

Testing conditioned taste aversion in the IntelliCage – validation of the procedure

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Conditioned taste aversion (CTA) test of learning and memory in rodents is based on the association of novel flavor with sickness that can be induced by oral self-administration of LiCl. Considering this knowledge, we adapted a CTA procedure for the fully-automated system IntelliCage. In total, 68 C57BL/6 and 58 DBA/2 female mice were used and divided into control (CON) and conditioned (CTA) groups. Each group could drink from both bottles in two opposite corners during two-30min sessions. After 7 days, the training was performed: water was replaced by 75 mM NaCl for CON mice, whereas 75 mM LiCl was available for CTA group. Both solutions were made in 0.5% saccharin. Three conditions were tested: groups mixed in one cage 1) or separated in two cages 2), one training session; 3) groups mixed, two training sessions. During training, CTA mice showed: i) reduced activity; ii) increased error rate; iii) reduced drinking. Twenty-four hours after training a choice test was performed – one bottle in each corner contained water and the other 75 mM NaCl (CS). We expected the mice to develop CTA from LiCl to NaCl due to perceiving taste of these compounds as qualitatively similar, and indeed, significant aversion to the CS was shown by the CTA animals in all conditions. DBA/2 mice showed stronger aversion to CS than C57BL/6 mice. In summary, we suggest the presented automation of the CTA procedure as a promising new approach for high-throughput testing of learning and memory in mice.

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