Response to Intra-Articular IL-1 by Horses Receiving an Anti-Inflammatory Dietary Nutraceutical

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Intra-articular interleukin (IL)-1 administered to healthy horses alters synovial fluid composition in a manner consistent with mild inflammation. A dietary nutraceutical (SEQ) resulted in significant inhibition of IL-1–induced inflammatory response, which supports the use of this product as a preventive for articular inflammation in horses. Authors’ addresses: CANTOX Health Sciences International, 2233 Argentia Road, Suite 308, Mississauga, Ontario L5N 2X7, Canada (Pearson); Department of Animal Science, Michigan State University, East Lansing, MI 48824 (Orth); and Department of Human Health and Nutritional Sciences, University of Guelph, Ontario N1G 2W1, Canada (Lindinger); e-mail: wpearson@cantox.com. © 2008 AAEP.

1. Introduction

Dietary nutraceuticals are commonly used in horses to treat/prevent joint disease, but most have no research data supporting their efficacy. Objectives of this study were to (1) induce mild inflammation in horses using intra-articular interleukin 1 (IL-1in) and (2) evaluate the ability of a dietary nutraceutical (SEQ) to modulate IL-1–induced inflammation.

2. Methods

Ten horses were fed a diet containing SEQ (0 or 15 g/day; n = 5 per treatment) for 29 days. All horses received IL-1in (10 and 100 ng on days 14 and 15, respectively) into one intercarpal joint and intra-articular saline (salineia) in the contralateral joint. Two-way rmANOVA compared effects of IL-1in and salineia within each diet group; three-way ANOVA compared effects of diet.

3. Results

IL-1in increased synovial fluid (PGE2, GAG, inflammatory cells, and protein) in control horses with no effect on nitric oxide. Fourteen days of SEQ increased synovial fluid (GAG) before IL-1 injection. IL-1in did not increase synovial fluid (glycosaminoglycan [GAG] or prostaglandin E2 [PGE2]) in SEQ horses compared with salineia, and synovial fluid (GAG and PGE2) were higher and lower, respectively, in SEQ horses compared with controls. IL-1in induces mild inflammation in horses, and dietary SEQ for 14 days before IL-1in partially inhibits this inflammation.

4. Discussion

Inhibition of PGE2 provides evidence for the pain-relieving effect of SEQ in horses with joint pain. Further research is needed to understand the elevation of GAG subsequent to SEQ supplementation, but this effect may be caused by bioaccumulation of dietary GAGs.

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