Evaluation of Oral Avocado/Soybean Unsaponifiables Using an Experimental Model of Equine Osteoarthritis

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Avocado/soybean unsaponifiables (ASU) administered orally significantly reduced the composite gross pathological score (articular cartilage erosion and synovial membrane hemorrhage) of horses with experimentally induced osteoarthritis (OA). There were no significant side effects noted throughout the study. This is the first controlled study that provides positive evidence for the use of an oral product in equine OA. Authors' address: Gail Holmes Equine Orthopaedic Research Center, Colorado State University, 2503 Bay Farm Road, Fort Collins, CO 80523; e-mail: dfrisbie@colostate.edu (Frisbie). © 2006 AAEP.

1. Introduction

Joint disease, specifically osteoarthritis (OA), is one of the most prevalent and debilitating diseases affecting the equine industry. To date, few equine OA treatments have shown a disease-modifying effect when assessed in a controlled study, and none of those treatments were administered orally. The combination of unsaponifiable oil extracted from avocado and soybeans has been investigated over the last decade with promising results in experimental animal models and human patients. A combination of in vitro, in vivo, and clinical data suggests that additional investigation is warranted in target species. An avocado/soybean unsaponifiable (ASU) product has been formulated for horses, but to date, no controlled equine studies have been published. The purpose of this study was to compare ASU with placebo treatment in an equine model of OA.

2. Materials and Methods

This study was a blinded, experimentally controlled, randomized block design that used 16 horses in an established model of OA. On day 0 of the study, arthroscopic surgery was performed, and OA was induced unilaterally in the mid-carpal joint of all horses. Also on day 0, horses were divided into two treatment groups: placebo-control group and ASU-treatment group. The placebo-control horses (n = 8) received molasses orally one time daily, whereas the ASU-treated horses (n = 8) received 6 g of ASU plus a similar volume of molasses orally; both treatments were continued throughout the study period. On day 14, horses began and continued treadmill exercise for the remaining 8 wk of the study. Synovial fluid and serum were assessed every other week for total protein concentration, white blood cell (WBC) count, and levels of the inflammatory marker...
prostaglandin E₂ (PGE₂). Horses were assessed for lameness using the American Association of Equine Practitioners grading scale every 2 wk. At the termination of the study, operated joints were evaluated grossly, and tissues were harvested for biochemical and routine histologic examinations.

3. Results
All horses completed the study, and no adverse events were recorded. At the termination of the study, horses treated with ASU were observed to have significantly improved total gross examination score (articular cartilage erosion + synovial membrane hemorrhage score) in their OA joint compared with placebo-treated horses. The degree of lameness and other outcome parameters were not significantly different when ASU and placebo treatments were compared.

4. Discussion
Although the improvements were modest, they were more significant than those seen with some other parenteral (polysulfated glycosaminoglycan and IV hyaluronan) and oral (hyaluronan) products tested using the same model of equine OA. These data suggest that further research using both in vitro and clinical trials should be undertaken to evaluate ASU in horses.

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Footnote

*This product is commercially available in Europe, but, at the time of this publication, it is not commercially available in the United States.