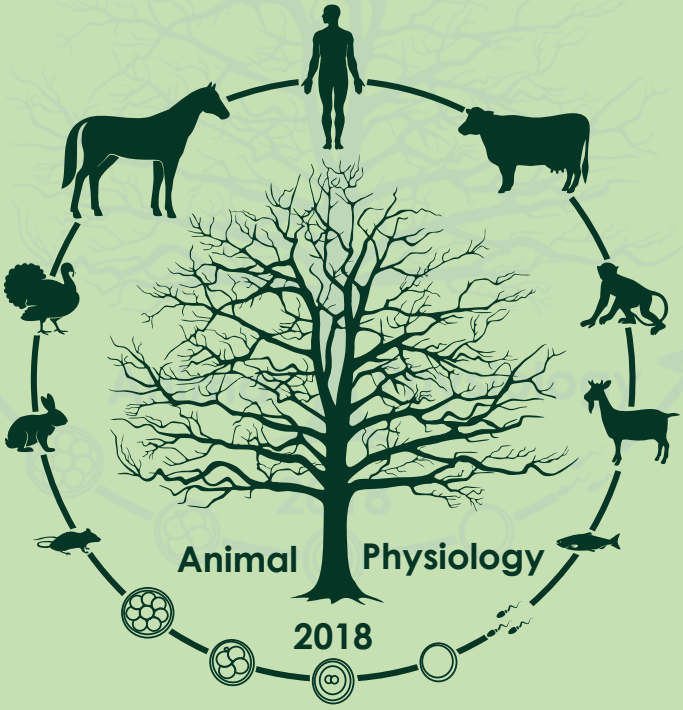
14th INTERNATIONAL SCIENTIFIC CONFERENCE

ANIMAL PHYSIOLOGY 2018

BOOK OF ABSTRACTS



13 - 15 June 2018
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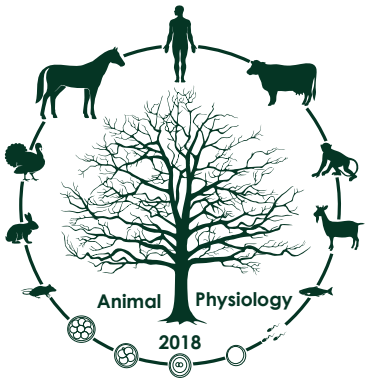

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Editor
Renata Muchacka, Ph.D.
Edyta Kapusta, MSc.

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Pedagogical University of Cracow
Faculty of Geography and Biology
Institute of Biology
Poland

Slovak University of Agriculture in Nitra
Faculty of Biotechnology and Food Sciences
Department of Animal Physiology
Slovak Republic

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Institute of Biology, Pedagogical University of Cracow, Poland

CONTENT

PERIODICITY OF CHANGES IN FUNCTIONAL INDICES IN ANIMALS AND HUMANS

Strashko S.*, Bilyk V.

Department of medico-biological and valeologic fundamentals of life and health protection, Faculty of Pedagogy and Psychology, National Pedagogical Dragomanov University, Kyiv, Ukraine
* s.strashko@gmail.com

In a series of long-term experiments with duration of up to 100 days, we investigated the dynamics of food and water consumption, body weight gain, body density, body water content, and changes in the hypoxic endurance of rats. These indicators were measured daily at the same time. Studies were carried out on young white rats of the Wistar line of both sexes. Dry mixed fodder balanced for a growing organism was used as feed. The body volume was determined by Renew-Lermontov volumenometer with an accuracy of 0.1 ml. Water content of the body was calculated from the body density by Yu. M. Madievsky's method. The hypoxic endurance was determined by smoothing of the T wave of cardiogram and by convulsive syndrome manifestation when simulating rise to an altitude in a pressure chamber according to V. Ya. Berezovsky's method. There were no significant interindividual differences in all the studied indicators. For instance, the average density of the body was 1.1222 ± 0.0148 g / cm^3. At the same time, individual density indices fluctuated within ± 5% from the average value. Variance of indicators in hypoxic resistance of the same animal on different days reached ± 19.3% and were to 7 500 to 11 000 meters above sea level. As a result of processing of the dynamics series by the method of sliding smoothing, were revealed periodic changes of the studied indices, with a length of about two weeks. They are correlatively related to body weight fluctuation that enables to refer them to manifestation of the "Basal rhythm of trophic processes" (BRT) (according to I. S. Kucherov). The analysis of primary data in the study of BRT in the activity of various human physiological systems made possible to establish an average value of the period of this biorhythm, which is 12.6 days. The synchronizer of this rhythm is unclear. However, its stability allows to speak of the presence of an external synchronizer, and, consequently, of the exogenous nature of the BRT and its adaptive role aimed at compensating for changes in environmental parameters.

Keywords: basal rhythm of trophic processes, exogenous biorhythm