



Quality of the publications on the genetic damage in mammalian cells exposed to radiofrequency fields.

Vijayalaxmi^{1*} and Thomas J. Prihoda²

¹Department of Radiology, University of Texas Health Science Center, San Antonio, TX 78229, USA. Email: vijay@uthscsa.edu

²Department of Pathology, University of Texas Health Science Center, San Antonio, TX 78229, USA.

Four specific quality control measures were used to determine the quality of 225 publications on the genetic damage in mammalian cells exposed *in vitro* and *in vivo* to RF energy and they were as follows. (i) 'Blind' collection/analysis of the data to eliminate individual/observer 'bias'. (ii) Adequate description of 'dosimetry' for independent replication/confirmation. (iii) Inclusion of 'positive controls' to confirm the outcomes. (iv) Inclusion of 'sham-exposed controls' which are more appropriate to compare the data with those in RF exposure conditions. In addition, meta-analysis of the data reported from 2160 tests was used to obtain the 'd' values or effect size or the standardized mean difference between the experimental and control cells. The relationship between d values and the above-mentioned quality control measures was ascertained. In addition, the correlation between the quality control measures and the conclusions (no significant difference between the cells exposed to RF energy and control cells; increased damage in former cells compared with the latter; increased, no significant difference and decreased damage in cells exposed to RF energy in the same experiment; decreased damage in cells exposed to RF energy) reported in the publications was examined.

The overall conclusions were as follows. (i) When all four quality control measures were mentioned in the publication, the d values were smaller compared with those when one or more quality control measures were not mentioned. (ii) Publications reporting no significant difference in genetic damage in cells exposed to RF energy, compared with that in control cells, increased with increased number quality control measures employed in investigations. (iii) The number of publications reporting increased genetic damage in cells exposed to RF energy decreased with increased number of quality control measures. Overall, the results emphasized the importance of including quality control measures in the investigations.