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Effect of a Tart Cherry Juice Blend on Exercise-Induced Muscle Damage in Exercising Horses

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Tart cherry juice blend administration diminishes markers of exercise-induced muscle damage. Authors' addresses: Department of Clinical Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853 (Ducharme, Fortier, Kraus, Hackett, Soderholm, Mitchell); Epizootic Research Center, Equine Research Institute, Japan Racing Association, 1400-4 Shiba, Shimotsuke-shi, Tochigi 349-0412, Japan (Hobo); Department of Population Medicine and Diagnostic Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853 (Mohammed); and the Nicholas Institute of Sports Medicine and Athletic Trauma, Lenox Hill Hospital, 100 E. 77th St., NY 10021 (McHugh); e-mail: ngd1@cornell.edu (Ducharme). © 2008 AAEP.

1. Introduction

A recent human study showed tart cherry juice blend (TCJB) lowered serum markers of exercise-induced muscle damage in patients. This benefit was believed to be a result of significant antioxidant and anti-inflammatory activities identified in tart cherries.

2. Materials and Methods

Six untrained/unconditioned horses, randomly divided into two groups assigned in a double-blind crossover study (2-wk wash out), were administered 48 oz, q 12 h, of either TCJB^a or a placebo for 2 wk before exercise. Horses were submitted to a stepwise incremental exercise protocol. Blood samples were taken on entry into the study, before and during the exercise test, hourly after exercise up to 4 h, and daily for 5

days after exercise test to measure markers of muscle damage [creatinine kinase (CK), aspartate aminotransferase (AST), Troponin I], markers of oxidative stress [thiobarbituric acid reactive substances (TBARS)], and inflammation [serum amyloid A (SAA)]. The effect of each treatment on the variables was assessed by regression analysis, and the level of significance was set at $p = 0.05$.

3. Results and Discussion

The exercise test resulted in a significant increase in oxidative stress ($p = 0.0001$), markers of inflammation ($p = 0.0140$), and markers of muscle damage (AST [$p = 0.0013$] and CT [$p = 0.089$]). TCJB treatment reduced the increase in markers of muscle damage (AST [$p = 0.0135$] and CK [$p = 0.054$]). The mechanisms of action for this beneficial effect could not be

Research Abstract

NOTES

CARDIOPULMONARY/EXERCISE

ascertained, because the flux in TBARS and SAA was unaffected by TCJB treatment. In conclusion, oral administration of TCJB for 2 wk before strenuous exercise resulted in significantly less elevated markers of muscle damage after exercise. Administration of TCJB may diminish muscle damage induced by exercise and allow horses to return to training earlier after a competition.

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Footnote

^aCherryPharm, Geneva, NY 14456.