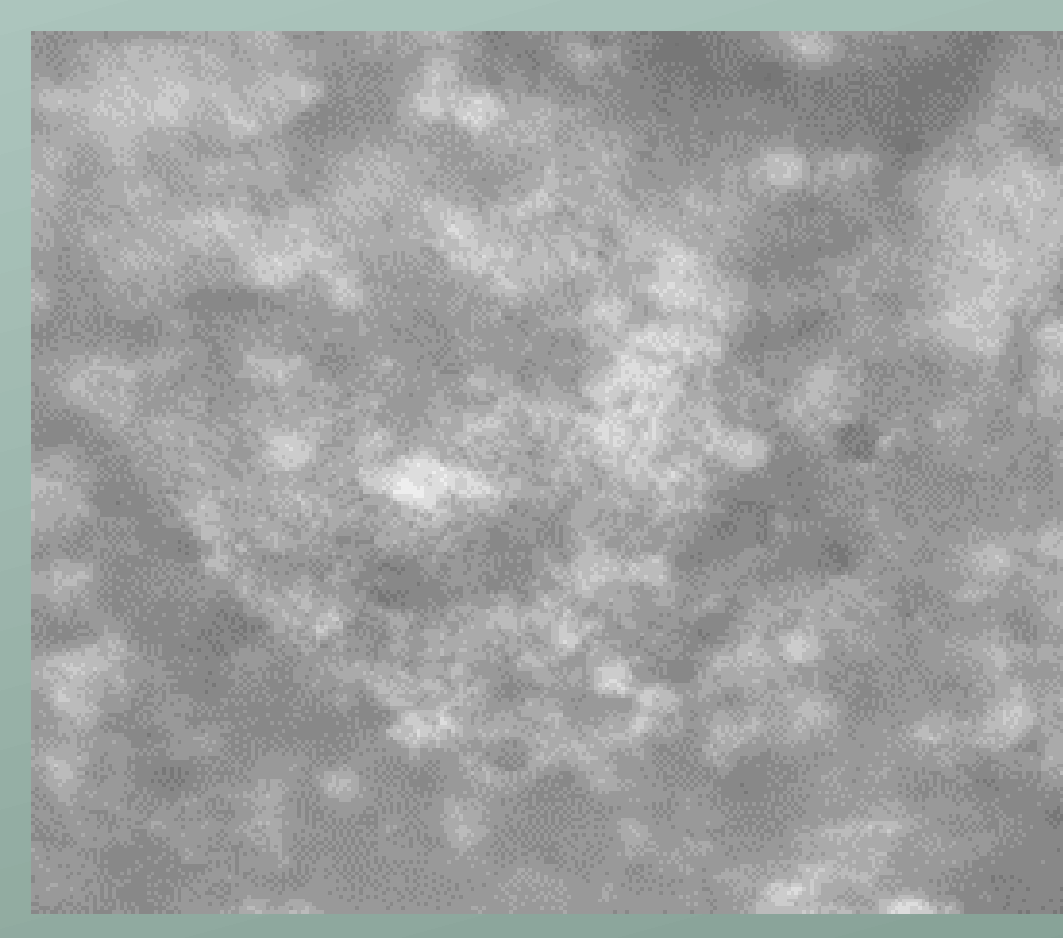
