Effect of ad libitum feeding on body weight and blood metabolites in spayed female beagle dogs

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Objectives: Ovariohysterectomy can result in significant weight gain in bitches fed ad libitum (Houpt, 1979). The aim of this study was to determine the effect of ad libitum feeding on weight gain and blood metabolites in spayed female Beagle dogs.

Materials and Methods: Four young adult 2 year-old female beagle dogs were ovariectomized. First, the amounts fed of a commercial maintenance diet was adjusted during 26 weeks to maintain stable body weight (BW) (period I). Then, a high-energy commercial dog food (Royal Canin Energy Croc, crude protein 30\%, fat 20\%, ME 3890 kcal/kg as fed) was fed in large amount during 16 weeks (period II). The amount offered was twice the amount that maintained BW. Food left uneaten after 1 hour was collected and weighted. Cholesterol, triglycerides, glucose and insulin were measured every 2 weeks during period II.

Results: During period I, dogs received (mean $\pm$ SEM) 120.9 $\pm$ 2.5 kcal/ kg BW$^{0.75}$ to maintain BW. Mean BW at the end of this period was 13.3 $\pm$ 0.4 kg. When a high energy food was allowed in double amounts, dogs spontaneously ate significantly (p<0.05) more food with food amounts corresponding to 181.9 $\pm$ 5.4 kcal/ kg BW$^{0.75}$. At the end of the second period, mean BW was 16.7 $\pm$ 0.8 kg, which represents a significant increase (p<0.05) of BW of 21.9\%. Period II can be divided in 4 subperiods of 4 weeks. Each subperiod was compared with period I for statistical analysis. The first four weeks, mean energy consumption was 211.5 $\pm$ 9.4 kcal/ kg BW$^{0.75}$ (p<0.01) and dogs consumed all the proposed food. Then, the ingested amounts decreased spontaneously. Mean energy consumption was 180.6 $\pm$ 12.5 (p<0.01), 176.1 $\pm$ 9.9 (p<0.01), 159.6 $\pm$ 7.2 (p<0.05) kcal/ kg BW$^{0.75}$, for each subperiod respectively. No significant effect was seen on blood metabolites during the second period.

Conclusion: Ad libitum feeding induced overconsumption and subsequent weight gain in spayed female beagle dogs. This overconsumption was observed during 16 weeks (length of the study) but was more important during the first 4 weeks. It seems that ad libitum feeding induced no significant effect on blood metabolites during the study.

References: