Effect of HA and TA on IL-1 Treated Chondrocyte Pellets

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Results of this in vitro study suggest the addition of sodium hyaluronate or triamcinolone acetate has a protective effect on chondrocyte pellet proteoglycan catabolism. Authors’ address: Equine Medicine and Surgery Department, College of Veterinary Medicine, University of Illinois, 1008 West Hazelwood Drive, Urbana, IL 61802; e-mail: ecschaef@yahoo.com. © 2007 AAEP.

1. Introduction
A previously published study showed that the addition of Halovet in combination with methylprednisolone acetate had a protective effect on interleukin-1 (IL-1) induced proteoglycan (PG) matrix catabolism. Our hypothesis was administration of a high-molecular-weight sodium hyaluronan⁵ alone or in combination with a medium-acting corticosteroid (triamcinolone acetate)b could equally mitigate effects of IL-1 induced PG matrix catabolism.

2. Materials and Methods
Normal chondrocyte pellets from four horses were isolated, cultured, and treated with fresh control media, IL-1 media, or IL-1 media containing triamcinolone acetate (TA), sodium hyaluronate (HA), or TA with HA. New PG synthesis and release was determined by ³⁵SO₄ incorporation into the pellet or release into the media, respectively. Total glycosaminoglycan (GAG) content in pellets and media was determined using dimethylene blue binding assay. Total DNA content per pellet was determined using fluorometric quantification.

3. Results
HA (2.0 mg/ml) caused a significant increase in PG synthesis of IL-1 treated pellets, whereas TA alone had no effect. Total pellet GAG content had a significant increase when treated with 2.0 mg/ml of HA or 0.6 mg/ml of TA.

4. Discussion
In contrast to a previously published study, 2.0 mg/ml of HA alone had a protective effect on proteoglycan metabolism in IL-1 stimulated chondrocytes, whereas 0.6 mg/ml of TA alone had a protective effect on total GAG pellet content. In this study, there was no significant benefit from combining HA and TA.

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⁶Vetalog, Fort Dodge Animal Health, Fort Dodge, IA 50501.