

TECHNOLOGY OFFER

A versatile telemetry system for continuous measurement of heart rate, body temperature and locomotor activity in free-ranging ruminants

Description:

The aim of this project was to develop a system for measurements of some physiological and behavioral parameters in free-ranging ruminants. For this purpose a minimally invasive telemetry system has been developed to measure heart rate, body temperature and locomotor activity.

A ruminal transmitter unit was placed *per os* into the reticulum and therefore in close proximity to the heart. By use of an acceleration sensor heart rate was detected and also body temperature was measured and transmitted via short-distance UHF link to a repeater system located in a collar unit.

Heart rate was measured containing noise caused by reticulum contractions and animal movements that triggered the accelerator sensor in the ruminal unit. With an appropriate software filter noise is removed to clean the data for heart rate.

Locomotor activity was measured with two different activity sensors located in the collar unit and was stored together with the physiological data from the implant in a non-volatile memory.

As control for the system, free-ranging Alpine ibex (*Capra ibex*) were used to validate the system and the parameters. Data indicate this system offers a minimally invasive method to acquire physiological and behavioral data in ruminants. With appropriate battery settings and measurement cycles, a system lifetime of approximately 2 years can be established.

Advantages: non-invasive telemetry system for free-ranging ruminants

Application: stress-free monitoring of cattle, sheep, deer, and alpine ibex

Availability: the sensors can be ordered at the University of Veterinary Medicine; contact Franz Schober (Franz.Schober@vetmeduni.ac.at) or Gerhard Fluch (Gerhard.Fluch@vetmeduni.ac.at).

Literature: Methods in Ecology & Evolution 2010, 1, 75-85. A versatile telemetry system for continuous measurements of heart rate, body temperature and locomotor activity in free-ranging ruminants; by C. Signer et al.



Collaboration:

- Scientific interest/license
- Further development

Patents:

- none

Keywords:

- Telemetry
- Ruminants
- Heart rate
- Temperature
- Locomotor activity
- Non-invasive

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