

An examination of nest-building behaviour using five different nesting materials in C57BL/6J and BALB/c mice

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Abstract

The aim of our study was to assess the nest-building behaviour of two mouse (*Mus musculus*) strains using different nesting materials and examine possible sex- and housing-specific effects. Adult mice of two strains (C57BL/6J; $n = 64$ and BALB/cAnNCrI; $n = 99$) were randomly allocated to the following housing groups: single-housed male, single-housed female, pair-housed male and pair-housed female. One of the following nest-building materials was placed in each home-cage in a random order: nestlets (Plexx BV, The Netherlands), cocoons (Carfil, Belgium), wooden wool, crinklets and compact (all three, Safe, Germany). The following day, nests were rated applying a nest-scoring scale ranging from 0 to 10, the nests were removed, and a different nest-building material provided. In both tested strains, nestlets achieved the highest nest-building scores when compared to the other four nest-building materials. All nest-building materials scored higher in BALB/c mice compared to C57BL/6J animals reaching statistical significance in crinklets only. Sex comparison revealed that female C57BL/6J mice only scored significantly higher using crinklets than males and BALB/c female mice were rated significantly higher using wooden wool, cocoons and compact than their male counterparts. While pair-housed C57BL/6J animals built higher-rated nests than single-housed mice in the C57BL/6J strain in all five materials tested, the scores were not significantly different in the BALB/c strain. Results of the present study reveal significant strain-, sex- and housing-related influences on the complexity of nests using different standardised building materials. Such observations need to be taken into account when planning the optimal enrichment programme for laboratory animals.

Keywords: animal welfare, behaviour, enrichment, laboratory mice, nest building, nest-building materials