

## Protein hydrolysates and recovery of muscle damage following eccentric exercise

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### **ABSTRACT**

**Background:** A whey protein hydrolysate (NatraBoost XR; WPH<sub>NB</sub>) has been shown to speed repair muscle damage. We sought to determine whether this benefit is specific to this hydrolysate to evaluate a marker for quality control.

**Methods:** Three hydrolysates of the same whey protein isolate (WPI) were prepared (WPH<sub>NB</sub>, WPH<sub>1</sub> and WPH<sub>2</sub>). Isometric knee extensor strength was measured in 39 sedentary male participants before and after 100 maximal eccentric contractions of the knee extensors to induce muscle damage. Participants were then randomised to consume 250 ml of flavoured water (FW, n=9), or 250 ml of FW containing 25 g of either NatraBoost XR (n=3), WPH<sub>1</sub> (n=9), WPH<sub>2</sub> (n=9) or WPI (n=9). Strength was reassessed over the next seven days while the supplements were consumed daily. Fibroblasts were cultured for 48 hr in the presence of the different hydrolysates, WPI, saline or fetal bovine serum to ascertain effects on cell proliferation.

**Results:** Strength was reduced in all treatment groups after eccentric exercise (P<0.001). Strength recovered steadily over 7 days in the FW, WPI, WPH<sub>1</sub> and WPH<sub>2</sub> treatment groups (P<0.001), with no difference between treatments (P=0.87). WPH<sub>NB</sub> promoted faster strength recovery compared with the other treatments (P<0.001). Fibroblast proliferation was greater with WPH<sub>NB</sub> compared with saline, WPI or the other hydrolysates (P<0.001).

**Conclusions:** Promoting recovery from muscle damage seems unique to WPH<sub>NB</sub>. *In vitro* fibroblast proliferation may be a useful marker for quality control. It is not clear whether effects on fibroblast proliferation contribute to the *in vivo* effect of WPH<sub>NB</sub> on muscle damage.

**Keywords:** tissue repair, fibroblast proliferation, strength recovery, whey protein