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The effect of BCAA supplementation on serum insulin secretion before, during, and following a lower-body resistance exercise bout

Austin Oetken*, Bill Campbell, Paul La Bounty and Darryn Willoughby

Address: Baylor University, Exercise & Biochemical Nutrition Laboratory, Waco, Texas, USA

Email: Austin Oetken* - Austin_Oetken@baylor.edu

* Corresponding author

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Background

Insulin and BCAA have been shown to be anabolic compounds via their augmentation of translation initiation when secreted or ingested before, during, or immediately after an acute resistance exercise (RE) bout. The purpose of this study was to determine the effect of BCAA supplementation on serum insulin secretion in conjunction with a lower body resistance exercise bout.

Methods

In a randomized, double blind, placebo controlled design, 20 recreationally active males (22.7 ± 3.9 yrs; 177.1 ± 7.3 cm; 83.9 ± 11.5 kg) ingested either 120 mg/kg of BCAA (n = 10) divided into 3 equal doses or a placebo (n = 10) in conjunction with a lower body RE bout. The RE bout consisted of 4 sets of leg press at 80% of 1 RM to failure followed by 4 sets of knee extension at 80% 1 RM to failure. Rest periods between sets and exercises were 150 seconds. Supplementation was administered 30 minutes prior, immediately before, and immediately following RE. Serum insulin was obtained at baseline, 30 minutes after the first supplementation administration, as well as immediately post, 30 min, 2 hr, and 6 hr post RE. Serum insulin was analyzed via ELISA (Alpha Diagnostic Intl.). Insulin data were analyzed using SPSS for Windows version 15.0. A 2 × 6 repeated measures ANOVA (mixed methods) with repeated measures on the second factor (time) was utilized.

Results

Data are reported as means ± SD. Serum insulin values at baseline, 30 minutes after the first supplementation administration, immediately post, 30 min, 2 hr, and 6 hr post RE were 19.2 ± 7.8, 23.0 ± 9.6, 25.3 ± 12.9, 24.8 ± 14.3, 19.0 ± 9.0, 15.8 ± 6.4 and 22.0 ± 11.1, 22.0 ± 11.6, 27.8 ± 9.6, 24.1 ± 9.3, 17.9 ± 9.4, 21.2 ± 13.5 for the BCAA and placebo groups, respectively. A main effect for time ($p < .001$) was observed, but no main effect was observed for group ($p = .730$). Furthermore, no statistically significant differences in insulin values between the BCAA and placebo groups was observed ($p = .211$).

Conclusion

At a dosage of 120 mg/kg of bodyweight, it appears that BCAA supplementation does not increase serum insulin values to a greater extent than an acute bout of resistance exercise alone.