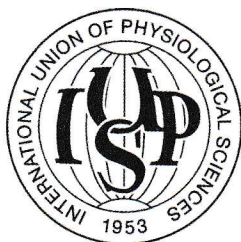


**3rd CONGRESS OF PHYSIOLOGICAL SCIENCES OF SERBIA
WITH INTERNATIONAL PARTICIPATION**

**MOLECULAR, CELLULAR AND INTEGRATIVE BASIS
OF HEALTH AND DISEASE:
TRANSDISCIPLINARY APPROACH**

Organized by
Serbian Physiological Society
Co-organized by
Military Medical Academy
Faculty of Medical Sciences, University of Kragujevac

Under the auspices of
Federation of European Physiological Societies (FEPS)
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EXPOSURE TO ALTERNATING MAGNETIC FIELD (50 Hz, 0.5 mT) AFFECTS RAT PITUITARY ACTH CELLS: STEREOLOGICAL STUDY

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Presence of an alternating magnetic field of extremely low frequency (ELF-MF, <300 Hz) is correlated with technological development in a modern world. ELF-MF shows its influence on different cell types and organs and leads to changes in ion currents, neurotransmission and behavior. Modern medicine uses some positive aspects of ELF-MF action for treating some conditions like anxiety, depression, and schizophrenia. Bearing in mind that hypothalamo-pituitary-adrenal (HPA) axis is a system responsible for maintaining homeostasis in organisms, the aim of the present study was to determine does extremely low frequency magnetic field (50 Hz, 0.5 mT) affect pituitary adrenocorticotroph (ACTH) cells in adult animals. The following experiments were performed: 3 month old rats were short-term exposed to ELF-MF either for 1 or 7 days, while long-term exposure to ELF-MF was conducted on rats from their conception to 3 months of age. Stereological analysis was performed on immunolabeled pituitary ACTH cells. Specifically, we measured total number and volume of ACTH cells, the volume of their nuclei and pituitary volume. Obtained data showed that ELF-MF exposure for 1 day significantly decreased total number and volume of ACTH cells, the volume of their nuclei, as well as pituitary volume. Furthermore, 7 days ELF-MF exposure significantly reduced only the ACTH cells volume. Life-long exposure to ELF-MF decreased the volume of ACTH cells as well as the pituitary volume. Based on these results we can conclude that the applied ELF-MF has a strong influence on the pituitary ACTH cells morphometrical parameters and could be characterized as a stressogenic factor.