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# Differential Effects of Parity, Stress and Fluoxetine Treatment on Locomotor Activity and Swimming Behavior in Rats

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**Abstract :** Peripartum period is a time where women are vulnerable to depression, and stress may further increase the risk of its occurrence. Use of selective serotonin reuptake inhibitors (SSRI) in the treatment of postpartum depression is a common practice. Comparison of antidepressant treatment, however, is rarely studied between gestated and nulliparous animals exposed to stress. This study was aimed to investigate the effect of parity and stress, as well as fluoxetine (an SSRI) treatment after stress exposure on the behavior of rats. Gestating and nulliparous Sprague Dawley rats were either subjected to chronic stressors or left undisturbed throughout the gestation period. After parturition, all stressors were stopped and some of the stressed rats were treated with fluoxetine (10mg/kg). Hence, the final groups formed were: 1. Non-stressed nulliparous rats, 2. Non-stressed dams, 3. Stressed nulliparous rats, 4. Stressed dams, 5. Fluoxetine-treated stressed nulliparous rats, and 6. Fluoxetine-treated stressed dams. Rats were tested in open field test (OFT), novel object recognition test (NOR) and forced swim test (FST) after weaning of pups. Gestational stress significantly reduced the locomotor activity of rats in OFT ($p<0.05$), while fluoxetine significantly increased the activity in nulliparous rats ($p<0.001$) but not the dams. While no differences were observed in NOR, stress and parity inhibited the rats from performing swimming behavior in FST. However, climbing and immobile behaviors in FST were found to have no significant differences, although there is a tendency of effect of treatment for immobility parameter ($p=0.06$) where fluoxetine-treated stressed dams were being the least immobile. In conclusion, the effects of parity and stress, as well as fluoxetine treatment, depended on the type of behavioral test performed.

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