

# **Influence of the ovarian cycle on Binge Eating evoked in female rats by stress and food restrictions**

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Dieting and stress are key determinants of binge eating (BE). In the model adopted by our group [1] BE for highly palatable food (HPF) is evoked in female rats by the combination of cyclic food restrictions and stress. Since variability in the occurrence of BE was observed, taking into account the inverse association between plasma estradiol levels and feeding [2] or BE [3-4], we investigated whether the variability may be related to the ovarian cycle.

Female Sprague-Dawley rats were divided into 2 groups: NR+NS rats were normally fed and not stressed on the test day (d 25); R + S rats were exposed to three 8-day cycles (4d 66% of the usual chow intake + 4d food ad libitum) of yo-yo dieting and then stressed. Stress was induced by preventing access to HPF for 15 min, while rats were able to see and smell it. Following examination of vaginal smears on the test day, statistical analysis revealed that HPF intake was significantly lower during the estrous phase both in NR+NS and R + S rats. HPF intake of R + S rats was significantly higher than that of NR+NS rats during proestrous, metaestrous and diestrous, but during estrous there was no difference in HPF intake between the two groups. Present findings show that BE in our model does not occur during the estrous phase and that the variability of the results can be almost completely abolished if female rats in estrous are not included in the statistical evaluation.

Moreover, these results raise interest for further investigations regard the ovarian hormones mechanisms on BE, in particular way estradiol.

[1] Cifani et al. 2009 *Psychopharmacology* 204:113-25

[2] Geary & Asarian 1999, *Physiol. Behav.*, 141-147

[3] Klump et al. 2008, *Psychol. Med.*, 38, 1749-1757

[4] Lester et al. 2003, *Psychol. Med.*, 33, 51-60