

عنوان مقاله:

Effects of Electromagnetic Fields with Frequencies Lower Than 50 Hz and Intensity of 50 μ T on Learning and Memory

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خلاصه مقاله:

Introduction: Biological effects of magnetic fields have been investigated by scientists for many years and a vast amount of research using different frequencies and intensities have been performed on humans and laboratory animals. The results of these studies, which have mostly been done by applying high frequencies, have shown that electromagnetic fields are effective on structure and function of biological systems. Material and Methods: Sixty male Sprague Dawly rats were randomly divided into 6 groups of ten each. The first group was sham exposed and the other groups were exposed to fields with frequencies of 5, 10, 15, 25 and 40 Hz and intensity of 50 μ T. To investigate the effects on learning, 20 trials were undertaken for each animal using a shuttle box that was sandwiched between the arms of the field generator, which was adjusted to produce the desired frequency and intensity. To evaluate the reversibility of the possible effects of the fields and also to evaluate memory, the 20 trials were repeated 24 hours later under the same condition but in the absence of the field. In this study, we measured the latency and number of conditioning responses. Results: According to our findings, a significant difference was found between latency and number of conditioning responses of the second day of the 25 Hz group and the sham and other experimental groups. For that group, latency increased and number of conditioning responses decreased on the second day compared to the first day, in contrast to all other groups.

Conclusion: Exposure to the field with frequency of 25 Hz caused disruption of memory, however, there was no significant difference between the groups regarding learning.

کلمات کلیدی:

Magnetic Fields, Memory, Learning, Shuttle box, Conditioning

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