EFFECT OF A TEST FOOD ON CLINICAL MEASURES, CARTILAGE BIOMARKERS, AND METABOLOMIC CHANGES IN CATS WITH APPENDICULAR DEGENERATIVE JOINT DISEASE

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This study was conducted to evaluate the effect of a test food on clinical and biological measures when fed to cats with appendicular degenerative joint disease (DJD). Thirty-one domestic short hair cats (initial weight, 4.2 ± 1.27 kg, age, 12.1 ± 2.98 years) with lameness and radiographic changes consistent with DJD were included in the study. All cats were fed a control food for 28 days followed by a test food. The test food contained increased levels of DHA and EPA, methionine, manganese, Vitamins C and E, and L-carnitine. Blood and urine samples were collected on the last day of the control food and after 14 days on the test food. Serum fatty acids, cartilage biomarkers, urine biomarkers, and plasma metabolomics were measured. Orthopaedic exams were performed every 14 days during the study and collars with activity watches were worn throughout the study beginning the last week of the control food. After consuming the test food, arthritic cats had improved mean overall orthopaedic scores and increased activity (activity counts/5 minute interval) compared to while on the control food. They also had lower mean serum concentrations of C2C, CPII, keratan sulfate, and urinary CTXII after consuming the test food. Cats fed the test food had significantly higher serum eicosapentaenoic acid, docosahexanoic acid, ghrelin, PIIANP, and PIIANP:C2C ratio. Metabolomic changes after consuming the test food were consistent with a decrease in pathways associated with carbymoylation of proteins, inflammation, and cartilage degradation. In summary, feeding cats with DJD a test food resulted in improved orthopaedic scores, increased activity, and a reduction in cartilage degradation biomarkers. Furthermore, metabolomic analysis supported reduced inflammation and decreased cartilage destruction.