

A novel whey protein hydrolysate enhances recovery of isometric muscle torque following eccentric exercise

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Introduction

- High mechanical forces during muscular contraction, particularly eccentric contraction (ECC), can cause muscle damage, inflammation, soreness and loss of force generating capacity (Byrne *et al*, 2004).
- Prolonged loss of muscle force may impair subsequent athletic performance.
- NatraBoost XR, a novel whey protein hydrolysate, reduced TNF- α production and promoted cell growth in isolated cells *in vitro* (MG Nutritionals unpublished).
- This study aimed to see whether NatraBoost XR could speed recovery of muscle force after ECC.

Methods

- 40 sedentary males had muscle soreness assessed using a visual analogue scale, and peak isometric torque of their right quadriceps muscles measured on a KinCom dynamometer.
- 100 maximal ECC of the quadriceps were performed, after which muscle soreness and peak isometric torque were reassessed.
- Subjects were then randomly allocated to consume 250ml of flavoured water alone (n=11) or containing 25g NatraBoost XR (n=6), 25g whey protein isolate (n=11) or 25g casein (n=12).
- Muscle soreness and peak isometric torque were reassessed 1, 2, 6 and 24 hr later
- Subjects consumed additional doses of supplement immediately after the 6 hr assessment and 2 hr prior to the 24 hr assessment.

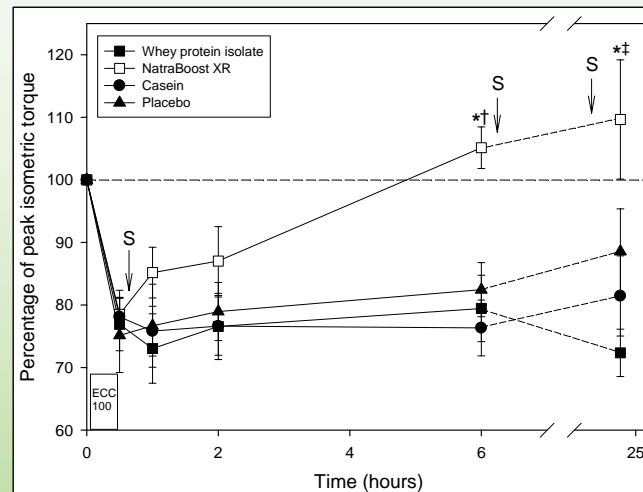


Figure 1. Change in peak isometric torque

S - supplement consumed. ECC100 - 100 maximal eccentric contractions of the quadriceps.
*Significantly different from immediate post-eccentric exercise assessment ($P < 0.001$)
† Significantly different from all other treatments ($^{\dagger} P < 0.01$; $^{\ddagger} P < 0.001$).

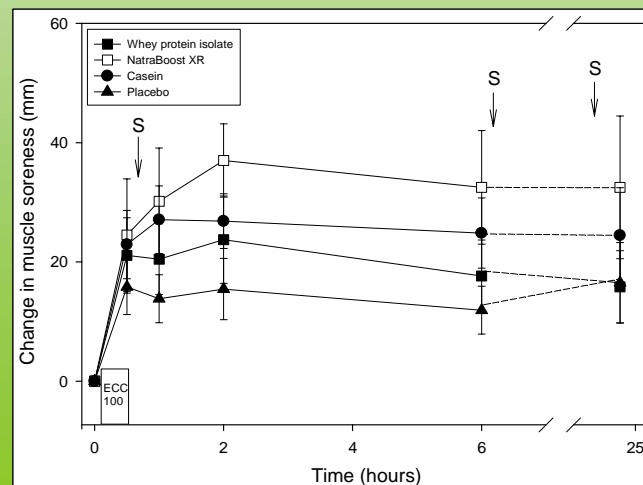


Figure 2. Change in muscle soreness

S - supplement consumed. ECC100 - 100 maximal eccentric contractions of the quadriceps.

Results

Peak torque (Fig. 1)

- There was no difference in peak torque between groups prior to ECC ($P = 0.70$).
- Peak torque decreased in all groups after ECC ($P < 0.001$) and remained suppressed in the control, whey protein isolate and casein groups for the duration of the study period.
- Peak torque recovered rapidly in the NatraBoost XR group: it was no longer different from pre-ECC values by 2 hr ($P > 0.05$) and was greater than all other groups by 6 hr ($P < 0.01$) and 24 hr ($P < 0.001$).

Muscle soreness (Fig. 2)

- Muscle soreness increased in all groups following ECC ($P < 0.001$) and remained elevated for the duration of the study period, with no difference between groups ($P = 0.93$)


Discussion

- NatraBoost XR resulted in a rapid recovery of isometric torque following eccentric exercise.
- The recovery of torque was not dependent on reduction of muscle soreness. The mechanism of action is not known.
- **NatraBoost XR may assist athletes to recover more rapidly from fatiguing and muscle damaging exercise.**

Reference

Byrne *et al*. Neuromuscular function after exercise induced muscle damage. *Sports Med* 34:49-69, 2004.

Acknowledgement

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