Cell Specific Responses to RF

Some Startling Results from Finland

May 29, 2007

Every now and then a new paper comes along that gives hope that one day we'll make sense of the conflicting results that have become the hallmark of EMF research. A team of Finnish researchers from the University of Kuopio has published such a paper. It's in the June issue of the *International Journal of Radiation Biology*.

Anne Höytö, Jukka Juutilainen and Jonne Naarala have shown that the type of cells used in *in vitro* studies can determine whether they will respond to RF radiation. They ran the same experiment with *primary* cells —those taken directly from an organism— and with *secondary* cells —those that have been grown in a petri dish. They exposed both types of cells to two different RF signals, CW and modulated (GSM), at various intensities (SAR =1.5, 2.5 or 6 W/Kg) for various amounts of time (2, 8 or 24 hr), and then measured the activity of ODC (ornithine decarboxylase), an enzyme related to cellular growth and differentiation.

The results are startling. "In experiments with rat primary astrocytes, [highly] statistical differences [in ODC activity] were found at all exposure levels and signals," they reported. (Astrocytes are brain cells.)

The Finns tried three different types of secondary cell lines. All were unresponsive under the various exposure conditions, with only a few isolated exceptions.

These findings raise a number of questions that need to be answered. For instance, the Finns did not see a difference in ODC activity in the primary cells between modulated and unmodulated signals (GSM vs. CW). And while they saw changes after a 2 hr and an 8 hr exposure, they did not see any after a 24 hr exposure.

Yet, the Finnish researchers are the first to check for variations in the responses of primary and secondary cell lines and, as they

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themselves remarked, their results are "very interesting." They went on to point out that primary cells better represent "normal tissues" than do secondary cell lines. That is, primary cells are more likely to behave like those in a functioning organism. [Neither Höytö nor Juutilainen answered a request for further comment.]

While others (for example, Craig Byus & Ross Adey) have seen increased ODC activity following RF exposure, the Finns saw a decrease. But as the Kuopio team explains, a decrease in ODC could impair a cell's ability to protect DNA from free radical attack. This means, for instance, that mobile phone radiation could lead to an increase in DNA breaks.

Finland, Jukka Juutilainen, Anne Höytö, Jonne Naarala, ODC, DNA breaks, cell biology, Ross Adey,

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