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## Nutrition System for Carnivores

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## Long-term effects of high protein diets in dogs.



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Over the last twenty years the effect of protein concentration of the diets for carnivores has been discussed with particular reference to the possible negative effects of diets which are either excessively high or low in protein on dog health related.

Dietary proteins represent a primary source of essential and non essential amino acids. Endogenous and exogenous proteins are basically composed of the same 20 alpha-amino acids. Ten of these, while being indispensable, can be produced by the animal's organism, through transamination of endogenous proteins, while the remaining are called essential because they must be supplied with the diet. Twenty alpha amino acids there is a beta-amino acid, taurine, which is considered essential for cats and "conditionally essential" for dogs.

The proteins in the body perform different functions (structural, transportation, immunization, hormonal, enzymatic and energetic). The continuous protein turnover is due to the synthesis of proteins, directed by RNA, that requires the supply of amino acids from diet and/or from protein catabolism of lean body mass (Allison and Wannemacher, 1965; Wolfe, 2006).

The main concern with respect to the administration of excessive protein in the diet has focused on the potential impact on renal function. Brenner et al. (1985) in rats observed that high protein diets could cause renal failure. Although the results of some research conducted subsequently have rejected that hypothesis, the perception that the intake of excess protein cause kidney damage, remains.

effects on adult  
h-protein diets



## MATERIAL AND METHODS

Ten healthy adult dogs (mean age 3.5 years, mean body weight 22.35 kg), were equally divided into two groups, according to a Latin square scheme (5 dogs diets x 2 x 8 months) were fed with two high-protein diets, made with the same ingredients, but differing in protein content (34 vs 37 % tq, for diet A and B, respectively).

At the beginning of the test and every two months the dogs were weighed and subjected to blood sampling in order to determine the CBC and the major biochemical parameters. All data were analysed by ANOVA in order to evaluate diet and sampling period effects and the related interaction.

## RESULTS AND DISCUSSIONS

During the trial all dogs showed CBC and biochemical parameters within the ranges indicated as optimal for the species.

The two parameters indicative of renal function (BUN and creatinine) remained fairly stable during the trial and no statistically significant differences between dietary treatments were found.

The indicators of liver function (AST and ALT) did not show significant changes attributable to the diet. Neither the diet nor the treatment period influenced the blood count parameters and body weight.

Figure 1 - Trend of nitrogen levels in the blood during treatment with the two diets.

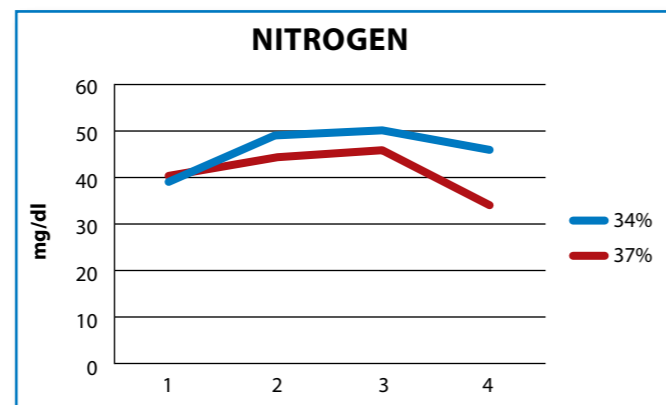


Figure 2 - Trend of levels of blood creatinine during treatment with the two diets.

