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Electromagnetic Biology and Medicine (formerly Electro- and Magnetobiology)

Publisher: Taylor & Francis**Issue:** Volume 21, Number 3 / 2002**Pages:** 255 - 268**URL:** [Linking Options](#)**DOI:** 10.1081/JBC-120015999**INHIBITION OF EHRlich TUMOR GROWTH IN MICE BY ELECTRIC INTERFERENCE THERAPY (IN VIVO STUDIES)**Magdy M. Ghannam ^{A1}, R. H. El-Gebaly ^{A1}, M. H. Gaber ^{A1}, Fadel M. Ali ^{A1}^{A1} Biophysics Department, Cairo University, Cairo, Egypt**Abstract:**

A study of solid tumor growth retardation by employing extremely low frequency (ELF) electric fields has been carried out. ELF electric fields were generated in tumor tissue in mice by the interference of two high frequency sinusoidal waves with the beat frequency centered at the tumor core. The results indicated a pronounced decrease in tumor growth rate in animals exposed to a 5-Hz interferential frequency for 1 hr daily. The 1 hr/day treatment produced a greater retardation effect than the 1 hr/week treatment. This indicates that treatment duration at the applied field frequency appears to play an important role in tumor growth delay. The dielectric properties of the tumor cells showed higher permittivity and conductivity values than homologous normal tissue. The permittivity of tumor cells treated daily with 5 Hz reaches nearly the same value as control tissue. Moreover, histological studies show that tumor tissues treated daily with the same frequency undergo partial regression and shrinkage of the aggregates of neoplastic cells leaving very little of them. We conclude that this new interferential technique is promising for tumor treatment in which a resonating electric field affects cell-to-cell communication.

Keywords:

Extremely low frequency, Ehrlich tumor, Tumor growth, Dielectrics, Inferential therapy

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