The effects of taurine supplementation on eccentric exercise-induced muscle damage.

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Introduction

Taurine is a semi-essential amino acid and it has been reported that taurine treatment is useful for reducing physical fatigue and muscle damage during exercise training in rats. On the other hand, there is no study to evaluate the effects of taurine treatment on exercise induced muscle damage in human subjects. The purpose of this study was to determine the effects of taurine supplementation on indirect markers of muscle damage following eccentric exercise.

Methods

Fourteen healthy male (age 26±3.4) were randomized to a taurine supplement (T; n=7) or a placebo (C; n=7) before two sets of eccentric exercise. Daily food consumptions of subjects were controlled to achieve similar levels of taurine uptake from dietary sources. The T group consumed 1g of taurine capsules once a day for 14 days prior to eccentric exercise. The C group consumed identical capsules that contained wheat bran. A day after the last supplementation, muscle damage was induced on the nondominant elbow flexors by eccentric exercise regimen. Basically, 24h before the exercise regimen all subjects were tested to determine concentric 1RM of their elbow flexors. On the exercise day, subjects were seated on a chair and exercise started with when elbows are fully flexed. Subjects were asked to eccentrically extend their elbows against a resistance which is 100% of their concentric 1RM. When elbows are fully extended subjects were able to freely move their elbows without any resistance to flexed position and repeat the exercise. Exercise was consisting of 2x25 repetitions with 5 min rest between two sets. Each repetition cadence was controlled by using metronome. Blood samples were obtained before (baseline) and immediately after cessation of exercise (0 h), and through 10 d postexercise to determine plasma CK and LDH enzymes levels.

Results

Taurine supplementation resulted in increased plasma levels of taurine concentration (p<0.05). Eccentric exercise resulted in an increase in CK and LDH activities. CK and LDH enzyme activities were significantly lower in T group than that of C group on days 5, 6, 7, 8, 9 and on days 2, 3, and 4, respectively (p<0.05).

Discussion/Conclusion

These findings suggest that 14 days of taurine supplementation was helpful in reducing the elevations in plasma CK and LDH activity after eccentric exercise.

References