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J.D. Pagan

THE EFFECT OF A NUTRITIONAL SUPPLEMENT ON THE INCIDENCE OF OCD LESIONS, FUTURE PERFORMANCE AND BONE-RELATED LAMENESS OF STANDARDBRED WEANLINGS

K.L. WAITE, B.D. NIELSEN, M.W. ORTH, D.S. ROSENSTEIN AND B.A.L. LEVENE
Michigan State University, East Lansing, MI

Osteochondritis dissecans (OCD) is a developmental orthopedic disease in young animals that occurs due to a disturbance of growth cartilage such that cartilage fails to develop into healthy, weight-bearing bone. While epidemiological data suggests that OCD may be present in as many as 25% of all young horses, little information is available regarding the long term effects of OCD on future performance of the equine athlete. Research has suggested a number of factors which may play a role in the development of OCD. However, a single definitive cause has yet to be determined. A number of researchers have shown that low Cu concentration in the diet of young horses may increase the incidence of OCD lesions, epiphysitis and intermittent lameness. Additional work has demonstrated an increase in bone density, hence bone strength, as determined by radiographic bone aluminum equivalence (RBAE) in horses fed increased levels of calcium over those recommended by the NRC (1989). Sodium zeolite A (SZA) as a source of dietary silicon has been shown to decrease the incidence of tibial dyschondroplasia in poultry and to decrease the incidence of athletic injury to racehorses. Thus, we hypothesize that feeding a supplement to young horses containing increased levels of Cu, Ca and silicon will decrease the incidence of OCD, improve bone metabolism as estimated by serum markers and decrease future incidence of bone-related lameness. To test our hypothesis, 100 Standardbred weanlings will be randomly assigned to dietary treatment groups: Control (C), Low (L) and High (H) (Table 1).

Table 1. Content of dietary supplement (Consolidated Nutrition, L.C.) by treatment.

Treatment	C	L	H
Ca	.40%	.50%	.70%
Cu	10 ppm	20 ppm	40 ppm
SZA	.00	.92%	2.80%

Each farm will house horses on all three treatments, and horses will remain on their respective treatment for 12 months. Feed will be analyzed for mineral concentration, energy density and protein content. At day 0 and at the conclusion

of the project, horses will have radiographs taken of the hock, stifle and fetlocks to assess the presence of OCD lesions. Radiographs will be analyzed by an individual blinded to treatment. Serum samples will be collected at day 0, 100, 200 and at the conclusion of the project for the analysis of osteocalcin, a biochemical marker of bone synthesis, as well as C-terminal cross-linked telopeptides of type I collagen (ICTP), a biochemical marker of bone resorption. Differences between treatment groups will be statistically analyzed for repeated measures using PROC MIXED (SAS). The feeding trial will conclude before horses are sold in fall yearling sales and enter training. One year after the completion of the feeding trial, race records of all study horses will be obtained and differences by treatment in official starts, average race times, money earned and injuries will be analyzed.