

Pilot study to assess potential influence of 900 MHz GSM cell phone radiation and the protective effectiveness of a compensation technology *

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Objective

A pilot study was performed in order to evaluate potential influence of non-ionizing radiation (NIR) emitted by 900 MHz GSM cell phone, as well as the protective efficacy of a compensation technology (Tecno AO magnetic oscillator) designed to protect from NIR-induced adverse bio-effects.

Materials and methods

The radiation source was a 900 MHz GSM cell phone (SAGEM, France) with 2 W maximum power output. It was placed horizontally with the battery downwards, 4 cm underneath the cage containing the mice. EMF intensity measured on the floor of the cage ranged from 6 to 18 V/m for microwaves and from 70 to 90 dBpT for extremely low frequency magnetic field. The compensation technology was a device containing an electromagnetically charged saline solution emitting an hyperweak electromagnetic signal*. The study was initiated with three week-old C57BL mice held under 22 + 2 °C, 12L-12D-19 h-07 h, with free access to feed and water. The irradiation schedule consisted in sending 3 min. phone calls continuously during the experimental session. From the age of 4 to 15 weeks, three groups of 4 mice each experienced different irradiation conditions: the control group was exposed to switched off cell phone; the exposed group was submitted to operating cell phone; the protected group was submitted to operating cell phone with the compensation oscillator installed. After 15 weeks of irradiation, peritoneal macrophages were maintained in vitro in culture medium, fixed with formaldehyde and nuclear DNA was labelled with Hoechst dye. The formation of micronuclei was evaluated by counting the number of DNA spots/macrophage under fluorescent microscope.

Results

The results (also see enclosed photos) indicated that in the control group, about 5 % of macrophages had more than 2 nuclei and the average number of nuclei for 100 macrophages was 130.75. The percentage of macrophages with more than 2 nuclei was 7 times higher in the exposed than in the control group (31.50 % vs. 4.75 %). Meanwhile the average number of nuclei for 100 macrophages was significantly higher

* Tecno AO: international registered patent and trademark

($P < 0.01$) in the exposed than in the control group (227 vs. 130.75). On the other hand, in the protected group, the percentage of macrophages with more than 2 nuclei was significantly reduced ($P < 0.01$) in comparison with the exposed group (17.25 % vs. 31.50 %). The same trend was observed regarding the average number of nuclei for 100 macrophages (167.75 vs. 227).

Discussion and conclusions

Together, these preliminary findings indicate that prolonged in vivo exposure of mice to NIR emitted by 900 MHz GSM cell phone induced abnormal levels of micronuclei in peritoneal macrophages, which is symptomatic of cell dysfunction, apoptosis or cancer process [1–3]. This effect was significantly mitigated by Tecno AO magnetic oscillator. Further experiments with larger number of mice are underway in order to confirm present data.

References

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