

Anesthetized ECG (Mouse) 心電圖(小鼠)

1. Purpose

- 1.1 An electrocardiogram (EKG) is a recording of the electrical activity of the heart with surface electrodes. EKG's are specifically used to analyze cardiac rhythms, conduction and re-polarization patterns within mice.

2. Safety Requirements

- 2.1 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.

3. Associated Documents

- 3.1 Powerlab 8/30 and Animal Bio Amp

4. Notes

- 4.1 The majority of mouse cardiovascular studies are age/sex/strain dependent. It is important to keep these parameters comparable throughout a single experiment.
- 4.2 Isoflurane is metabolized nearly all by lung, only extremely on a small quantity by liver, and very small to cardiovascular influence.
- 4.3 Environmental factors may contribute to the levels of anxiety of the mice. Noise levels in the experimental room must be kept to a minimum and several parameters such as temperature, moisture and ventilation must be controlled according to regulations of animal welfare. Ambient conditions of the testing room should be recorded.

5. Quality Control

- 5.1 All of the connections must be inspected before experimentation.
- 5.2 Avoid any source of electrical interference.

6. Equipment

- 6.1 The Electrocardiograph, PowerLab 8/30 (ADINSTRUMENTS, Australia). Any other PowerLab unit equipped with an analogical output is suitable.
- 6.2 The electrocardiograph system consists of four main parts: the Electrocardiograph PowerLab 8/30 (ADINSTRUMENTS, Australia), four Amplifiers and subject cables, Electrodes (MLA1204 Needle Electrodes), and notebook with Chart 5 software and Cardio Axis Program (ADINSTRUMENTS, Australia) as a data acquisition, analysis and storage system.
- 6.3 Inhalation Anesthesia System.

7. Supplies

- 7.1 Ethanol 70%
- 7.2 Tissues
- 7.3 Isoflurane
- 7.4 Tape
- 7.5 Mask
- 7.6 Gloves

7.7 Pad

7.8 Absorbent cotton ball

7.9 Needle electrodes

8. Procedures

8.1 Turn on the PowerLab.

8.2 Turn on the computer, and start the "ECG" program.

8.3 Narcosis of mouse by 1 vol.% isoflurane with oxygen, rate of 1 L/min.

8.4 Place the animal facing up on a pad, tape the limbs of the animal on the pad.

8.5 Place the 6 electrodes subcutaneously in the main axis of the animal without muscular puncture (see Table 1).

ECG	Lead	Negative(black)	Positive(red)	Common(green)
Channel I	I	Right arm	Left arm	Right leg
Channel II	II	Right arm	Left leg	Right leg

Table 1: The standard limb leads and electrode connects to the subject cable.

8.6 Click on "START" icon and the signal obtained appears.

8.7 About 10~15 minutes later, click "STOP" icon to stop recording and save the file.

8.8 Remove the mouse from the pad.

8.9 Double click on "ECG", "HRV" icon and Cardiac Axis Program to analysis data.

8.10 Export analysis data.

