

Improved memory and lower stress levels in male mice co-housed with ovariectomized female mice

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Aggressiveness in the form of fighting is a frequent problem in group-housed laboratory male mice, leading to stress, injury, and death. Fighting can be prevented by single housing, but this contradicts welfare concerns considering the lack of social interaction. Another way is by pairing up the male mice and an ovariectomized female, to provide a companion. However, considering the effect of these housing conditions remains unclear, we aimed to evaluate behaviour and stress levels in two different housing conditions, pair-housed the male with an ovariectomized female, and group-housed with other males. Behavioural tests were performed to assess stress and anxiety-like behaviour. Moreover, the corticosterone levels in plasma were measured by ELISA. Based on home cage behaviour assessment, pair-housed male mice showed no fighting even after isolation and regrouping. Our results also showed that the pair-housed males had better memory and demonstrated less anxiety-like behaviour and subsequently, the pair-housed male mice tended to have lower corticosterone levels compared to group-housed males. Overall, pair housing reduced anxiety-like behaviour and stress levels in male mice. Moreover, the females were observed to nest and engage in ordinary social behaviour, which may suggest that co-housing with fertile male mice had a limited impact on their welfare (beyond their surgeries). Still, it remains important to balance animal welfare against the expected gains. We aim to further explore this balance in future studies. male mice aggression, housing condition, group-housed, paired with ovariectomized female, anxiety-like behaviour, stress levels, corticosterone.