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Abstract

The replicability of the Zhadin effect and perspectives of application in diagnostics and therapy

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In the present work the results of the known investigation (Zhadin et al., 1998) of the influence of combined static ($40 \mu T$) and alternating (amplitude of $40 \mu T$) parallel magnetic fields on the current through the aqueous solution of glutamic acid, were successfully replicated. On 14 experiments the current was created by application of static voltage to golden electrodes placed into the solution. On 6 experiments the current was induced by the application of the combined magnetic fields to the solution placed in a plexiglass reaction vessel, without electrodes, within an electric field, generated by means of a condenser at the voltage 27 mV. The frequency of the alternating field was scanned within the bounds of 1.0 Hz including the cyclotron frequency corresponding to a glutamic acid ion and to the applied static magnetic field. In the present work the prominent peaks with half-width of ~ 0.5 Hz and with different heights (till 80 nA) were registered at the alternating magnetic field frequency equal to the cyclotron frequency (4.1 Hz). The general reproducibility of the investigated effects was 70% among the all solutions we studied and they arose usually after 40-60 min. after preparation of the solutions. In some makeup solutions the appearance of instability in the registered current was noted in 30-45 min after the solution preparation. This instability endured for 20-40 min. At the end of such instability period the effects of combined fields action appeared practically every time. The possible mechanisms of revealed effects were discussed on the basis of modern quantum electrodynamics (Preparata, 1995).

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