



EFFECT OF OVARIECTOMY AND *AD LIBITUM* FEEDING ON BODY COMPOSITION, GHRELIN AND LEPTIN PLASMA CONCENTRATIONS

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The objectives of this study were, firstly, to evaluate the effects of ovariectomy on daily energy requirement (DER) and, secondly, to determine the effects of *ad libitum* feeding on body weight (BW), body composition, leptin and ghrelin plasma concentrations.

Four young adult 2-year-old female Beagle dogs were used. They were fed a standard diet (Royal Canin Premium Croc, crude protein 24.0 %, fat 16.1 %, 3730 kcal/kg as fed) for 6 weeks prior to ovariectomy (Period (P) 0) then 6 months after (P1). Food allowance was adjusted in order to maintain optimal BW. Then, a diet slightly higher in energy (Royal Canin Energy Croc, crude protein 30 %, fat 20 %, ME 3890 kcal/kg as fed) was fed *ad libitum* for 4 months (P2). The standard diet was then fed *ad libitum* for 4 additional months (P3). Food intake was recorded daily over the study. Body composition was determined at the end of P0, P1 and P3. Plasma ghrelin concentration was determined at the end of P0, at the beginning and the end of P1, P2 and P3. Plasma leptin concentration was determined at the end of P1 and at the beginning and the end of P2 and P3.

The maintenance of optimal BW after ovariectomy required a significant decrease in energy allowance (by 30%). A significant decrease of body fat mass was observed 6 months after surgery with this level of energy restriction. Ghrelin concentration remained unchanged. The first month of *ad libitum* feeding, plasma ghrelin concentration and energy intake increased (by 75% and 278% respectively), then they decreased. Mean BW and plasma leptin concentration significantly increased (by 34% and 150%, respectively) over the study. The BW increase was exclusively due to an increase in body fat. Plasma leptin concentration was significantly correlated to BW and body fat mass.

In conclusion, the energy restriction needed to avoid BW increase, and the increase in food intake and BW when animal were fed *ad libitum* suggest that energy allowance should be strictly controlled in spayed dogs to avoid increase in fat stores, and body weight gain subsequent to ovariectomy. The increase in food intake observed after a change of diet could be partially linked to change in plasma concentration of ghrelin that is known as an orexigenic hormone.