Effect of magnetic field gradient on biomass growth and Cd(II) binding process by *S.platensis* cells

E.N. Ginturi, F.Kh . Akopov, A.N. Rcheulishvili, E.S. Gelagutashvili, E. Y. Efremova , A.I. Belokobilsky.

E.L. Andronikashvili Institute of Physics, Georgian Academy of Sciences,
6, Tamarashvili str., Tbilisi, 0177, Georgia
E.mail: gel@iph.hepi.edu.ge

Effect of magnetic field gradient in the interval 7-2 *mT* upon growth of *S.platensis* biomass compared with the control was studied during 9 days of cultivation in the Zaroukh nutrient. As it can be seen from fig. 1, growth half-period ($t_{1/2}$) for control and magnetic field amounts to 4,5 and 3 days respectively. The eighth day of *S.platensis* cultivation in magnetic field turned to be dramatic – multiple trichome splitting into short fragments and cell decay could be seen in microscope - whereas in the control normal cell growth persisted.

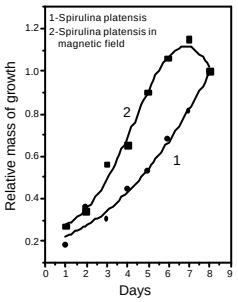

Fig.1. Effect of magnetic field on growth of *Spirulina platensis*

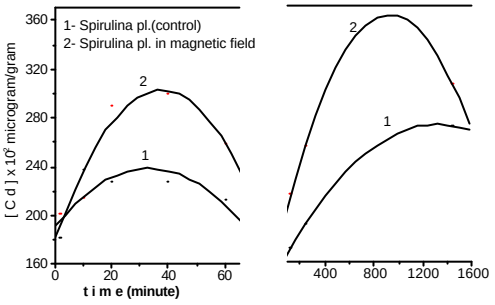

Fig.2. Effect of magnetic field of Cd(II) absorption by *Spirulina platensis*

In the other experiment series it was shown that Cd(II) adsorption by *S.platensis* cells in the gradient of magnetic field is considerably more intensive than that in the control during the whole experiment (fig.2). Cd(II) was added into nutrient as glycinate, its qualitative determination was performed by atomic-absorption spectrometry.

Thus, magnetic field gradient exerts a substantial effect on viability of blue-green microalgae *S.patensis* and on level of Cd(II) adsorption. Studies of these mechanisms may be very important for development of effective systems of wastewaters bioremediation and of algae biomass cultivation for food supplements.