

Evaluation of 3 Struvite-Oxalate Preventative Diets in Healthy Cats

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There are 3 feline "oxalate-struvite" preventative diets available. We hypothesized that (a) these 3 diets would induce lower urinary saturation estimated by relative supersaturation for struvite (RSS_{struvite}) and calcium oxalate (RSS_{caox}) than an adult maintenance diet.

Six healthy shorthair cats, 2 FS aged 3 yr, 2 FS aged 6 yr, and 2 MC aged 3 yr, were randomly assigned to consume 1 of 3 dry struvite-oxalate preventative diets (CD = Prescription Diet c/d MultiCare, SO = Royal Canin s/o, and UR = Purina UR St/ Ox) or a maintenance adult food (M = Science Diet Maintenance) in a Latin-square design. Diets fed for 3 weeks and a 24hour urine sample was collected. All cats consumed all 4 diets. Data were analyzed using ANOVA with significance of $p < 0.05$.

Differences were not found for body weight; 24-hour excretions of magnesium, oxalate, citrate, or creatinine; or RSS_{struvite} and RSS_{caox} between diets. Differences between diet groups were found for 24-hour urinary excretion of sodium, potassium, calcium, ammonia, phosphorous, chloride, and 24-hour urine volume.

Despite differences, estimated RSS were not different between CD, SO, UR, and M, although RSS_{caox} tended to be highest on M and lowest on UR. Twenty-four hour urinary excretion of sodium and chloride and urine volume was greatest with SO and UR because these diets contain greater amount of sodium chloride than CD and M; 24-hour urinary excretion of calcium was lowest with CD. The 3 oxalate-struvite preventative diets tend to induce a lesser degree of urine saturation for calcium oxalate than the maintenance diet by differing dietary modifications.

Table. Twenty-four hour excretions of analytes, urine volume, and relative supersaturation from 6 cats consuming 4 diets.

Results with different superscript letters differ at $p < 0.05$.

Analyte	Units	CD	SO	UR	M
Sodium	mEq/kg	1.29 ± 0.32 ^a	5.64 ± 1.23 ^b	6.24 ± 1.96 ^b	1,32 ± 0.30 ^a
Potassium	mEq/kg	2.10 ± 0.54 ^{ab}	2.97 ± 0,57 ^{ac}	3.08 ± 0.85 ^c	1.69 ± 0.19 ^b
Calcium	mg/kg	0.18 ± 0.07 ^a	0.43 ± 0.22 ^b	0.34 ± 0.13 ^{ab}	0.29 ± 0.10 ^{ab}
Ammonia	mM/kg	0.17 ± 0.15 ^a	0.52 ± 0.16 ^b	0.55 ± 0.28 ^b	0.21 ± 0.37 ^a
Phosphorous	mg/kg	26.9 ± 4.9 ^a	27.0 ± 5.6 ^a	44.1 ± 11.9 ^b	27.4 ± 3.5 ^a
Chloride	mEq/kg	2.14 ± 0.85 ^a	6.13 ± 1.36 ^b	7.69 ± 2.46 ^b	1.85 ± 0.32 ^a
Volume	ml/kg	10.4 ± 1.8 ^a	17.5 ± 2.5 ^{ac}	19.2 ± 6.5 ^{bc}	11.7 ± 4.5 ^a
RSS _{coax}		1.48 ± 0.76 ^a	1.531.00 ^a	1.15 ± 0.79 ^a	2.53 ± 1.26 ^a
RSS _{struvite}		0.041 ± 0.059 ^a	0.034 ± 0.038 ^a	0.089 ± 0.089 ^a	0.017 ± 0.059 ^a
pH		6.09 ± 0.17 ^a	5.98 ± 0.12 ^a	6.14 ± 0.29 ^a	5.92 ± 0.18 ^a