

111. Title: Terahertz Radiation Induces Spindle Disturbances in Human-Hamster Hybrid Cells

Author: Hintzsche, H; Jastrow, C; Kleine-Ostmann, T; Stopper, H; Schmid, E; Schrader, T

Source: RADIATION RESEARCH

Volume:175

Issue:5

Pages: 569-574

Publication year: 2011

Document type:Journal article (JA)

Abstract: The aim of this study was to investigate and quantify the production of spindle disturbances in A(L)₉ cells, a human-hamster hybrid cell line, by 0.106 THz radiation (continuous wave). Monolayer cultures in petri dishes were exposed for 0.5 h to 0.106 THz radiation with power densities ranging from 0.043 mW/cm² to 4.3 mW/cm² or were kept under sham conditions (negative control) for the same period. As a positive control, 100 µg/ml of the insecticide trichlorfon, which is an aneuploidy-inducing agent, was used for an exposure period of 6 h. During exposure, the sample containers were kept at defined environmental conditions in a modified incubator as required by the cells. Based on a total of 6,365 analyzed mitotic cells, the results of two replicate experiments suggest that 0.106 THz radiation is a spindle-acting agent as predominately indicated by the appearance of spindle disturbances at the anaphase and telophase (especially lagging and non-disjunction of single chromosomes) of cell divisions. The findings in the present study do not necessarily imply disease or injury but may be important for evaluating possible underlying mechanisms.