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THE ROLE OF DIFFERENT AVERSIVE STIMULI ON MORPHINE SEEKING BEHAVIOR IN SOCIALLY ISOLATED MALE MICE

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Background and Aim : Self-administration studies demonstrated that, as a social animal, mice exhibit less vulnerability to addiction in a rich social living condition. Accordingly, is it possible to say that poor social life, increases the vulnerability to addiction? On the other hand, it has been strongly suggested that counter-conditioning by using aversive stimuli, may reduce the drug seeking behavior. Therefore, this study stands on the comparison of the role of each aversive stimulus in the reduction of morphine seeking behavior in socially isolated male mice.

Methods : The study included three treatment groups (foot shock, voice noise & restraining) and a control group, each of which consisted of 7 male mice. The Passive Avoidance Apparatus was used to study the aversive learning and morphine seeking behavior. Initially, all groups were measured in terms of the time they spent in each of two light and dark rooms. Then, the mice of each group were kept in separate boxes for 10 days. After the isolation, the time spent in each room was re-recorded. The day after that, the mice received 5 mg/kg morphine via subcutaneous injection for 3 days and after each injection, immediately, they placed in the dark room for 30 minutes singly, and the aversive stimulus (e.g. foot shock) presented. Finally, at the fifth day, the time that mice spent in each room recorded again.

Results : Comparing the pre-isolation and post-isolation scores, demonstrate that the mice will spend more time in the dark room after separation ($p < 0.001$). Also, after morphine administration, the mice which received foot shock tended to spend less time in the dark room rather than two other treatment groups (voice noise and

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restraining) ($p < 0.001$) and there was no significant difference between voice noise and restraining as aversive stimuli. The results showed that in terms of reducing the seeking behavior, all three treatments were significantly different from control group ($p < 0.001$).

Conclusion : This study shows that, firstly, mice living in a poor social environment, exhibit a higher psychological tendency to stay in the dark part of the box, which can be due to high anxiety or low mood in these animals; Secondly, the results demonstrate that the foot shock can strongly reduce the morphine seeking behavior in mice, however, the voice noise and restraining can be effective too. These findings can emphasize the role of social life in coping with and treating addiction.

Keywords : Drug Seeking Behavior; Social Isolation; Morphine Dependence