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2.45 GHz radiofrequency fields alter gene expression in cultured human cells.

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The biological effect of radiofrequency (RF) fields remains controversial. We address this issue by examining whether RF fields can cause changes in gene expression.

We used the pulsed RF fields at a frequency of 2.45 GHz that is commonly used in telecommunication to expose cultured human HL-60 cells.

We used the serial analysis of gene expression (SAGE) method to measure the RF effect on gene expression at the genome level. We observed that 221 genes altered their expression after a 2-h exposure. The number of affected genes increased to 759 after a 6-h exposure.

Functional classification of the affected genes reveals that apoptosis-related genes were among the upregulated ones and the cell cycle genes among the downregulated ones. We observed no significant increase in the expression of heat shock genes.

These results indicate that the RF fields at 2.45 GHz can alter gene expression in cultured human cells through non-thermal mechanism.

Publication Types:

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MeSH Terms:

- [Dose-Response Relationship, Radiation](#)
- [Electromagnetic Fields/adverse effects*](#)
- [Gene Expression/radiation effects*](#)
- [Gene Expression Profiling](#)
- [Genome, Human](#)
- [HL-60 Cells/radiation effects*](#)
- [Humans](#)
- [Radio Waves/adverse effects*](#)
- [Telecommunications](#)