A prospective clinical study was conducted with 31 adult dogs (21.8 ± 15.3 kg, age: 5.4 ± 3.3 years), recruited from private veterinary practices across the United States, diagnosed with chronic enterocolitis (predominantly large bowel diarrhea) and currently experiencing an episode of diarrhea. Dogs were excluded from this study if they had intestinal parasites, systemic diseases, chronic use of colonic motility drugs, received oral antibiotics within past 4 weeks, or consumed a therapeutic food within past 3 months. Dogs qualifying were switched to a complete and balanced dry therapeutic food (TF) including whole grains and fiber sources (ground pecan shells, cellulose, flaxseed, dried beet pulp, dried citrus pulp, pressed cranberries, dried pumpkin, psyllium seed husks, and ginger root) for 56 days. Physical examinations, clinical evaluations and fecal collections were performed on days 1, 2, 3, 14, 28, and 56. Veterinarians evaluated changes in overall clinical signs, recurrence of clinical signs and stool parameters (consistency, blood, mucus, stool frequency) as compared to baseline at days 1, 2, 3, 28, and 56. Pet owners evaluated stool quality on a daily basis and nausea/vomiting, quality of life, and stooling behaviors (straining, unproductive attempts, defecation accidents) at days 1, 14, 28, and 56. Fecal short chain fatty acids (SCFA) were analyzed using liquid-liquid extraction and gas chromatography with flame ionization detection. Statistical analysis was performed using a mixed-effects model. Untargeted metabolomics analysis was performed by a commercial lab and analyzed using repeated measures ANOVA. Results significant at pDiarrhea improved significantly within the first 24 hours of consuming TF. Veterinarians reported that 68% of dogs had complete resolution of their clinical signs and remaining 32% of dogs were improved after 56 days with no dogs having a recurrence of clinical signs ($p < 0.05$). Additionally, dogs had significant improvement in stool consistency and reductions of blood and mucus in stool. Pet owners reported a significant decrease in nausea/vomiting, and improvements in stooling behaviors and quality of life after consuming TF for 28 days; these changes were sustained through day 56. TF significantly decreased fecal putrefactive metabolites isobutyric, 2-methylbutyric, and isovaleric acids, and decreased fecal ammonium compared to baseline. In addition, TF increased fecal ribulose/xylulose and arabinose, saccharolytic products derived from fiber, compared to baseline. Furthermore, TF significantly increased fecal antioxidant and anti-inflammatory plant compounds such as limonin, nomilin, diosmetin, tangeritin, sinensetin, eriodictyol, secoisolariciresinol diglucoside, vanillate, hesperidin, neoponcirin, and narirutin, as well as postbiotics produced by microbial metabolism such as secoisolariciresinol, hesperetin, ponciretin, naringenin, and 4-hydroxycinnamate as compared to baseline.

TF rapidly improved stool quality and resolved clinical signs in dogs with chronic enterocolitis and pet owners reported improvement in stooling behaviors and quality of life. TF increased metabolites associated with saccharolytic fermentation, decreased putrefactive metabolites, and increased antioxidant and anti-inflammatory plant compounds and postbiotics. Fiber sources rich in antioxidant and anti-inflammatory compounds may contribute to long term health and contribute to rapid resolution and decreased recurrence of chronic diarrhea.

## NM05

### Hydration Measures in Cats During Brief Anesthesia: Intravenous Fluids Versus Pre-Procedure Water Supplement Ingestion

