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ATHERMAL MICROWAVE RADIATION AFFECTS THE GENETIC OF VEGETAL EMBRYOS

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Abstract

In this paper low power microwave radiation impact on *Zea mays* root meristeme tissues was investigated. Seeds with uniform genophond were exposed for 3 hours at 10 W incident power level in controlled condition to continuous wave at three different frequencies (0.6 GHz, 1 GHz and 2.5 GHz) and let to germinate after electromagnetic exposure. Dosimetric assessment made experimentally and computationally allowed the proper energetic characterization of the interaction between vegetal tissue and radiation. Root tip cells in different division stages were analyzed and chromosomal aberration assay was used to determine the mitotic index and chromosomal aberration frequency induced by electromagnetic exposure. Results show that both genetic parameters were influenced by microwave radiation with specific absorption rates (SAR) of energy deposition between 0.3-0.9 W/kg. Mitotic division process indicates inhibition due to exposure when compared to non-irradiated sample while chromosomal aberration frequency was modulated by the absorbed energy; higher SAR values conducted to increased aberration frequencies.

Key words: athermal effect, chromosomal aberration, microwaves, mitotic division, plant seeds

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