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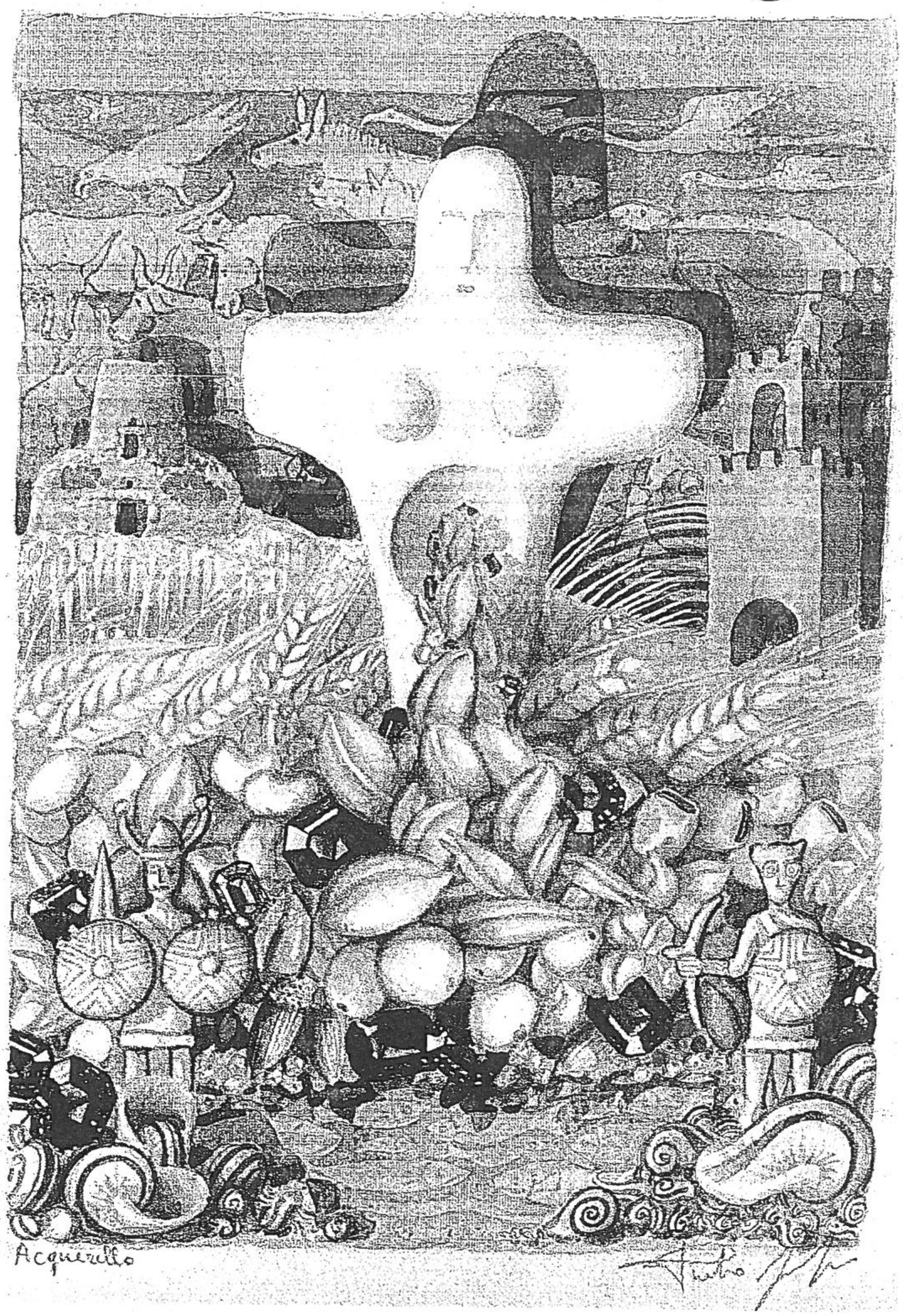

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Effect of dietary protein and carbohydrate supply on organ development and digestive function in mink kits (*Mustela vison*)

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Introduction: The requirements of protein and energy for mink kits in the transition period from milk to solid food are incompletely known. Dietary composition can affect the development of the gastro-intestinal tract, liver and kidneys, but the knowledge on the organ development in mink kits in the period around weaning is scarce. Therefore, the objective of this study was to investigate how different dietary supply of protein and carbohydrate affected organ development and digestive function in 6 to 12 weeks old mink kits.

Materials and Methods: Four different diets were fed to dams and kits from week four post *partum*. The kits were weaned at eight weeks of age. The protein:fat:carbohydrate supplies, in percent of ME, were 45:30:25 (HPHC), 45:40:15 (HPLC), 30:45:25 (LPHC) and 30:55:15 (LPLC). The mink kits were fed *ad libitum*. Diet digestibility was determined in eight male kits per treatment. Twelve kits per gender were killed at 6, 9 and 12 weeks of age, respectively, after being fasted for one hour. Body weight and length (nose to tail base), liver and kidney weights were recorded. The intestine was emptied and weighed, and the length was measured.

Results and Discussion: Minks on diet LPLC were significantly smaller than those on diets HPHC and HPLC and the LPHC kits were intermediate. This reflected a significantly lower intake of ME on diet LPLC than on the other diets, which was caused by significantly lower digestibility of N, fat and energy (Hellwing *et al.*, 2008). However, the length and the weight of the intestine on diet LPLC (161 cm/40 g) were significantly greater than on diet HPLC (152 cm/36 g) and LPHC (149 cm/34 g). On diet HPHC (156 cm/36 g) only the weight of the intestine differed significantly from LPLC. The average weight per cm intestine did not differ between diets. The lower N digestibility may partly be explained by a relatively larger proportion of faecal N being of endogenous origin, but the cause of the low fat and energy digestibility and increased intestine size are unknown. High dietary protein supply to mink kits (30 vs. 60% of ME) has been shown to result in higher weight of the liver in relation to body weight (Fink *et al.*, 2007). In this experiment the relative liver weights were highest on diet LPLC (4.7%), which differed significantly from HPHC (4.3%) and LPHC (4.0%) but not from HPLC (4.4%). However, Damgaard *et al.* (1998) reported increased liver weights and fatty infiltration in livers of mature mink raised on low protein/high fat diets, so the high liver weights on LPLC may be caused by an increased fat content. The kidney weight in percent of body weight was significantly lower on diet LPHC than on the other diets.

Conclusion: A low protein - high fat diet impaired digestive function, despite increased size of the intestine. Increased liver weights probably reflected increased liver fat content.

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