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Cats undergoing a routine dental cleaning procedure require anesthesia; although use of intravenous (IV) fluids is considered the standard of care, ultimately including IV fluid therapy is up to the discretion of the attending veterinarian. This study evaluated hydration measures in domestic shorthair cats (n = 53; 5.0 kg BW± 1.0 kg SD; age 4.1 yrs ± 1.6 yrs SD) undergoing a dental cleaning as a model for a short anesthetic procedure to compare the inclusion (F group; *N*=20: 10ml/kg BW/hr) or exclusion (no-F group; *N*=19) of IV fluids during the anesthesia period, or offering a nutrient-enriched water supplement (NW group: *N*=14) to be ingested 2-3 hrs prior to anesthesia with no IV fluids administered. All cats had an IV catheter. Blood samples for serum chemistry and osmolality ($S_{osmo}$), blood pressure, and total body water (TBW) by quantitative magnetic resonance (QMR) were obtained three times; 2-3 hrs prior to anesthesia (baseline), immediately prior to anesthesia, and immediately after the dental procedure. Each cat was housed in the clinic starting 2-3 hrs prior to the dental cleaning with free access to either 50 mL of NW (NW group) or tap water (F or no-F groups). Nine of 14 cats drank > 98% and 5 cats ingested 30 to78% of the NW dose, which on average equates to a 0.9% increase in BW from liquid ingestion. By contrast, the F or no-F groups ingested 3 mL ± 2 mL (SD) of tap water. The duration (min) of the anesthetic procedure was 18 (±12min SD), 15 (±8min SD), and 13 (±7min SD), whereas the duration (min) between QMRs for the pre- and post-anesthesia was 50 (±19min SD), 50 (±18min SD), and 42 (±8min SD), for the NW, F, and no-F groups, respectively. A significant time x treatment (TxT) interaction ($P < 0.001$) resulted for %TBW. There was no difference ($P > 0.35$) for %TBW between groups at baseline. Immediately prior to anesthesia, %TBW increased 0.9% (±0.3% SE; $P < 0.001$) from baseline, by contrast the F or no-F groups quantitatively declined -0.3% (±0.2% SE; $P = 0.19$) and -0.1% (±0.1% SE; $P = 0.54$), respectively versus baseline. After the dental cleaning, the NW group returned to baseline %TBW (52.7%; $P = 0.85$), the F group remaining stable at -0.2% lower (±0.2% SE; 50.7%; $P = 0.25$), but the no-F group significantly dropped -0.9% (±0.2% SE; 51.1%; $P < 0.001$) compared to baseline. Serum measures associated with general hydration status and electrolytes resulted in a significant TxT interaction (total protein[TP] $P = 0.02$; sodium $P = 0.03$; magnesium $P = 0.02$), whereas others like creatinine ($P= 0.34$), urea nitrogen ($P = 0.37$), or $S_{osmo}$ ($P = 0.09$), potassium ($P = 0.06$) did not. Sodium, magnesium, and TP primarily differed ($P < 0.05$) because the NW group was significantly higher at baseline compared to F and no-F groups, NW had declined compared to baseline, and groups did not differ post-anesthesia. Main effect of time was significant ($P < 0.01$) for diastolic, systolic, arterial pressure, or heart rate, as differences were observed at the end of the anesthesia period, but effect of treatment ($P > 0.09$) or TxT ($P > 0.31$) were not significant. This study demonstrated that cats ingesting a nutrient-enriched water supplement 2-3 hrs prior to anesthesia will begin the procedure better

hydrated as determined by increased %TBW than cats offered tap water. In addition, NW cats appear to be equally hydrated compared to cats administered IV fluids or better hydrated than cats with no IV fluids following completion of a brief anesthetic procedure.

## NM06

### Evaluation of Visceral Fat Mass in Dogs by Computed Tomography

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In human medicine, visceral obesity, defined as excessive accumulation of visceral fat, has been reported as a risk factor for diabetic mellitus, cardiovascular disease, dyslipidemia, and hypertension. In humans, computed tomography (CT) has been used as the gold standard to measure visceral fat, and it is reported that visceral fat area (VFA) of umbilical slice significantly correlates with total visceral fat mass (VFM). In veterinary medicine, however, few studies have evaluated visceral fat using CT images. The objective of this study was to evaluate visceral fat in dogs using CT images and to determine the slice which significantly correlates with VFM in order to make visceral fat measurement easier.

