

Test Report:

Aurocon automatic trapping device - Aurotrap

The purpose of this study was to examine the effectiveness of the AUROCON trapping device according to test methods described by The Swedish Environmental Protection Agency's regulations on type approval of trapping devices (NFS 2013 (ISSN 1403-8234).

The test was performed at the Biomedical Laboratory, University of Southern Denmark, on June 22, 2021.

A technical description of the design of the trapping device and the material it is made of

The trap functions as described on <https://www.aurocon.dk/aurotrap/>, translated by Google Translate:

AuroTrap is an effective rat trap that kills both rats and mice in a humane and non-toxic way. The rat trap is built into a steel box and can function independently, with or without a ground spike, or mounted on a wall.

The steel box is weatherproof and is locked with the corresponding key to prevent injury to other animals or people.

When the rat or mouse goes up into the trap, a CO2 cartridge is activated, which triggers a piston that kills the animal using compressed air. Each CO2 cartridge contains enough compressed air to strike approx. 80 rats or mice.

The manufacturer's user instructions

According to the manufacturer, the trapping device is to be placed at a location where tracks of rats have been observed. The trap is activated automatically, and after activation, data is sent to a smart phone or computer. Data include:

- Trap number
- Trap location
- Number of rats trapped
- Number of mice trapped
- Entrance side of the trap
- Date for activation
- Time of activation
- Battery level
- Pressure level
- Daytime off function

Description of the test situation

The test was performed at an animal research laboratory approved by the Danish Animal Experiments Inspectorate (license 2013-15-2937-00012). The study was approved by license 2021-15-0201-00908.

Animals were received from a commercial vendor (Janvier Labs, Route du Genest, F-53940 Le Genest-Saint-Isle, France). They were received on June 16, 2021 and acclimatized in the test cages. The test cages consisted of two Macrolon type VI cages, interconnected with a tube with a diameter of 80 mm. Three rats were housed per test cage.

The test was performed on June 22, 2021, and for the test, the tube connecting two cages was replaced by the Aurotrap device. Figure 1 displays the test situation.

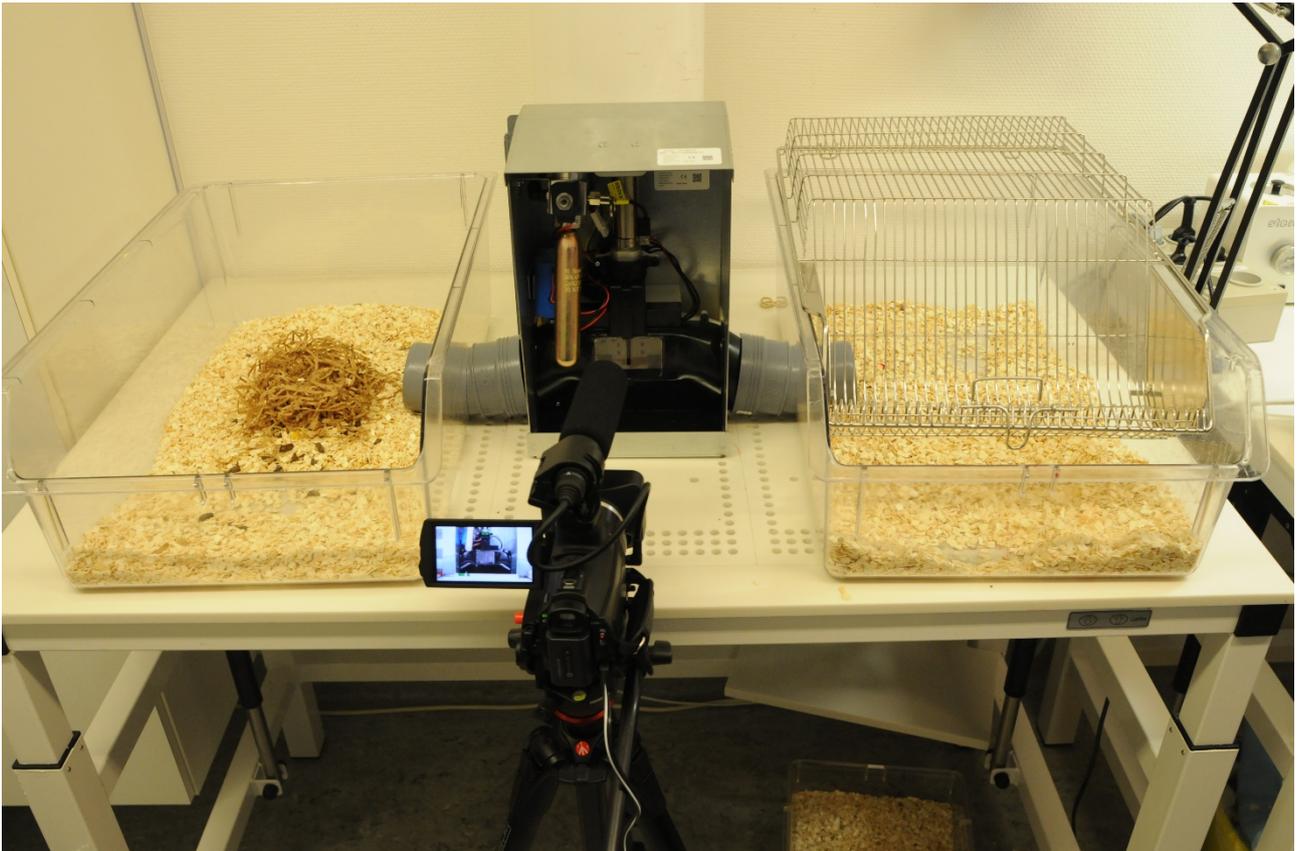


Figure 1: Test situation.

