The Efficacy of Equine Oral Joint Supplements


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Abstract
Few studies have examined the efficacy of glucosamine, hyaluronic acid, and chondroitin sulfate supplements in horses. The purpose of this study was to determine if the commercially available supplements are meeting the label guarantees, and to analyze any correlation between price point and efficacy of use. The supplemental ingredients of interest in this study are combinations of glucosamine, hyaluronic acid, and chondroitin sulfate. Horses in the study were fed each supplement for a 14-day period with synovial fluid extracted through aseptic arthrocentesis at days 0 and 14. The 12 horses followed a 14-day feeding period accompanied by a 28-day dry-out period. This protocol was repeated 3 times, each with a different supplement.

Introduction

Lameness evaluations were conducted on days 0 and 14 of each trial to determine any correlation between supplementation and physical changes. Graphs 2, 3, and 4 represent the data collected from the veterinarians over the 3 trials on the left front leg of each horse. The data showed no relationship between supplementation and physical change.

Discussion

The difference was taken between day 14 and day 0 for each supplement to represent a positive or negative change. Table 2 shows the differences of each horse for supplements A, B, and C. The results are represented in Graph 1 to show the diurnal difference between the 3 supplements. According to the graph, supplement C showed the most negative differences, there were a few negative differences in supplement B, and only positive differences were found using supplement A.

Methods

Exercise regimens of different levels were tested to determine the connection between amounts of exercise and supplement efficacy. The samples of each supplement, blood serum, and synovial fluid were evaluated using enzyme-linked immunosorbent assays (ELISA) to quantify the chondroitin sulfate and hyaluronic acid. Phosphorus assisted carbohydrate electrophoresis (PACE) was used to quantify the glucosamine molecules in each supplement product.

Figure 1: Graph 1: Supplement Differences

Figure 2: Graph 2: Supplement A - Left Front

Figure 3: Graph 3: Supplement B - Left Front

Figure 4: Graph 4: Supplement C - Left Front

Figure 5: Graph 5: Supplement A Comparison

Figure 6: Graph 6: Supplement B Comparison

Figure 7: Graph 7: Supplement C Comparison

Table 1: Pasture and Exercise Groupings

Table 2: Supplement Differences

Table 3: Label Guarantee vs. Analyzed Quantity

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