

College of Allied Health & Nursing

Modeling the Effect of Hormonal Status on H₁ Receptors in Intact Versus Ovariectomized (OVX) Female Rats

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This study was to determine the nature of the relationship between hormonal status and brain histamine H₁ receptors elucidating their mutual effect on food intake, while exploring the influence of dietary protein levels within this complex regulatory process

Intact and ovariectomized female rats were placed on 25% or 1% casein, with food intake, weight change and H₁ receptor concentration measured. Ovariectomized rats (OVX) injected subcutaneously with either estradiol benzoate or corn oil was fed 25% or 1% casein and monitored.

OVX rats fed 25% casein demonstrated a significantly higher ($p < 0.05$) food intake (58.59 ± 0.92 g) and weight gain (16.64 ± 1.07 g) in comparison to intact rats (48.05 ± 1.24 g) and (7.83 ± 1.85 g) respectively for food and weight gain, and while on a 1% casein diet, similar ($p > 0.05$) food intake (OVX: 46.78 ± 1.85 g and Intact: 45.44 ± 2.23 g) and weight gain (OVX: -10.96 ± 1.38 g and Intact: -6.52 ± 1.61 g) were obtained. Weight gain was reversed in OVX rats on a 25% casein diet injected with estradiol. Histamine H₁ concentrations was higher ($p < 0.05$) for intact rats on a 1% casein diet (81.56 ± 1.56 pmol/g protein) compared to ovariectomized females (75.36 ± 4.04 pmol/g protein). Both OVX (84.38 ± 2.88 pmol/g protein) and intact (86.40 ± 2.65 pmol/g protein) on the 25% diet showed no significant change ($p > 0.05$). There is synergy in physiological regulation between hormonal status and diet and their effects on H₁ receptor involvement in food intake and weight gain regulation.