Abstracts

A System for Developing Microwave-Induced Hyperthermia in Small Animals (Aug. 1978 [T-MTT])

R.J. Baker, V. Smith, T.L. Phillips, L.J. Kane and L.H. Kobe. "A System for Developing Microwave-Induced Hyperthermia in Small Animals (Aug. 1978 [T-MTT])." 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)): 541-545.

A system has been developed at the University of California, San Francisco, for producing microwave-induced hyperthermia in small laboratory animals by irradiating an entire transverse section of defined height, for the purpose of assessing the effects of heat alone and heat plus ionizing radiation on normal tissue and tumors. A thermometry system consisting of a thermistor array, a low-voltage scanner, and a single channel recorder is described. Thermographic studies on sacrificed animals and thermistor studies in a phantom reveal a pattern of deep heating in a well-defined region, corroborated by thermistor measurements in vivo. Long-term animal survival at elevated temperatures (/spl equiv/45°C) throughout a large volume is not readily obtained. Seven out of 17 animals heated to 44.8°C throughout the entire abdominal region survived seven days post-heating, and histologic findings on this group of animals are briefly described. Various aspects of the biological techniques and the endpoints for current and planned experiments are discussed.

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