Abstracts

The Effects of High Power Microwave Pulses on Red Blood Cells and the Relationship to Transmembrane Thermal Gradients (Dec.1981 [T-MTT])

A.W. Friend, Jr., S.L. Gartner, K.R. Foster and H. Howe, Jr.. "The Effects of High Power Microwave Pulses on Red Blood Cells and the Relationship to Transmembrane Thermal Gradients (Dec.1981 [T-MTT])." 1981 Transactions on Microwave Theory and Techniques 29.12 (Dec. 1981 [T-MTT] (1981 Symposium Issue)): 1271-1277.

Calculations based on an idealized sphericaf model show that the relaxation times of transmembrane thermal gradients in red blood cells, and cells in general, are much less than 1 µs. Heat cannot be stored across the membrane during microwave pulses and only intense pulses can cause substantial transmembrane temperature gradients. Experiments show no hemolysis in red blood cells exposed in vitro to large microwave pulses with peak SAR's of more than 1 kW/g.

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