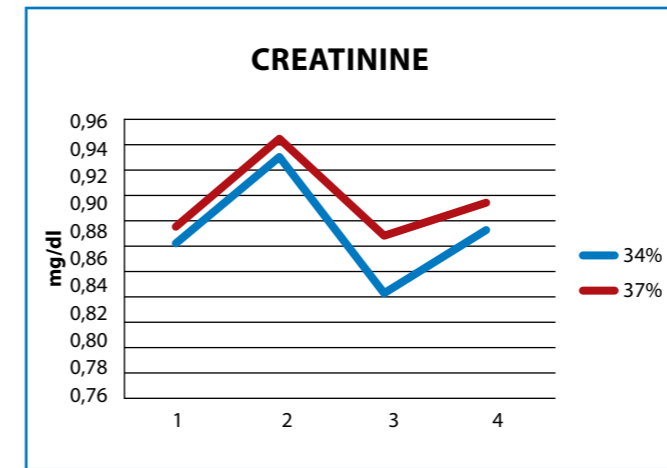


Figure 3 - AST trend during treatment with the two diets.

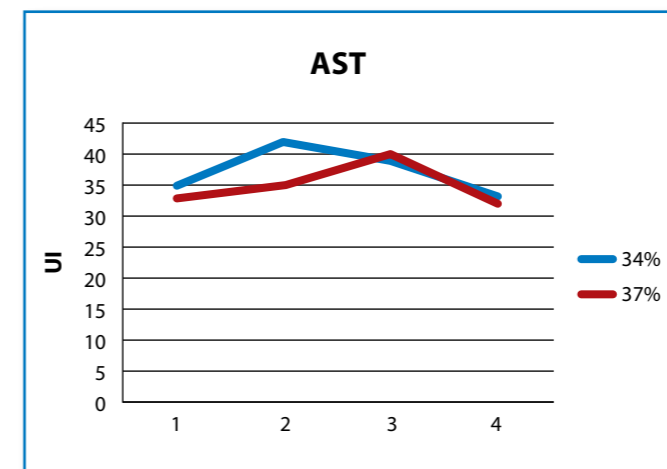
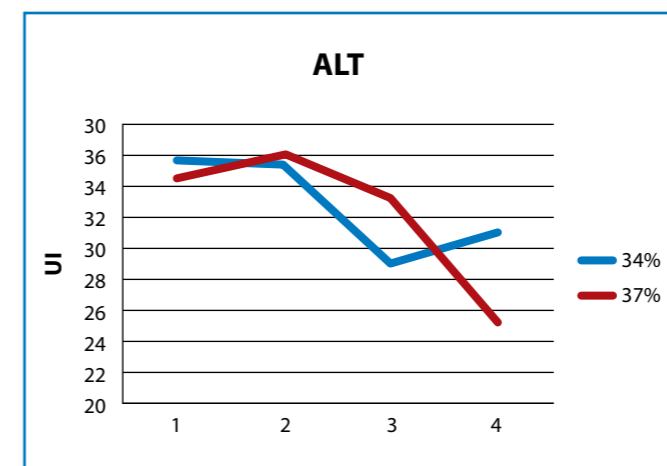


Figure 4 - ALT trend during treatment with the two diets.



## CONCLUSION

The use of two high-protein diets (37 vs 34%) for eight months did not induce statistically significant changes to the main biochemical markers of the kidney and liver function or changes in CBC. Our results are in agreement with the observation of Churchill et al. (1997), which evaluated the effects of older dogs (ages 6 to 8 years old at the beginning of the study) fed dry diets less rich in protein (18 vs 34%) for 4 years and did not observe any negative effects of dietary proteins.



## BIBLIOGRAPHY

- Allison JB, Wannemacher RW: The concept and significance of labile and over-all protein reserves of the body. *Am J Clin Nutr* 16:445-452, 1965
- Brenner BM, Meyer TW, Hostetter TH: Dietary protein intake and the progressive nature of kidney disease: the role of hemodynamically mediated glomerular injury in the pathogenesis of progressive glomerular sclerosis in aging, renal ablation, and intrinsic renal disease. *New Engl J Med* 307:652-659, 1982
- Churchill J, Polzin D, Osborne CT: Influence of diet on morbidity and mortality in geriatric uninephrectomized dogs. *Proceedings ACVIM* :675, 1997
- Wolfe RR: The underappreciated role of muscle in health and disease. *Am J Clin Nutr* 84:475-482, 2006.