

CORT measures confirm the suitability of the IntelliCage system in testing wild wood mice and bank voles for behavioral flexibility

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We have shown before that wild wood mice and bank voles, two sympatric rodent species that differ in lifestyle and survival strategies, can successfully be tested in learning and memory tasks in the IntelliCage (IC) system. Behavioral tests of wild animals in the IC system are not confounded by their innate fear and escape responses. Nevertheless, a formal examination of their hormonal stress response to the IC has not yet been performed.

To confirm and extend previous findings, both species were tested in IC tasks for mild fear response, motor impulsivity, self-paced behavioral flexibility, and temporal and spatial sequence learning. Hormonal analysis was performed as endpoint measure. Preliminary results confirm the species-specific circadian rhythmicity, and we found similar responses to the mild fear stimulus and equal performance in the temporal and spatial sequence task. However, species differ in the behavioral flexibility and motor impulsivity task. After completion of the behavioral experiments, blood CORT level was measured. Animals not challenged by a reversal task during the last 10 hours of the experiment showed stress hormone levels equal to controls. In the reversal group, successful learners showed lower stress hormone levels than poor performers. Our findings strengthen the suitability of the IC system and reveal task-specific differences in wild wood mice and bank voles.