

Tail Suspension Test 懸尾測試

1. Purpose

- 1.1 The tail suspension test is used to screen the potential antidepressant drugs by recording the immobility of mice during the test.

2. Safety Requirements

- 2.1 Individuals who have been trained and are competent in performing the procedures described herein must follow this procedure.
- 2.2 Any queries, comments or suggestions, either relating to this SOP in general or to a specific problem encountered during a procedure, should be addressed to the Neuroscience Project Leader.
- 2.3 Any deviations from this protocol must be reported to the Behavioral Neuroscience Project Leader.

3. Associated Documents

- 3.1 General laboratory procedures should be followed, which include: no eating, no chewing gum, no drinking, and no applying of cosmetics in the work area. Laboratory coats and gloves must be worn at all times in the work area, unless the protocol specifically describes the appropriate attire for the procedure.

4. Notes

- 4.1 The validity of results obtained from behavioral phenotyping is largely dependent on methods of animal husbandry. It is important that individuals following this procedure are experienced and aware of the animal's welfare, and be familiar with the animal being tested, in order to reduce the anxiety levels of the animal prior to testing.
- 4.2 The majority of mouse behavioral studies are age/sex/strain dependent. It is important to keep these parameters comparable throughout a single experiment.
- 4.3 Environmental factors may contribute to the levels of mouse anxiety. The temperature, humidity, ventilation, noise intensity and light intensity must be maintained at levels appropriate for mice. It is essential that the mice be kept in a uniform environment before and after testing to avoid anomalous results being obtained.
- 4.4 It is recommended that all phenotyping experimentation is conducted at approximately the same time of day because physiological and biochemical parameters change throughout the day.

5. Equipment

- 5.1 Illumination system, Luxmeter, EthoVision video tracking system.
- 5.2 Commercially available Tail suspension apparatus, which is the dimensions 55 height X 60 width X 11.5 cm depth with three-walled rectangular compartment (white apparatus for black mice, vice versa).
- 5.3 Digital camera.
- 5.4 Full-sized tripod.
- 5.5 White noise generator (50-60 dB).

6. Supplies

- 6.1 Pens
- 6.2 Marker pen
- 6.3 Ruler (more than 20 cm)
- 6.4 Datasheet
- 6.5 Gloves
- 6.6 Linen glove
- 6.7 Facial mask
- 6.8 Tape
- 6.9 Ethanol 70%
- 6.10 Hand towels
- 6.11 Absorbent bench top
- 6.12 Detergent (Windex)
- 6.13 Timer
- 6.14 Climbstoppers (dependent upon strain used)

7. Procedures

- 7.1 Mice may be handled daily in the testing room three days before the testing.
- 7.2 Mice should be individually marked to be easily identified on the test day. One suggestion is to mark their tails.
- 7.3 Transport mice outside the testing room in their home cages and allow 60 minutes for the mice to acclimation to the environment.
- 7.4 Start the white noise generator in the testing room.
- 7.5 Wipe clean the apparatus with detergent (Windex) and 70% ethanol; allow time for it to dry.
- 7.6 Cut 17 cm of tapes and adhere to mice tails.
- 7.7 If a strain is known to climb their tails, the climbstopper should be placed around their tails before applying the tape.
- 7.8 Take the tapes with mice and adhere to the suspension bar. The tape should be applied to the very end of tail with 2-3 millimeters of tail remaining outside the tape.
- 7.9 Record mouse by digital camera for 6 minutes.
- 7.10 Following the experimental session, remove the mice as soon as possible from the Tail suspension box and the adhered tapes from their tails, and then place back into their home cage.
- 7.11 Wipe the Tail suspension equipment clean with detergent (Windex) and 70% ethanol after each experimental session to avoid olfactory cueing. Allow time for it to dry.
- 7.12 Set up the appropriate database and arena range in the program so that images can be analyzed by EthoVision System software.
- 7.13 Save data from the experimental sessions onto a disc and analyses.

8. Reference compound

- 8.1 Fluoxetine hydrochloride is administered via the intraperitoneal route in an injection of 10-30 mg/kg body weight.

9. Reference

Adem Can, David T. Dao, Chantelle E. Terrillion, Sean C. Piantadosi, Shambhu Bhat, and Todd D. Gould (2012) The Tail Suspension Test. *J Vis Exp.* 59, e3769