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900 MHz TELEPHONE SIGNAL AFFECTS PROLIFERATION AND CELL CYCLE REGULATION ON CCRF-CEM: TIME AND POWER DEPENDENT RESULTS.

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Abstract:

We previously reported that unmodulated sinusoidal 900 MHz signal caused an unbalance in protein expression in CEM cells. Here we point out that the GSM telephone signal, as emitted by a telephone device, affects the proliferation and the genes expression of cultured CEM-cells. The cell cultures were exposed for 2, 3, 4, and 6 hours, using a normal mobile telephone through a TEM cell device from 0,6microWatts to 1.3milliWatts in 11 steps of increasing power density inside a cell culture incubator. Exposures till two hours caused an increment of the number of proliferating surviving cells. While the exposed samples to 3, 4, and 6 hours show a reduction of the survived cells as detected by MTT viability test. Moreover the expression level of the most representative pro-apoptotic and cell cycle regulator genes in CCRF-CEM cell line was evaluated. The WB analysis revealed a difference in the gene activation expression between short exposure time (2 hours) and longer exposure time (3, 4, and 6). In particular exposure time till two hours induced a prevailing pro-survival anti-apoptotic gene expression activity (Bcl-2 and Ras). The exposure time 3, 4, and 6 hours induced prevailing pro-apoptotic gene activation (p53, pRb/p110,). DNA breaks in exposed samples were visualized by alkaline Comet assay. Inverse correlation between exposure time and power density was also detected.