Protease Supplementation Improves Muscle Function after Eccentric Exercise

THOMAS W. BUFORD, MATTHEW B. COOKE, LIZ L. REDD, GEOFFREY M. HUDSON, BRIAN D. SHELMArine, and DARRYN S. WILLOUGHBY

Exercise and Biochemical Nutrition Laboratory, Baylor University, Waco, TX

Abstract

BUFFORD, T. W., M. B. COOKE, L. L. REDD, G. M. HUDSON, B. D. SHELMArine, and D. S. WILLOUGHBY. Protease Supplementation Improves Muscle Function after Eccentric Exercise. Med. Sci. Sports Exerc., Vol. 41, No. 10, pp. 1908–1914, 2009. Protease supplementation has been purported to reduce the damaging effects of eccentric exercise and accelerate recovery of muscle function, possibly by regulating inflammation. Purpose: To determine the effectiveness of protease supplementation in attenuating eccentric exercise-induced skeletal muscle damage and inflammation. Methods: Subjects were randomly assigned to consume 5.83 g daily of either a cellulose placebo or a protease mixture containing fungal proteases, bromelain, and papain (Proten, Prostatech). Subjects performed a 45-min downhill (~17.5%) treadmill protocol at 60% of VO2max. An additional four blood draws and three muscle function tests were performed during the next 48 h. Blood was analyzed using standard hematology and clinical chemistry, enzyme-linked immunosorbent assay, and immunofluorescence. Biodex data were analyzed using a MANOVA on percentage change from preexercise. Significant group differences (T1, 0.05) were observed, including reductions in circulating IL-6 and IL-12 in the protease group. Significant group × time interactions (P < 0.05) were observed, including elevations in circulating eosinophils and basophils in the protease group coinciding with lower levels of serum cyclooxygenase 2, interleukin 6, and interleukin 12 in this group. Conclusions: Protease supplementation seems to attenuate muscle strength losses after eccentric exercise by regulating leukocyte activity and inflammation.
REFERENCES


