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ABSTRACTS

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Effects of Time-Variant Extremely-Low-Frequency (ELF) Electromagnetic Fields (EMF) on Cholinesterase Activity in *Dictyostelium discoideum*. ANDREA AMAROLI, FRANCESCA TRIELLI, BRUNO BIANCO*, STEFANO GIORDANO*, ELSA MOGGIA[†] and MARIA U. DELMONTE CORRADO, Dipartimento per lo Studio del Territorio e delle sue Risorse, Genova, Italy, [†]Dipartimento di Ingegneria Biofisica ed Elettronica, Università di Genova, I-16100 Genova, Italy.

Recently, we have shown the presence of molecules belonging to the cholinergic signalling system in the ciliate *Paramecium primaurelia* and in the sarcodine *Dictyostelium discoideum*. Propionylcholinesterase (PrChE) activity has been detected in single-cell amoebae of *D. discoideum*, using cytochemical, electrophoretic, and spectrophotometric methods (Falugi et al., *Chemosphere*, 48:407–414, 2002; Amaroli et al., *Europ. J. Protistol.*, 39:213–222, 2003). It has been suggested that this enzyme activity is involved in cell–cell and cell–environment interactions, as its inhibition by xenobiotic compounds affects cell migration and aggregation. In this work, we have spectrophotometrically evaluated the effect of an ELF-EMF of 300 T, 50 Hz, on PrChE activity after exposure of single-cell amoebae from 1 h up to 48 h at 22 °C. The enzyme activity was inhibited significantly by 1-h- and 3-h exposures, whereas it was similar to the control value after a 4-h exposure. A significant increase in PrChE activity was found after 5- and 24-h exposures, while a decrease in PrChE activity appeared in 48-h-exposed samples. The increased PrChE activity detected in 24-h-exposed cells returned to the control value 24 h after transferring the amoebae to standard conditions. A delay in both migration and aggregation processes was observed in 3 h-exposed cells, corresponding to a decreased PrChE activity. After a 24-h exposure, a decrease in the fission rate and an increase in the cell size were found.