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Changes in Behavior and Learning Ability of Rats Intoxicated with Lead

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Abstract : Measuring the effect of perinatal lead exposure on learning ability of offspring is considered as a sensitive and selective index for providing an early marker for central nervous system damage produced by this toxic metal. A total of 35 Sprague-Dawley adult rats were used to investigate the effect of lead acetate toxicity on behavioral patterns of adult female rats and learning ability of offspring. Rats were allotted into 4 groups, group one received 1g/l lead acetate (n=10), group two received 1.5g/l lead acetate (n=10), group three received 2g/l lead acetate in drinking water (n=10), and control group did not receive lead acetate (n=5) from 8th day of pregnancy till weaning of pups. The obtained results revealed a dose-dependent increase in the feeding time, drinking frequency, licking frequency, scratching frequency, licking litters, nest building, and retrieving frequencies, while standing time increased significantly in rats treated with 1.5g/l lead acetate than other treated groups and control. On the contrary, lying time decreased gradually in a dose-dependent manner. Moreover, movement activities were higher in rats treated with 1g/l lead acetate than other treated groups and control. Furthermore, time spent in closed arms was significantly lower in rats given 2g/l lead acetate than other treated groups, while they spent significantly much time spent in open arms than other treated groups which could be attributed to occurrence of adaptation. Furthermore, number of entries in open arms was-dose dependent. However, the ratio between open/closed arms revealed a significant decrease in rats treated with 2g/l lead acetate than the control group.

Keywords : lead toxicity, rats, learning ability, behavior
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