < 0.001$) increased in the supplement group. No other significant differences were noted between groups for leukocytes or erythrocytes. For muscle strength, decrements to peak torque and average power following the eccentric bout were significantly attenuated ($p < 0.05$) in the supplement group. No significant differences were observed between groups for CK or perceived muscle soreness. In addition, no significant differences were observed between groups for average daily intake of calories, macronutrients, vitamin C, or vitamin E.

Conclusion

These results indicate that prophylactic protease supplementation prior to damaging eccentric exercise significantly attenuates decreases in skeletal muscle force production capability when compared to placebo. It appears that a systemic eosinophilia may be partially responsible for this effect. Further investigations on

inflammatory mediators affected by eosinophils are needed to further elucidate the mechanisms underlying this effect.

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