EFFECT OF ENRICHMENT ON STRESS LEVEL OF LABORATORY RATS

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Abstract

In certain biomedical research protocols, there is a need to singly house experimental rats. Since rodents are classified as social animals in nature, housing rats singly will result in stress to the animals. The aim of this study was to determine the effect of enrichment to the stress leukogram, feed intake, weight gain and behavior of singly-housed rats as opposed to singly-housed rats without enrichment and pair-housed rats. Eighteen 5 weeks old, male Sprague-Dawley rats were randomly assigned to three groups; singly-housed without enrichment, singly-housed with enrichment (provided with enrichment nestlets), and pair-housed. The rats were acclimatized for 7 days before start of study. Blood samplings were done on days 0, 14 and 26 for complete blood and differential counts. Feed intake and weight gain were recorded every 4 days and on days 0, 14 and 26. Behavioral assessment was done every week for 10 minutes for each cage. Results showed significant neutropenia in the singly-housed rats with and without enrichment as opposed to neutrophilia in the pair-housed rats. Monocytosis and eosinophilia were also more evident in the singly-housed rats without enrichment than in either the pair-housed rats or singly-housed rats with enrichment. However, there was no significant difference in other blood parameters, feed intake and weight gain. Singly-housed rats without enrichment also showed significantly higher stereotypical behavior when compared to rats in the other two groups. Thus, it could be concluded that singly-housed rats did not show higher stress level than pair-housed rats in the short term. Enrichment nestlets too have been proven to be effective in reducing some degree stress, aggression and stereotypical behavior in singly-housed rats.

Keywords: Sprague-Dawley rats, enrichment, stress assessment