

CYTOGENETIC STUDIES IN MAMMALIAN SOMATIC CELLS EXPOSED TO RADIOFREQUENCY RADIATION: AN OVERVIEW

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A multitude of devices that emit non-ionizing radiofrequency radiation (RFR, 300 MHz to 300 GHz) are already in use for a variety of civilian and military purposes. A large increase in the number of people who are potentially exposed to RFR occurred with the introduction of household microwave ovens which work predominantly at 2450 MHz and wireless communication systems that operate at less than 2000 MHz. With the escalating use of RFR emitting consumer devices, public attention has been drawn to the possibility that acute and/or chronic exposure to RFR could have adverse effects on human health, including the development of cancer.

There has been a steady increase in investigations determining the potential of RFR to induce genotoxicity in mammalian cells. The importance of conducting these studies comes from the fact that most genotoxic agents are also carcinogens. The results from genotoxicity studies (determining the extent of DNA strand breaks, chromosomal aberrations, micronuclei and sister chromatid exchanges) which were published during 1990-2003 in peer-reviewed scientific journals will be reviewed. Among a total of 53 reports, the conclusions from 31 studies (58%) did not indicate increased damage to the genetic material in RFR-exposed cells as compared with sham exposed and/or un-exposed cells, while those from 12 investigations (23%) have suggested an increase in such damage in RFR-exposed cells. The observations from 10 other studies (19%) were inconclusive. The probable reason(s) for the conflicting results will be discussed.

Reference: Vijayalaxmi and G. Obe. Radiation Research, 162, 481-496, 2004.