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PII: S0165-0270(17)30293-5
DOI: http://dx.doi.org/10.1016/j.jneumeth.2017.08.012
Reference: NSM 7820

To appear in: *Journal of Neuroscience Methods*

Received date: 31-1-2017
Revised date: 5-8-2017
Accepted date: 11-8-2017

Please cite this article as: Kyriakou Elisavet I, Nguyen Huu Phuc, Homberg Judith R, Van der Harst Johanneke E.Home-cage anxiety levels in a transgenic rat model for Spinocerebellar Ataxia type 17 measured by an approach-avoidance task: the light spot test.*Journal of Neuroscience Methods* http://dx.doi.org/10.1016/j.jneumeth.2017.08.012

Home-cage anxiety levels in a transgenic rat model for Spinocerebellar Ataxia type 17 measured by an approach-avoidance task: the light spot test

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Type of article: Research article

Highlights

- Light spot used for measuring anxiety in the home cage for the first time in rats.
- Light spot caused an initial increase in activity and time spent in the shelter.
- Light spot test evoked avoidance responses in rats.
- Light spot effects in SCA17 rats at 6 and 9 months.

Abstract

Background: Measuring anxiety in a reliable manner is essential for behavioural phenotyping of rodent models such as the rat model for Spinocerebellar ataxia type 17 (SCA17) where anxiety is reported in patients. An automated tool for assessing anxiety within the home cage can minimize human intervention, stress of handling, transportation and novelty.

New method: We applied the anxiety test "light spot" (LS) (white led directed at the food-hopper) to our transgenic SCA17 rat model in the PhenoTyper 4500® to extend the knowledge of this automated tool for behavioural phenotyping and to verify an anxiety-like phenotype at three different disease stages for use in future therapeutic studies.

Results: Locomotor activity was increased in SCA17 rats at 6 and 9 months during the first 15 minutes of the LS, potentially reflecting increased risk assessment. Both genotypes responded to the test with lower duration in the LS zone and higher time spent inside the shelter compared to baseline.