A direct calorimetric system for the continuous recording of heat balance of freely moving small animals.

メタデータ	言語: jpn
	出版者:
	公開日: 2022-10-28
	キーワード (Ja):
	キーワード (En):
	作成者: Nagasaka, Tetsuo
	メールアドレス:
	所属:
URL	https://doi.org/10.24517/00067740

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 International License.



1988 Fiscal Year Final Research Report Summary

A direct calorimetric system for the continuous recording of heat balance of freely moving small animals.

Research Project

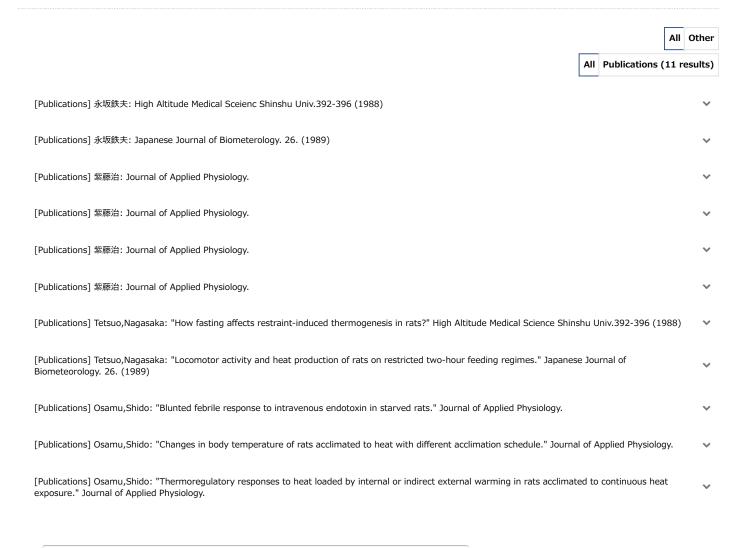
Project/Area Number
61870009
Research Category
Grant-in-Aid for Developmental Scientific Research
Allocation Type
Single-year Grants
Research Field
環境生理学(含体力医学·栄養生理学)
Research Institution
Kanazawa University
Principal Investigator
NAGASAKA Tetsuo Kanazawa University, School of Medicine, 医学部, 教授 (80023646)
Co-Investigator(Kenkyū-buntansha)
NODA Yuko Kanazawa University, School of Medicine, 医学部, 助手 (20180755) SHIDO Osamu Kanazawa University, School of Medicine, 医学部, 講師 (40175386) HIRATA Kozo Kanazawa University, School of Medicine, 医学部, 講師 (70110624)
Project Period (FY)
1986 – 1988
Keywords
direct calorimeter / automatic feeder / restricted feeding / heat loss / exercise efficiency / 体温調節
Research Abstract

A system has been designed which provides for simultaneous measurements of heat loss and heat production of freely moving rodents under restricted feeding schedules. The custom includes specially designed calculators are supplied as a thermobath for

A system has been designed which provides for simultaneous measurements of heat loss and heat production of freely moving rodents under restricted feeding schedules. The system includes specially designed calorimeter, an air suppier and flow regulators, air remperature controllers, a thermobath for heat sink temperature regulation, humidity sensing devices or a platemeter, O_2 and CO_2 analyzers and a data logger and a personal computer. The over-all response time and the sensitivity of the calorimeter are less than 5 min and 0.499 W/mV at a calorimeter remperature of 25° c. Heat production was estimated from continuous measurements of O_2 consumption and CO_2 production, and changes in heat balnce were computed with the personal

computer. Using this system, following results were obtained. 1) Effects of peptides injected into the cerebroventricle are in different directions in heat loss response with different peptide-groups. 2) A clear daily difference in temperature regulatory responses to body warming exists when rats are physically restrained, but not when they were allowed to move freely. 3) The effects of intermittent and continuous heat exposures are different according to the mode of heat exposure to obtain heat acclimation in rats. 4) Food restricted rats (2 hours feeding only in a day) enhance wheel running activity several hours before and after the feeding time. The relationship between wheel running and average heat production was not different between pre- and post feeding periods and control ad-lib feeding period. 5) Fasting suppresses heat loss response to intravenous injections of endotoxin and endogenous pyrogens but not to intracerebroventricular injections. Several other experiments were also conducted.

Research Products (11 results)



URL: https://kaken.nii.ac.jp/report/KAKENHI-PROJECT-61870009/618700091988kenkyu_seika_hokoku_

Published: 1990-12-18