

Poster presentation

A comparative study on the influence of estrous cycle on cognitive and coping behaviors in rats

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from International Society on Brain and Behaviour: 3rd International Congress on Brain and Behaviour
Thessaloniki, Greece. 28 November – 2 December 2007

Published: 17 April 2008

Annals of General Psychiatry 2008, **7**(Suppl 1):S258 doi:10.1186/1744-859X-7-S1-S258

This abstract is available from: <http://www.annals-general-psychiatry.com/content/7/S1/S258>

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Background

Although, it is recognized that ovarian steroids can modulate brain mechanisms of learning, memory and perceiving novel object recognition, however, particular influences of the ovarian steroid status on behavioral strategy responses to novelty and to the partial or whole acquired fearful cues have not been evaluated yet.

Materials and methods

The present study was investigate the influence of estrous cycle in adult female Wistar rats on the responses to emergency novelty by using an open field (OF) and on the recognition of fearful partial or whole cues presented during testing in the passive avoidance (PA) apparatus. In conditioning task, rats recieved a single shock (1 mA) following a 30-s preshock exposure period to the shock associated context of the PA. Estrous cycle phases were determined by vaginal lavage.

Results

OF test showed that female rats in estrus preferred to use active coping strategy. They spent significantly longer time in the center of the apparatus ($P < 0.05$) and showed upward exploration to the extra-maze cues, expressed as increased free fears ($P < 0.05$). PAC test showed that female rats in estrus status is less attendant to the partial fearful cues, expressed as decreased freezing ($P < 0.001$), compared to that in pro-estrus status and had more attempt to enter to the shocked section ($P < 0.05$).

Conclusions

The present study provides evidence that ovarian steroid status influences behavioral coping strategy and perceiving cues related with novelty and fear but not affect non-associative and associative learning and memory retrieval.