Effect of a dry diet composition on water intake in cats

I. Leriche[a], E. Benizeau[b], C. Navarro[b], S. Fournel[b], G. Chaix[b]
[a] Virbac Nutrition, Vauvert, France
[b] Virbac Medical and R&D Department, Carros, France

Introduction

Cats tend to produce small amounts of concentrated urine, and this may be particularly marked when they are fed dry diets.[1] Inflammation and crystallization are thus favoured. Urine volume is determined to a large extent by water intake, and so increasing water intake should result in an increased volume of more dilute urine, and increased frequency of urination. High dietary sodium contents are useful to increase water intake.[2-4]

The aim of this study was to assess the impact of a high-protein maintenance diet on water intake in cats.

Animals, materials and methods

8 healthy adult cats tested, according to a cross over design, 3 dry diets for 2 weeks per diet. The test diet (A) was compared to commercial dry diets for adult cats (B & C). The study focused on the two main nutrients known to impact water intake in cats: protein and sodium (Table 1). Individual daily rations were iso-caloric, calculated to maintain cats' bodyweight. During the 2nd week of each test period, daily diet and water intakes were measured for each cat. Adjusted pair-wise comparisons were used to compare water intake between groups. Pearson coefficients of correlation were computed and tested. Significance threshold was set at 5%.

Table 1: Protein and sodium contents (%CM) in the 3 diets

Diet	Protein	Sodium
A: High Prot / Moderate Na	44.4	0.60
B: Low Prot / Low Na	30.5	0.43
C: Moderate Prot / High Na	36.0	0.85

Results

The mean dietary protein and sodium intakes are summarized in Table 2. Mean water intakes are shown in Figure 1, with a significant difference between A and B (p=0.0004), but no significant difference between A and C. A significant positive correlation was shown between the daily dietary sodium intake and water intake, and a significant (p=0.0104) positive correlation was also established between daily dietary protein intake and water intake (Figure 2).

Table 2: Dietary protein and sodium intakes (g/kgBW/d) in the 3 groups

Diet	Protein	Sodium
A: High Prot / Moderate Na	7.9	0.12
B: Low Prot / Low Na	4.9	0.07
C: Moderate Prot / High Na	6.4	0.15

Fig. 1: Water intake in the 3 groups

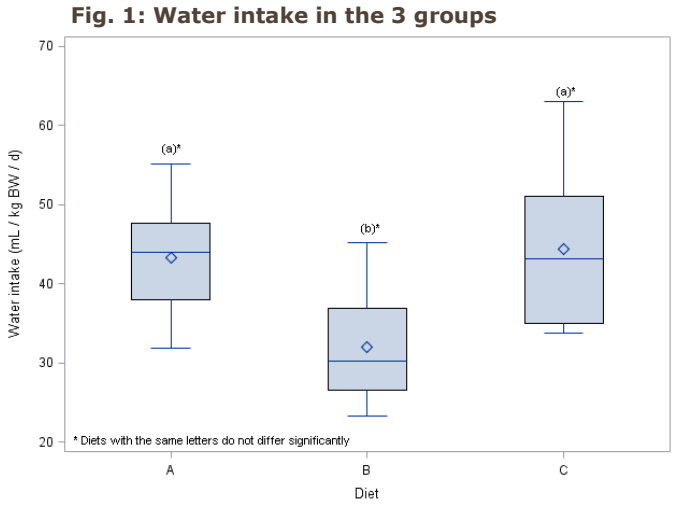
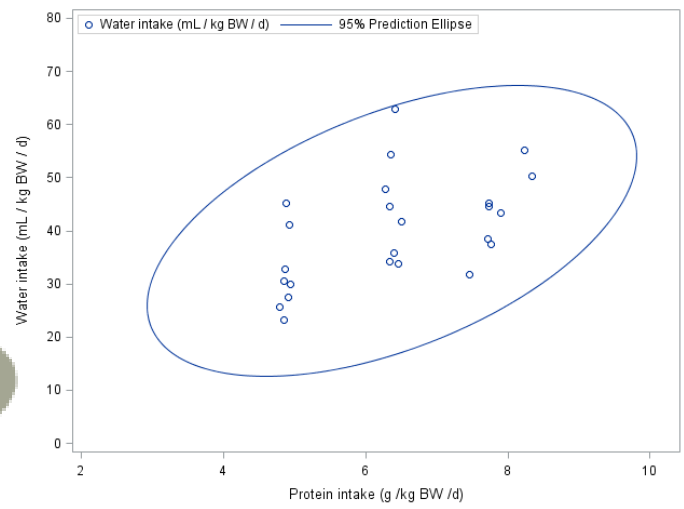


Fig. 2: Correlation between water and protein intakes



Conclusion

This preliminary study showed **the stimulating effect of dietary protein on water intake. Thus, increase dietary protein level in cats' diets could provide a way of preventing feline lower urinary tract disease. This could be more adapted for cats as carnivores than the use of increased dietary sodium contents.**

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