Antioxidant-Containing Kibble Supplemented to Adult Cats Elicited Improvements in Antioxidant Outcomes and C-Reactive Protein.
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Abstract: The objective of this study was to evaluate oxidative health biomarkers in healthy male and female adult cats (n=30; 10 male and 20 female, avg age and BW ± SD 3.34 ± 3.19 years; 3.85 ± 1.07 kg) fed an adult maintenance diet (Blue Buffalo Healthy Living Adult Chicken and Brown Rice) without (control diet) and supplemented with an antioxidant-containing kibble (test diet; proprietary blend containing blueberries, cranberries, and other antioxidant-containing ingredients). Both diets analyzed as 35.9% crude protein, 19.8% fat, 2.1% crude fiber, 6.4% moisture, 28.6% carbohydrate as-is. We hypothesized that test feeding would reduce serum pro-oxidative biomarkers, compared with control feeding. The study protocol was first approved by the Institutional Animal Care and Use Committee. All cats were fed a base kennel maintenance diet (no added antioxidants beyond maintenance requirements) for 14d before treatment phase. Animals were then randomized to control or test for a 28d treatment period in a randomized cross-over design. Base kennel maintenance diet was provided for a 14d washout, followed by another treatment period. Serum was collected on days 0, 14, and 28 of for biomarkers analysis. Data were analyzed as mixed models 2-way ANCOVA (SAS v9.4). Significance differences between treatments were set at P<0.05. Average daily food intake and body weight were similar between treatments for the duration of the study. Serum advanced glycation end-products and malondialdehyde were significantly (P<0.05) less when cats were fed test diet compared with control diet. Interestingly, serum C-reactive protein (CRP) was decreased and Fms-related tyrosine kinase 3 ligand was greater (P<0.05) when cats were fed test diet compared with control diet. These data suggest that inclusion of an antioxidant-containing kibble extruded to preserve antioxidant activity to a base kibble exhibits some favorable modulation to serum antioxidant markers and CRP in cats. These observations warrant additional research to elucidate the effects.

Keywords: antioxidant, biomarkers, cats

The Acute Effects of Supplementing a Meat-Based Diet with a Combination of Creatine, Carnitine and Choline, Taurine or Methionine on Post-Prandial Plasma Creatine and Creatinine Concentrations in Dogs. Sydney Banton¹, Ulrike Braun², Julia Guazzelli Pezzali¹, Anna-Kate Shoveller¹, ¹University of Guelph, ²AlChem Trostberg GmbH

Abstract: Creatine is an essential nitrogenous compound for cellular energy homeostasis in vertebrates. It is synthesized from the methylation of guanidinoacetate, a metabolite of arginine and glycine. Creatine is found in animal protein, however, when heat-processed for pet food, the creatine content decreases dramatically and creatinine is formed. Previous data from this study have been presented, however, the current objective was to define the postprandial plasma creatine and creatinine response in dogs fed a commercial meat-based diet (CON), top-dressed with a combination of creatine, carnitine and choline (CCC) or other nutrients involved in methyl metabolism, methionine (MET) or taurine (TAU). The control diet contained 0.195 g/kg creatine and 0.563 g/kg creatinine on an as-fed basis. Eight adult Beagles were fed one of the four diets for 7 days in a Latin Square design. On day 7, dogs had cephalic catheters placed and a series of blood samples were collected at fasted and up to 6 hours post-meal. Creatine and creatinine were analyzed using HPLC and data analyzed using Proc Glimmix in SAS (Version 9.4). Plasma creatine concentrations were greater in dogs fed CCC from 60 to 180 minutes post-meal (P<0.05) compared with MET (72±7 µmol/L) at fasted (P>0.05) and greater compared with all other treatments from 15 to 360 minutes post-meal (P<0.05), with a peak concentration of 735±74 µmol/L at 90 min. Plasma creatinine concentrations were greater in dogs fed CCC from 60 to 180 min post-meal compared to all other treatments (P<0.05), with a peak concentration of 223±13 µmol/L at 90 min. Both peak concentrations were outside of established reference ranges in dogs. These data suggest that when creatine is top-dressed for 7 days, plasma creatine remains increased at fasted and up to 6 hours post-meal, while plasma creatinine remains increased up to 3 hours post-meal, which has implications for energy production and methyl metabolism.

Keywords: canine, creatine, meal response