Abstracts

Microwave-Induced Hyperthermia Dose Definition

E.R. Atkinson. "Microwave-Induced Hyperthermia Dose Definition." 1978 Transactions on Microwave Theory and Techniques 26.8 (Aug. 1978 [T-MTT] (Special Issue on Microwaves in Medicine, with Accent on the Application of Electromagnetics to Cancer Treatment)): 595-598.

In vitro thermal data on cytotoxicity are consistent with the simple picture of chemical reaction kinetics as governed by an activation energy. These kinetics are used to calculate, for any arbitrary heating profile used in clinical hyperthermia, the corresponding percentage of cells killed by such treatment in in vitro tissue cultures. The quantity calculated, which incorporates biological response to thermodynamic parameters, is suggested as a measure of hyperthermal dosage. Alternative dosage measures are discussed. Doses, defined by thermal cytokinetics, are derived for current clinical practice in whole-body and Iocal hyperthermia. Both types of treatment, although superficially very different, are shown to employ comparable dose magnitudes, and these magnitudes are found to be in quantitative accord with the thermal cytotoxic basis for dosage measurement.

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