

Weight control with a high-protein diet allows the maintenance of optimal body composition and insulin sensitivity in adult neutered dogs

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Objective

The aim of this study was to assess the effect of a new high-protein low-carbohydrate diet on body composition and some hormonal parameters in dogs fed to maintain their body weight after a weight loss program.

Animals, material and methods

Nine adult neutered Beagle dogs (4.0±0.4 year old) were included. Previously obese, they had followed a weight loss program and just achieved optimal body condition (mean BW 12.9±0.7 kg, mean BCS 5/9). They were fed for 5 months the test diet (*in vivo* measured ME: 330±5 kcal/100g CM, protein: 36% ME, fat: 34% ME, carbohydrate: 30% ME). BW and BCS were assessed weekly, and food allowance adjusted for each dog to maintain optimal body weight.

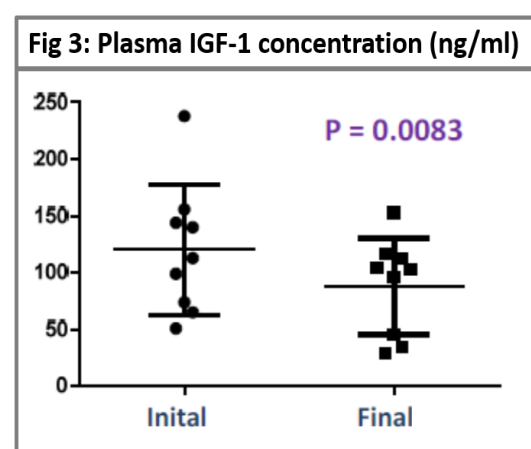
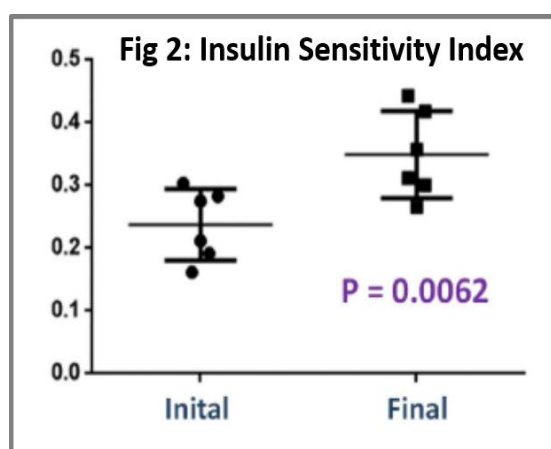
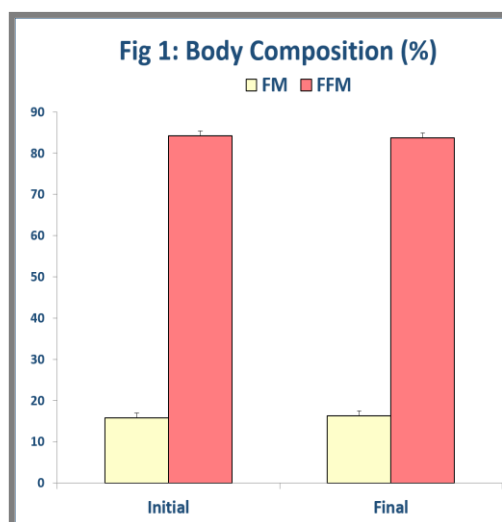
At the initiation and the end of the study, euglycemic hyperinsulinemic clamps (assessment of insulin sensitivity) were performed, haematological and biochemical profiles and some hormones were assayed from blood sampling, and body composition (BC) was determined using deuterium oxide dilution.

For statistical analysis, linear mixed effects models were used with a significance level of 5%.

Results

During the study, the mean energy allowance was 150 kcal/kg BW^{0.75}. The final BW and BCS were 13.2±0.7 kg and 5/9 respectively, with no difference compared to the initial values. All individual haematological and biochemical parameters were within the reference ranges and did not show any difference between the beginning and the end of the study. Lean mass

remained constant throughout the study (10.9±0.7 and 11.1±0.7 kg at the beginning and the end respectively), and consequently the FFM/FM ratio did not change (%FFM/%FM: 84/16) (Fig 1). The insulin sensitivity index was significantly higher at the end of the study (0.35±0.02 vs 0.24±0.02, p=0.0062) (Fig 2), and plasma IGF-1 concentration significantly lower (88±42 vs 120±57 ng/ml, p=0.0083) (Fig 3).



Discussion and Conclusion

Results indicate that dogs maintain their muscle mass and consequently optimal body composition. Adapted daily feeding rations and nutritional balance based on high protein – low carbohydrate formulation during the 5-month period could explain the significant improvement in insulin sensitivity.

Our results suggest that such a diet, associated with a rational feeding program, may be beneficial in adult neutered dogs to maintain optimal body weight, body composition and insulin sensitivity, and therefore limit the risk of obesity and diabetes mellitus.