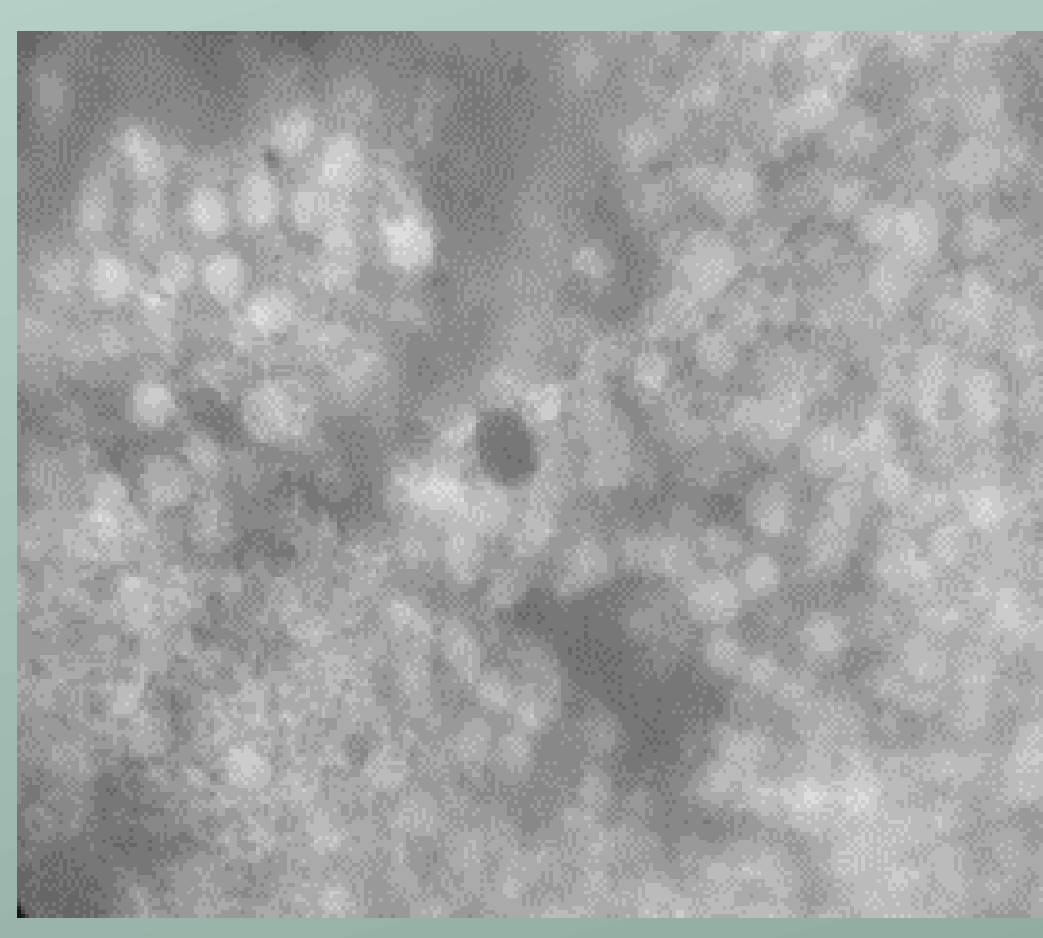
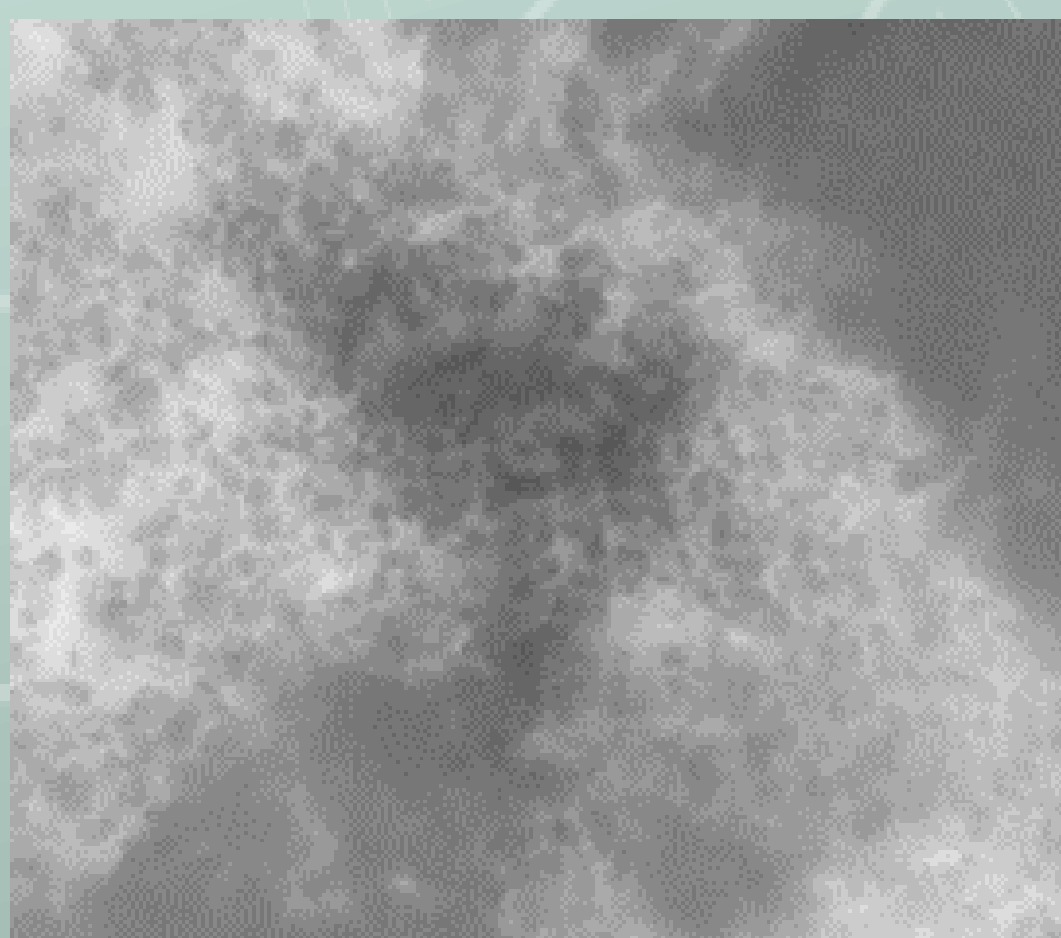
