

Abstract Submitted
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Repetitive Exposures of Extremely Low-Frequency Magnetic Field Induce DNA Double-Strand Breaks and Apoptosis in human cells¹

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We are exposed to 50-60 Hz extremely low-frequency magnetic fields (ELF-MFs) with a few mT intensity by high voltage transmission lines and electric transportations. However, the biological effects and molecular mechanisms of the exposure remain controversial. Herein, we investigated the potential effects of ELF-MFs on human normal and cancer cells. Whereas single exposure to ELF-MFs of 6 mT for 30 min did not show any effect, repetitive exposures reduced cell viability. Repetitive exposures of ELF-MFs activated p-H2AX and p-Chk2 kinases in the DNA damage checkpoint pathway and p38. In addition, cells underwent apoptosis. These studies suggest the necessity of standard ELF-MFs exposure evaluations for human health issues associated with repetitive exposures to ELF-MFs in daily environments.

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