

Tail Flick 疼痛閃尾測試

1. Purpose

1.1 The Tail-Flick test is designed to assess nociceptive threshold by using infrared source. The tested mouse is anesthesia free and is covered with a linen glove with its tail sitting on the groove of the heating panel. Wait until the mouse calms down then introduce the infrared radiant heat onto the subject and record the latency of tail flick.

This test is fast and safe and is applicable to the research of analgesia, anesthesia, thermal nociception and hyperalgesia.

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 deviances from this protocol must be reported to the Behavioural 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 behavioural 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 behavioural 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.
- 4.5 Heat intensity should be adjustable to produce stable baseline latencies from which hypo- or hyperalgesia responses can be determined. A cut-off time is set to prevent tissue damage.

5. Equipment

5.1 Commercially available tail flick apparatus (37360 Tail Flick Unit, Ugo Basile,

Italy).

6. Supplies

- 6.1 Pens
- 6.2 Marker pen
- 6.3 Datasheet
- 6.4 Gloves
- 6.5 Linen glove
- 6.6 Paper mask
- 6.7 Blue tack
- 6.8 Ethanol 70%
- 6.9 Hand towels
- 6.10 Absorbent bench top
- 6.11 Detergent (Windex)
- 6.12 Pedal Switch

7. Procedures

- 7.1 Transport mice to the testing room in their home cages. Allow 15 minutes for the mice to acclimatise.
- 7.2 Switch on the tail flick apparatus. Adjust the heat intensity that should automatically set a cut-off time. Note that different apparatus will have to be adjusted accordingly. Using the Ugo Basile apparatus set the heat intensity to 15 units with approximately a 22-second cut-off period.
- 7.3 Wipe clean the apparatus with detergent (Windex).
- 7.4 Remove a mouse from its home cage. Gently cover the mouse with a linen glove to restrain it.
- 7.5 Gently hold the mouse with its tail directly under heat source (25 ~30 mm and 20~25 mm away from the tail tip for naïve mouse and cutted-tail mouse, respectively) and press the start button. Stop the timer when the mouse flicks its tail (i.e. an indication that the mouse feels pain). The latency time is displayed on the control unit screen.
- 7.6 Record the latency of tail flick.
- 7.7 Ensure that the mouse has not sustained any tissue damage before returning to its home cage.
- 7.8 Wipe clean the apparatus with Windex before testing another mouse.
- 7.9 Following completion of the experimental session, switch off the tail flick apparatus.
- 7.10 Wipe clean the apparatus with Windex and then with 70% ethanol.