

**SINGLE, INTENSE PRENATAL STRESS CAN DIFFERENTLY AFFECT  
EMOTIONAL BEHAVIOUR ACCORDING TO THE NATURE OF THE TASK.  
INFLUENCE OF METYRAPONE**

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Exposure to prenatal stress is known to affect behavioural reactivity, cognition and emotionality in rats. Recently we reported a facilitatory effect of a single, intense prenatal stress on learning performance in adolescent male rats (1).

In this study we aimed to investigate the effects of a single maternal 2 hour- immobilization on day 16 of gestation, on emotional behaviour in the adult rat progeny of both sexes using two different tasks, the Elevated Plus Maze (EPM) and the Forced Swim Test (FST).

Therefore the influence of metyrapone (50 mg/kg i.p.), a  $11\beta$  steroid hydroxylase inhibitor that blocks stress-induced glucocorticoid release (2), administered 2 hours before the test session, was also evaluated. Our results show that prenatal exposure to stress induced a significant increase in the preference for the open arms of the EPM in male rats ( $p < 0.05$ ). Metyrapone did not significantly affect time and number of entries in the open arms, in control and prenatally-stressed (PS) male rats. On the contrary in female rats, prenatal stress was not able to induce any effect on the EPM while metyrapone was able to increase time spent on the open arms, only in PS rats ( $p < 0.05$ ).

When exposed to the pretest session of the FST, prenatal stress did not induce any effect on immobility, while metyrapone significantly reduced immobility in control male rats and in PS female rats ( $p < 0.02$ ).

In conclusion this study shows that prenatal stress may differently affect emotional behaviour in male and female rats, according to the characteristics of the aversive test procedure, and that an acute manipulation of stress-induced corticosterone levels may exert opposite effects depending on stimulus - and gender - related patterns of the hypothalamus-pituitary-adrenal axis sensitivity.

- 1) Cannizzaro C., Plescia F., Martire M., Gagliano M., Cannizzaro G., Mantia G., Cannizzaro E. (2006) *Beh. Br. Res.* 169, 128-136
- 2) Calvo N., Martijena I.D., Molina V.A. Volosin M. (1998) *Br. Res.* 800, 227-235