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THE INFLUENCE OF ELECTROMAGNETIC FIELD EXTREMELY LOW FREQUENCY (ELF) OF 500 kV HIGH-VOLTAGE TRANSMISSION LINES TO THE SPERMATOGENESIS OF WISTAR WHITE RATS

1. Syariffuddin Mahmudsyah --> Faculty of Electrical Engineering, ITS, Surabaya
2. Sudarti --> Department of Physics, Faculty of Teaching and Educational Sciences, Jember University, Jember

Abstract

This research was aimed at carrying out the assessment of the effect of the extremely low frequency (ELF) electromagnetic field exposure on the spermatogenesis of white rat. The study examined the in vivo effects of extremely low frequency electromagnetic fields (ELF-EMF) emitted by 500 kV high-voltage power-line to the spermatogenesis of white rats. A complete randomized factorial 3 x 2 design was used in the study. This research needed 60 white rats divided into three groups and placed in a different cage. Cage I (as a control) exposed to natural electromagnetic field with the rate intensity (0.00423 kV/m; 0.04625 μT). Cage II was exposed to the intensity of 0.638 kV/m; 1.5290 μT in the cage and 1.0640 kV/m; 1.5748 μT around the cage. Cage III was exposed to the intensity of 1.1620 kV/m; 1.6693 μT in the cage and 2.1480 kV/m; 1.7168 μT around the cage. The exposure was continuously held on the average of 14 h/d in the cage and 10 h/d around the cage during 4 and 8 weeks. The result of the study showed significant result (p < 0.05), the number of spermatogonium cells, primer spermatocyte cells and spermatid cells were influenced by the exposure intensity and the exposure duration of extremely low frequency electromagnetic fields. It can be concluded that extremely low frequency electromagnetic fields exposure emitted by 500 kV high-voltage transmission-line influences the spermatogenesis of white rats. Electromagnetic fields exposure functions as physical stressor on the spermatogenesis, but the tendency of adaptation up to 8 weeks exposure has not shown optimum results.

Keyword : Extremely, low, frequency, (ELF), electromagnetic, fieldspermatogenesis, 500, kV, high-voltage,

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