Ninety dogs which were referred to the Veterinary Medical Center of the University of Tokyo from May to July 2018 and were conducted whole body CT scans for diagnostic purposes were evaluated. In each CT image slice, fat was identified based on an attenuation range of −135 to −105 Hounsfield units (HU) of fat; fat inside the abdominal wall musculature was identified as visceral fat. We calculated VFM as the product of the VFA and thickness, and examined the correlation between VFM and VFA for each lumber vertebra (L1 to L7). We also calculated visceral fat percentage (VF%) as the ratio of the product of the VFM and fat density to the body weight, and examined the VF% and body condition score (BCS) correlation; VFA% was then calculated as the VFA to body area ratio, and the correlation between VF% and VFA% was examined. Additionally, we examined VF% and abdominal circumference correlation which was compensated for by the body size index characteristics including the ilium wing distance (IWD), femur length (FL), and vertebral length of L6 (VL) in order to predict VFM by body measurement.

The results showed positive correlations between the VFM and VFA at L1 to L7. Among these lumbar vertebras VFA of L3 showed the highest correlation with VFM ($rs$=0.968). There was no significant correlation between VF% and BCS ($rs$=0.517). VF% showed significant correlation with VFA% at L3 ranging from 0.15% - 6.76% in 90 dogs. The abdominal circumference of L3 which was compensated for by the IWD, FL, and VL did not show significant correlation with VF% ($rs$ of 0.466, 0.556, and 0.373, respectively).

This study revealed that VFA of L3 on CT could be used to evaluate canine visceral fat. Moreover, BCS showed no correlation with VF%, indicating that BCS alone is insufficient to evaluate the visceral obesity. Although abdominal circumference is used to estimate visceral fat without anesthesia in human medicine, compensated abdominal circumference did not significantly corelate with VF%. Considering the results, it is difficult to evaluate visceral fat by only morphometric measurement because there were more individual differences here than in humans. Further study is needed to evaluate visceral fat using non-anesthetic methods such as bioelectrical impedance analysis.

## NM07

### A Novel New S-Adenosylmethionine Salt with Increased Bioavailability

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Salts of S-adenosylmethionine (SAMe) contribute to their inherent stability, but this study is first to show an effect on bioavailability. SAMe is the principal biological methyl donor synthesized in all mammalian cells but most abundantly in the liver. SAMe is a compound used by the body to make glutathione which is an antioxidant that protects cells from toxins. When the liver is compromised, production of SAMe can drop, subsequently lowering liver glutathione concentrations in dogs and cats. The objective of this study was to assess and compare the pharmacokinetic profiles of a 225 mg dose of SAMe tosylate disulfate NMXSS75® (Denamarin®, Nutramax Laboratories Veterinary Sciences) and a 82 mg dose of SAMe phytate NMXSS75A™ (Denamarin Advanced, Nutramax Laboratories Veterinary Sciences). These two different supplements were administered once followed by a 7 day washout in a two period crossover design in a laboratory population of beagle dogs (n = 18). Dogs were randomly assigned to 1 of 2 groups in which sequence of treatment administration was randomly assigned. Blood samples were drawn at pre-treatment, 30 and 60 minutes; then at 2, 4, 6, 8 and 24 hours after treatment on days 0 and 7. Plasma samples were shipped to and tested at an outside laboratory for SAMe concentrations. Cmax, Tmax, AUC, and half-life means were calculated and analyzed for each group. At the administered dosages there were no significant differences in bioavailability between the two salts. This study shows that the pharmacokinetics of 82 mg of the SAMe phytate compound was comparable to 225 mg of the SAMe tosylate compound. This new salt in Denamarin Advanced™ allows for lower levels of a SAMe in a product for ease of administration for liver support.

## NM08

### Cats with a Specific AGXT2 Genotype Differentially Respond To Dietary Intervention for Calcium-Oxalate Stone Risk

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This study was completed to isolate and evaluate a genotype specific nutritional intervention for reducing the risk of calcium oxalate stones.

Metabolomic analysis of 445 cats (metabolomics measured by Metabolon®) with scaled imputed data was used to compare the profiles of specific genotypes. A genome wide association study of these