

Weight loss with a high-protein diet allows the recovery of optimal body composition and improves insulin sensitivity in obese dogs

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Introduction

Management of canine obesity is of the utmost importance because of its high prevalence and association with numerous diseases and important metabolic and hormonal changes. High-protein diets have been suggested to improve body weight, body composition and metabolic outcomes.

The aim of this study was to assess effects of energy restriction on body weight, body composition and some hormonal parameters in obese dogs fed a new high-protein low-carbohydrate diet.

Animals, material and methods

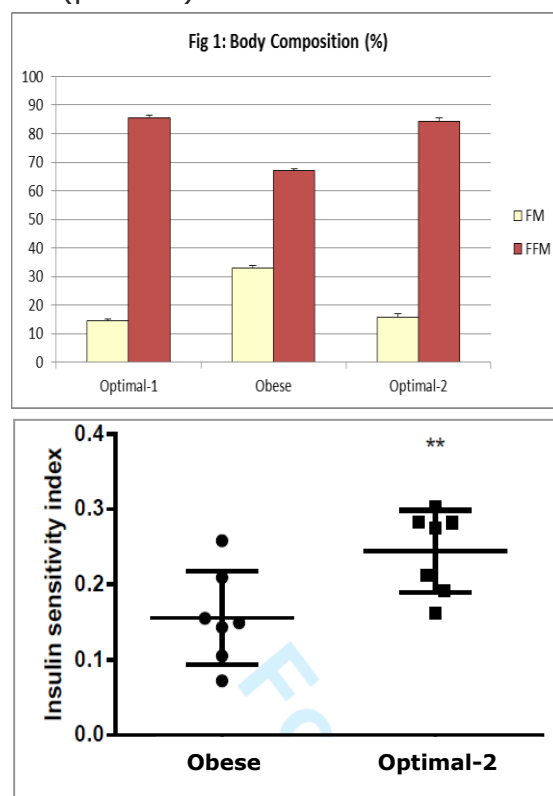
Nine obese adult neutered Beagle dogs (3.2±0.4 year old, mean BW 17.6±0.9 kg, BCS 8/9 (8 dogs) or 7/9 (1 dog), mean overweight 34%) were included. They were fed the test diet (ME: 3395 kcal/kg DM, protein: 43% ME, fat: 31% ME, carbohydrate: 26% ME). The food allowance was adjusted every week for each dog to achieve weight loss between 2-2.5% per week.

Euglycemic hyperinsulinemic clamps (assessment of insulin sensitivity) were performed, hormones were assayed, and body composition (BC) was determined using deuterium oxide dilution, when dogs were obese and then when optimal BW was recovered. For statistical analysis, linear mixed effects models were used with a significance level of 5%.

Results

During the weight loss period, the mean energy allowance was 98 kcal/kg optimal BW^{0.75}. The mean duration to achieve the dogs' optimal BW (BW: 13.1±0.7 kg, BCS: 5/9) was 14.3±1.4 weeks, with a mean weight loss rate of 2.2% per week. Weight loss resulted in significant decrease of fat mass (FM:

2.1±0.6 kg vs 5.9±2.1 kg, p<0.0001), and the final BC became optimal (%FFM/%FM: 86/14 vs 67/33) (Fig 1). The insulin sensitivity index was significantly higher after weight loss (0.24±0.05 vs 0.15±0.06, p=0.006) (Fig 2). Plasma leptin and IGF-1 levels were significantly lower (p<0.01).



Discussion and Conclusion

Results indicate that dogs effectively lost BW, mainly from the fat mass, and insulin sensitivity was improved. The BC improvement despite a rapid weight loss can be related to the high protein intake. Because low insulin sensitivity is a risk factor for diabetes, its improvement is considered desirable. The observed improvement in insulin sensitivity could have resulted from weight loss itself as well as from the high-protein and low-carbohydrate contents of the test diet.

Our results confirm that such a diet may be beneficial for the management of both obesity and diabetes mellitus in dogs.

References: Colliard L et al. J Nutr 2006, 136 : 1951S-4S. Courcier EA et al. J Small Anim Pract 2010, 51 : 362-7. Gayet C et al. J Anim Physiol Anim Nutr 2004, 88 : 157-65. Zoran DL. J Smamm Anim Pract 2010, 40 : 221-39. Mc Millian-Price J and Brand-Miller J. Clin Derm 2004, 22 : 310-4.