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Combined effect of branched-chain amino acids and taurine supplementation on delayed onset muscle soreness and muscle damage in high-intensity eccentric exercise

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Journal of the
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Volume 10

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Abstract

Background

Previous studies have evaluated the effectiveness of branched-chain amino acid (BCAA) supplementation for preventing delayed onset muscle soreness (DOMS) and muscle damage induced by eccentric exercise, their findings have been inconclusive. Since taurine has anti-inflammatory and anti-oxidative effects, the present study investigated the combined effect of BCAA and taurine on DOMS and muscle damage.

Methods

Thirty-six untrained male subjects (22.5 ± 3.8 years) were assigned to four groups (placebo + placebo [placebo], BCAA + placebo, placebo + taurine, and BCAA + taurine [combined]) and given a combination of 3.2 g BCAA (or placebo) and 2.0 g taurine (or placebo), three times a day, for two weeks prior to and three days after eccentric elbow flexor exercises. DOMS and muscle damage in the biceps brachii were subjectively and objectively evaluated using the visual analogue scale (VAS), upper arm circumference (CIR), and blood parameters (creatinine kinase, lactate dehydrogenase [LDH], aldolase, and 8-hydroxydeoxyguanosine [8-OHdG]).

Results

In the combined group, VAS and 8-OHdG two days after exercise, CIR two and three days after exercise and LDH from one to three days after exercise were significantly lower than the placebo group. The area under the curve from before exercise to four days later for CIR, LDH, and aldolase was also significantly lower in the combined group than in the placebo group.

Conclusion

A combination of 3.2 g BCAA and 2.0 g taurine, three times a day, for two weeks prior to and three days after exercise may be a useful nutritional strategy for attenuating exercise-induced DOMS and muscle damage.

Keywords: Double-blind study; Amino acids; Combined supplementation; BCAA; Taurine; DOMS

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