Evaluation of Intra-Articular Polysulfated Glycosaminoglycan and Sodium Hyaluronan for Treatment of Osteoarthritis Using an Equine Experimental Model

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The use of intra-articular polysulfated glycosaminoglycan or sodium hyaluronan showed disease-modifying effects and performed significantly better than placebo treatment in experimental osteoarthritis. The results of this study support the use of both of these products for equine osteoarthritis. Authors’ address: Gail Holmes Equine Orthopaedic Research Center, Colorado State University, 2503 Bay Farm Road, Fort Collins, CO 80523; e-mail: david.frisbie@colostate.edu. © 2008 AAEP.

1. Introduction
Few randomized, placebo-controlled studies evaluating the effectiveness of polysulfated glycosaminoglycan (PSGAG) and sodium hyaluronan (HA) on equine osteoarthritis (OA) have been performed; thus, these therapeutic agents were critically evaluated in this study.

2. Materials and Methods
This study was a double-blinded, experimentally controlled, randomized block design using 24 horses in an established model of OA. OA was induced in one carpal joint of each horse. On days 14, 21, and 28, horses received one of three intra-articular treatments: (1) 250 mg PSGAG and 125 mg amikacin, (2) 22 mg sodium hyaluronan and 125 mg amikacin, and (3) 2 ml 0.9% NaCl and 125 mg amikacin (PCB). Clinical, biochemical, gross, and histologic outcome parameters were objectively measured. Data were analyzed using a combination of analysis of variance matrices; a p value of ≤0.05 was considered statistically significant.

3. Results
No adverse treatment-related events were detected. Although the model induced a significant change in clinical parameters, no significant treatment effects were shown with the exception of improvement in synovial fluid effusion with PSGAG when compared with PCB. Histologically, the degree of synovial membrane vascularity and...
subintimal fibrosis were significantly reduced with PSGAG treatment compared with PCB. A trend of similar results was seen in synovial membranes of HA-treated horses. Histologically, significantly less fibrillation was seen with HA treatment, and a similar trend was observed with PSGAG compared with PCB.

4. Discussion

Results of this study indicated that PSGAG and HA had beneficial effects that could classify them as disease-modifying OA drugs. As such, both are viable therapeutic options for equine osteoarthritis.

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Footnotes

bAmikacin® (Sulfate injection, USP), Sicor Pharmaceuticals, Inc., Irvine, CA 92618.
cHyvise® (Hyaluronate Sodium), Anika Therapeutics, Inc., Woburn, MA 01801.