Effect of the Hyperimmune Egg Supplement on Anabolic Mediators of Muscle Repair

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Abstract

Hyperimmune egg (HIE) protein is a powdered, pure egg product derived from chicken hens immunized with more than 26 endotoxin-grown pathogens. Elevated levels of many immunomodulatory factors (e.g., Shigella, Staphylococcus, Escherichia coli, Salmonella, and Streptococcus) of human origin. Oral supplementation of HIE's immunomodulatory factors results in their digestion and absorption by the body. Once absorbed into the body these pathogen stimulates the endocrine system. Growth hormone (GH), i.e., somatotropin, released from the anterior pituitary is the most vital hormone for regulating and inducing growth and repair of tissue. Insulin-like growth factor-1 (IGF-I) is a small unbranched protein that cannot be found in the blood plasma of human origin. The purpose of this study was to determine if supplementation with hyperimmune egg protein for 10 days resulted in significant alterations in IGF-I axis and/or FAI to enhance muscle repair following a bout of exercise-induced muscle damage.

Methods

Twenty-four male participants were randomly assigned to one of two groups that orally supplemented with 4.5 g·d⁻¹ for 2 d, 9 g·d⁻¹ for 2 d and 13.5 g·d⁻¹ for 6 d. PLA and HIE supplements were identical in appearance and taste before and after mixing with 237 mL of low carbohydrate milk. Blood samples were collected following 20 min of seated rest on Days 1, 8, 9, 10 and 11. On days 1, 8 and 10, participants performed an exercise performance test battery. ANCOVA was used to determine significant differences between or within the groups during the 10 d of supplementation with initial differences between groups serving as a covariate. Significance was set at P<0.05.

Results

On days 1, 8 and 10, participants performed 3 min submaximal exercise bouts on a treadmill at 0%, 3% and 6% grade with constant speed (i.e., 6 mph) for each subject. Subsequently the subjects performed 1RM strength tests and 70% of 1RM muscular endurance tests for the bench press, seated row, and squat press. Following 15 min recovery each participant performed a 30 sec Wingate test using 75% of their own body mass. Participants abstained from their regular exercise routine for the duration of the study.

Discussion

The supplement dosing was titrated over 5 days in an effort to prevent previously reported gastrointestinal disturbances. No subjects in PLA and only one subject in HIE reported any signs or symptoms of gastrointestinal disturbance and no subjects in either group reported any other changes in health status during their 10 d study period.

Conclusions

These results provide support that HIE protein supplement may have caused greater recovery through increased anabolic hormonal responses. The enhanced recovery, measured by improved performance on repeated exercise tests, is most likely attributed to the significant increases in exercise performance (HIE vs. PLA: Submax HR: 6%, anaerobic peak power: 9%, muscular strength: 3 kg and Muscular endurance: 2 reps).

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