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BOOK OF ABSTRACTS

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Motor behaviour and energy metabolism of *Blaptica dubia* in artificial magnetic fields

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During the evolution, all organisms are exposed to the constant action of different environmental factors, biotic and abiotic, which are variable in time and space. Life on Earth is formed in a natural magnetic field (geomagnetic field). Therefore, magnetic field (MF) is classified as abiotic factor that help maintain different life processes of plants, animals and humans, as well as their biological and physiological functions. Organisms are exposed to new type of artificial MFs, due to the increasing electrification and technological development. So, MF is growing environmental pollutant and as a consequence of response and/or adaptation of organisms on new, stressful conditions, changes could be observed on all levels of the biological organization. So, the aim of this study was to evaluate the long – term effect of a static MF (SMF) and an extremely low frequency MF (ELF MF) on the motor behaviour in *Blaptica dubia* nymphs, as well as on their fat body glycogen concentration and total lipid content. One month old nymphs were randomly divided into three experimental groups: control, exposed to SMF (110 mT) and exposed to ELF MF (50 Hz, 10 mT). The cockroaches were exposed to these MFs for 5 months, while the control ones were kept outside the reach of the magnetic field. Fat body glycogen concentration, as well as total lipid content, was measured spectrophotometrically according to Wyatt and Kalf (1957) and Stone and Mordue (1980), respectively. Also, we monitored nymphal behaviour for 10 minutes in "open – field" test and analyzed several behavioural parameters (travel distance, average speed while in motion, time mobile, travel distance of the head, number of body rotations, immobility time) using ANY – maze software. Exposure to SMF and ELF MF affected the all examined behavioural parameters. Namely, in comparison to control cockroaches, all parameters, except immobility time, were significantly higher in *B. dubia* nymphs exposed to both MFs. The difference between the MF groups was no statistically significant. In SMF and ELF MF groups, fat body glycogen concentration was significantly lower compared to control group. Between the MF groups significant differences were not observed. The lipid concentration in the fatty body of *B. dubia* nymphs depended on the applied MF. In nymphs exposed to SMF, total lipid content was significantly higher compared to control. ELF MF caused its decrease compared to control and SMF group. These differences were significant only for SMF group. This study provides evidences that long – term exposure of *B. dubia* nymphs to magnetic fields induces important alterations in their motor behaviour, and consequently examined parameters of carbohydrate and lipid metabolism.

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