Biomarker Assessment for Detection of Joint Pathology in Horses and Evaluation of the Nutritional Supplement Steadfast Equine as a Therapeutic

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Degenerative joint disease (**DJD**) is one of the most prevalent musculoskeletal disorders seen in horses, resulting in loss of performance ability, early retirement and significant cost to horse owners. Biomarkers of tissue turnover may offer a sensitive diagnostic for the early detection of joint pathology. The objectives of this thesis were to establish inter- and intra-individual variance of joint tissue biomarkers (CTX-II, PIIANP and NO) in an equine population, determine whether there was a correlation between biomarker concentrations and lameness, and evaluate the efficacy of Steadfast® Equine for use in horses with naturally acquired lameness. CTX-II concentration decreased with increasing lameness score ($P<0.0001$), however there was no effect of lameness score on PIIANP concentration ($P>0.21$) or NO concentration. There was no effect ($P > 0.5$) of supplementation with Steadfast® Equine on lameness score, CTX-II concentration, or PIIANP concentration compared to the placebo group. The culmination of the data of these two trials demonstrates the potential utility of serum CTX-II concentration in order to non-invasively evaluate DJD and also several confounding variables and limitations, such as season, gender and a precise standard against which to measure joint damage.