During the test, a single animal was placed in the test setup in the right-hand cage. The animal was allowed to enter the trap voluntarily.

The following time points were registered:

- Time from animal placed in setup until activation of the trap (mm:ss)
- Time from activation of trap until cessation of heart beat (mm:ss)

After activation of the trap, the rat was removed immediately to observe the animal.

At time points 15, 25 and 45 seconds from activation of the trap, the following observations were made:

- Convulsions yes/no
- Corneal reflex yes/no
- Conscious yes/no
- Heart beat yes/no

Possible remarks were noted down as free text.

Information from the autopsy, including weight and length of the animals examined

In Group 1, the average body weight of the animals was 215 g (sd¹ = 6 g). The average body length from nose to tail root was 18 cm (sd = 0 cm), and the head length was 5 cm (sd = 0 cm). The lesion was located from 28 mm (sd = 4 mm) to 48 mm (sd = 2 mm) in average from the nose.

Moderate to massive bleeding and fracture of the skull (nose, frontal and parietal bone plates) were observed.

In Group 2, the average body weight of the animals was 504 g (sd = 6 g). The average body length from nose to tail root was 25 cm (sd = 0 cm), and the head length was 6 cm (sd = 0 cm). The lesion was located from 21 mm (sd = 8 mm) to 45 mm (sd = 4 mm) in average from the nose.

Light to moderate bleeding and fracture of the skull (nose, frontal and parietal bone plates) were observed.

Photographic documentation

Immediately after the test, X-rays of all animals were taken in two positions, the dorsoventral and lateral position. A representative X-ray is displayed in Figure 2

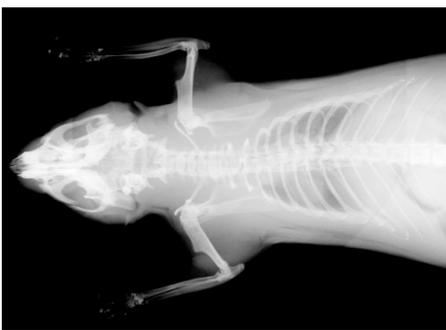


Figure 2a: X-ray of rat 1, dorsoventral position



Figure 2b: X-ray of rat 1, ventral position

¹ standard deviation

During the pathological examination, photographs were taken before and after dissection (Representative photograph displayed in Figure 3).



Figure 3a: X-ray of rat 2, ventral position



Figure 3b: X-ray of rat 2, dorsal position

Additional information

Information from the autopsy, including the weight and length of the animals:

Information from the autopsy, including the weight and length of the animals used and length of cranium as well as distance from nose to the point where they have been struck by the striking plate can be found in Table 1. Measures are given as means \pm standard deviation.

Table 1: Body weight and position of lesions

Body weight (g)	Body length (cm, nose to tail base)	Head length (cm)	Distance (mm, nose to start lesion)	Distance (mm, nose to start lesion)
215 \pm 6	18 \pm 0	5 \pm 0	28 \pm 4	48 \pm 2
504 \pm 12	25 \pm 0	6 \pm 0	21 \pm 8	45 \pm 4

Information on how much time elapsed before the animal became unconscious and lost all feeling:

In Group 1 (body weight 215 \pm 6 g)² five out of five animals (n=5) showed convulsions immediately after the trap was activated.

One animal (rat 4) was hesitant to enter the trap and was hit on its nose tip after activation. The animal fled back into the cage and was euthanized manually immediately. Thus, no data for this animal is available.

² mean \pm standard deviation

After 15 seconds, five animals (n=5) had no cornea reflex and were unconscious and remained unconscious throughout the test.

Animals were observed dead (cessation of heartbeat) after 1 min 50 sec \pm 18 sec.

In Group 2 (body weight 504 \pm 12 g) five out of six animals (n=5) showed convulsions immediately after the trap was activated.

One animal (rat 12) did not show convulsions and vocalized immediately after activation of the trap. The corneal reflex was present after 15 sec. but not after 25 and 45 sec. As the animal was gasping and not fully unconsciousness throughout the period it was euthanized manually 1 min. and 34 sec. after activation of the trap.

In Group 2 two out of six animals (n=2) had a positive corneal reflex after 15 sec. After 25 sec all animals (n=6) had an absence of corneal reflex, but only five animals (n=5) were considered to be unconscious. One animal (rat 12) was gasping and was not considered to be unconscious and was euthanized manually.

Animals were observed dead (cassation of heartbeat) after 3 min 12 sec \pm 42 sec.

Summary

Table 2 summarizes the test, classified according The Swedish Environmental Protection Agency's regulations on type approval of trapping devices (NFS 2013 (ISSN 1403-8234).

Table 2: Time limits for unconsciousness

Time limit for unconsciousness	Results from this test
Class A max 15 seconds for at least 80% of animals tested	8 out of 12 animals (66.7%)
Class B max 25 seconds for at least 80% of animals tested	10 out of 12 animals (83.3%)
Class C max 45 seconds for at least 80% of animals tested	10 out of 12 animals (83.3%)