

Investigation of micronuclei induction in human peripheral blood lymphocytes exposed in vitro to EMF RF

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The widespread application of cellular phones is of great concern in view possible consequences for human health. The aim of this study is to assess the capability of electromagnetic fields (EMF) RF with frequency 925 MHz and modulation 217 Hz to induce genotoxic effects as evaluated by the in vitro micronucleus assay on peripheral blood lymphocytes. The flasks of peripheral blood samples collected from healthy volunteers (5 men and 5 women) were placed just on the oscillator of emitting antenna. The signals were produced by the laboratory research plant and were evaluated at four specific absorption rates (SARs) – 0; 0.29; 1.2; 8.1 W/kg. SARs were determined by the calorimetric method. Phytohaemagglutinin stimulated lymphocytes were exposed three times for 10 minutes in the G₀ (the first 30 minutes after the beginning of cultivation), S (24 hours later), G₂-M (after 48 hours from the beginning of cultivation) stages of the cell cycle. 72-hours cultures of lymphocytes were examined to determine the extent of micronuclei. The Mann-Whitney U-test was used to evaluate the significance for comparison. The data indicated a significant increase of micronuclei in human lymphocytes exposed to EMF RF (6.5 ± 0.51 ‰; 7.1 ± 0.66 ‰; 7.0 ± 0.50 ‰) in comparison with sham-exposed lymphocytes (3.0 ± 0.60 ‰). There was not revealed a dose-dependent increase of micronuclei in human lymphocytes. It was suggested that the increase of micronuclei in lymphocytes is explicated by a particularity of EMF RF just near the oscillator of emitting antenna.

Keywords: *electromagnetic field RF, lymphocyte, micronucleus.*