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THE EFFECTS OF MAGNETIC FIELDS ON MORPHOMETRIC CHARACTERISTICS OF GYPSY MOTH MEDIAL NEUROSECRETORY NEURONS

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POSTER ABSTRACT

The effect of magnetic field on the physiology of neuroendocrine system and developmental processes in insects are poorly examined. Insect neurohormones which are master regulators of physiological, metabolic processes, homeostasis uphold, are mainly synthesized in neurosecretory neurons of protocerebral part of insect brain. The products of neurosecretory neurons in the medial part of insects' protocerebrum include neurohormones which participate in regulation of the synthesis of the main morphogenetic hormones.

The activity of protocerebral medial A2 neurosecretory neurons were investigated in 4th instar *Lymantria dispar* larvae, which were exposed to the acute effect of constant magnetic field (CMP) and extreme low frequency magnetic field (ELF MF). Larvae were kept for three days in constant magnetic field (average magnet induction of 235 mT) and extreme low frequency magnetic field (average magnet induction of 6 mT).

The size of A2 neurosecretory cells and the size of their nuclei were decreased after the exposure to ELF MF. Constant magnetic field induced the increase in number of A2 neurosecretory cells with high amount of large grained neurosecretory material. Our results indicate that ELF MF reduces the activity of A2 neurosecretory neurons, a possible location of the synthesis of insulin-like peptides, which have a role in control processes of moulting program, but probably also in stress response phase in which the energy for physiological reactions is obtained.

Keywords: A2 neurosecretory neurons, magnetic fields, *Lymantria dispar* L.