

Assessment of renal function over 5 months in adult cats fed a high protein dry diet

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Introduction

Despite the absence of evidence of any renal deleterious effect of high-protein diets, there are still concerns regarding the renal safety of such diets in healthy cats.

The aim of this study was to assess the impact of a dry maintenance high-protein diet on renal function in adult cats, compared to diets with a lower protein content.

Animals, materials and methods

Twenty four healthy adult European cats were randomized into 3 groups. They were fed exclusively, for 5 months, one of 3 maintenance dry diets, with a high (HP), a moderate (MP) or a low (LP) protein content (Table 1). The daily rations were calculated to maintain the cats' body weight. Blood samples were taken in the fasting state at the initiation of the study and then every 4 weeks. Urine samples were performed every day for the 2 last weeks of the study.

Table 1: Nutritional characteristics of the tested diets

	HP diet	MP diet	LP diet
Crude protein (% ME)	48	31	27
Phosphorus (g/Mcal)	4.0	1.7	4.3
Ca/P ratio	1.1	1.0	1.0
<i>In vivo</i> ME (kcal/100g)	328	359	323

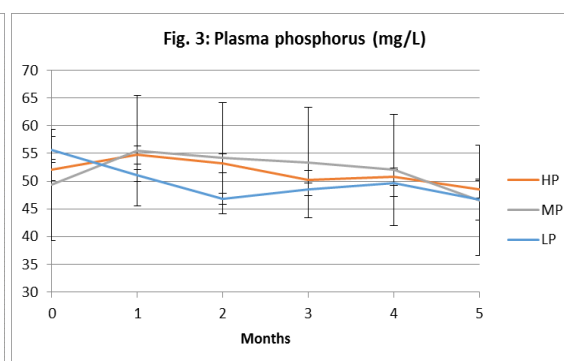
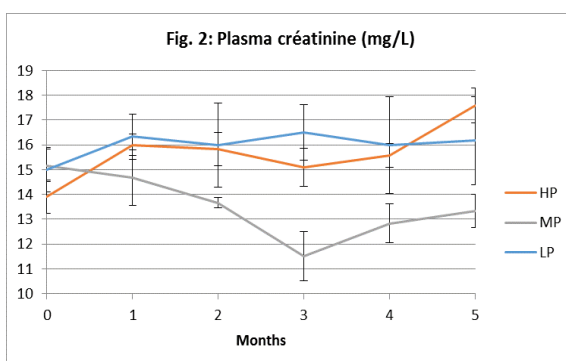
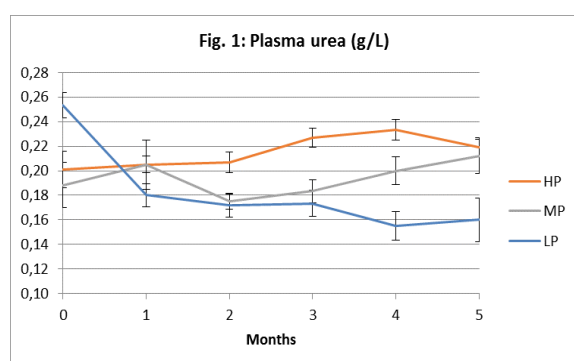
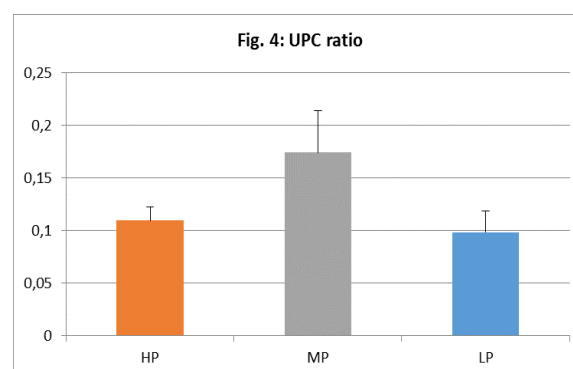
Results

The mean dietary protein intake was 7.2 ± 0.6 , 4.6 ± 0.3 and 4.0 ± 0.2 g/kg BW/day with HP, MP and LP diets respectively. All plasma parameters as well as urinary protein-to-creatinine (UPC) ratios (Table 2 and Figures

1 to 4) remained in the reference ranges over the course of the study with no significant difference between the groups.

Table 2: Mean plasma values and UPC ratio in each group

	HP diet	MP diet	LP diet	reference ranges
Urea (g/L)	0.22 ± 0.01	0.19 ± 0.01	0.18 ± 0.01	0.1 to 0.3
Creatinine (mg/L)	15.7 ± 0.6	13.5 ± 0.7	16.0 ± 1.4	3 to 21
Phosphorus (mg/L)	51.6 ± 1.7	51.8 ± 2.1	49.7 ± 1.9	34 to 85
Potassium (mmol/L)	4.0 ± 0.2	4.1 ± 0.2	4.1 ± 0.3	3.7 to 5.8
Total protein (g/L)	73.3 ± 1.3	68.0 ± 1.6	69.0 ± 1.1	54 to 82
Albumin (g/L)	36.4 ± 0.7	32.5 ± 1.1	36.3 ± 1.0	22 to 44
UPC ratio	0.11 ± 0.01	0.17 ± 0.04	0.10 ± 0.02	< 0.2



Conclusion

These results confirm that a high protein content in a balanced diet has no impact on renal function in the medium term in healthy adult cats.