

- SOP No:** AHT 45
- SUBJECT:** Elevated Plus Maze - Rats
- POLICY:** This technique may only be performed by operators skilled in the technique.
- PRECAUTIONS:**
- EQUIPMENT:** Black Perspex maze shaped in a plus raised off the floor (60 cm) with two arms having walls, and the other two arms being exposed. All arm lengths extend 43 cm from the central area and are 14 cm wide. The walls of the enclosed arms are 30cm high.  
Normal laboratory up lighting – should be ~100 lux at the ends of the open arms, and 70-80 in the centre of the maze.
- PROCEDURE:**
1. Bring animals into room (with experimental lights on and doors shut) at least 30 mins before beginning experiment.
  2. If pharmacological intervention is required, route of admin. and uptake period should be accounted for prior to the next step.
  3. Start recording, and identify subject with white board placed in front of camera for ~3 secs. Then gently place animal in the centre of the maze, facing one of the open arms (important).
  4. Each trial lasts for 10 minutes.
  5. At the end of each trial, thoroughly clean the arena with 70% alcohol solution, and dry with paper towelling.
  6. Tests can be repeated either on a daily, bi-daily (i.e. 48hr) or weekly basis.

**Assessment:**

The longer time spent in the closed arms and the lower frequency of entries into the open depicts the more anxious state of the subject.

Greater number of risk assessments determines an anxious state of the subject.

The distance travelled depicts both the locomotor activity (i.e. sedation/hyperactivity) as well as anxiety levels (lower locomotor activity suggests anxiety).

**Repetition of the trials, either on a daily, bi-daily (i.e. 48hr) or weekly basis results in fear-avoidance/motivational-learning behaviours, such as open arm avoidance, as previously described**

#### **RECOMMENDATION**

- 1. Note the lighting levels and time of day when each experiment is conducted – these should be consistent for every experiment performed.**
- 2. At all times during the experimental testing, the experimenter can watch the trial on a television while being in the same room, but removed from the immediate experimental area (behind a curtain screen or a door).**

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**REVISED:**

#### **REFERENCES**

- 1. M. R. Lamprea, F. P. Cardenas, R. Silveira, S. Morato, T. J. Walsh, (2000) *Behav Brain Res* 117, 97.**
- 2. L. J. Bertoglio, A. P. Carobrez, (2004) *Behav Pharmacol* 15, 45.**
- 3. A. P. Carobrez, L. J. Bertoglio, (2005) *Neurosci Biobehav Rev* 29, 1193.**