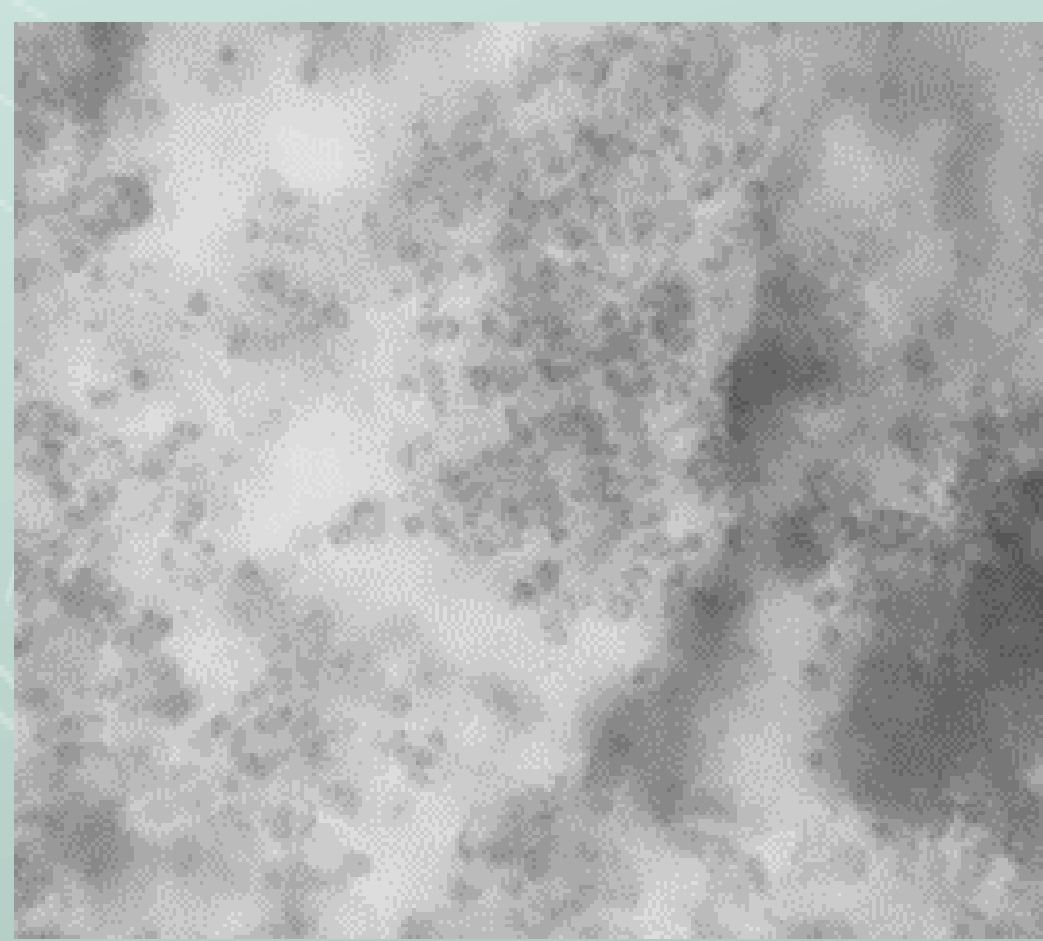
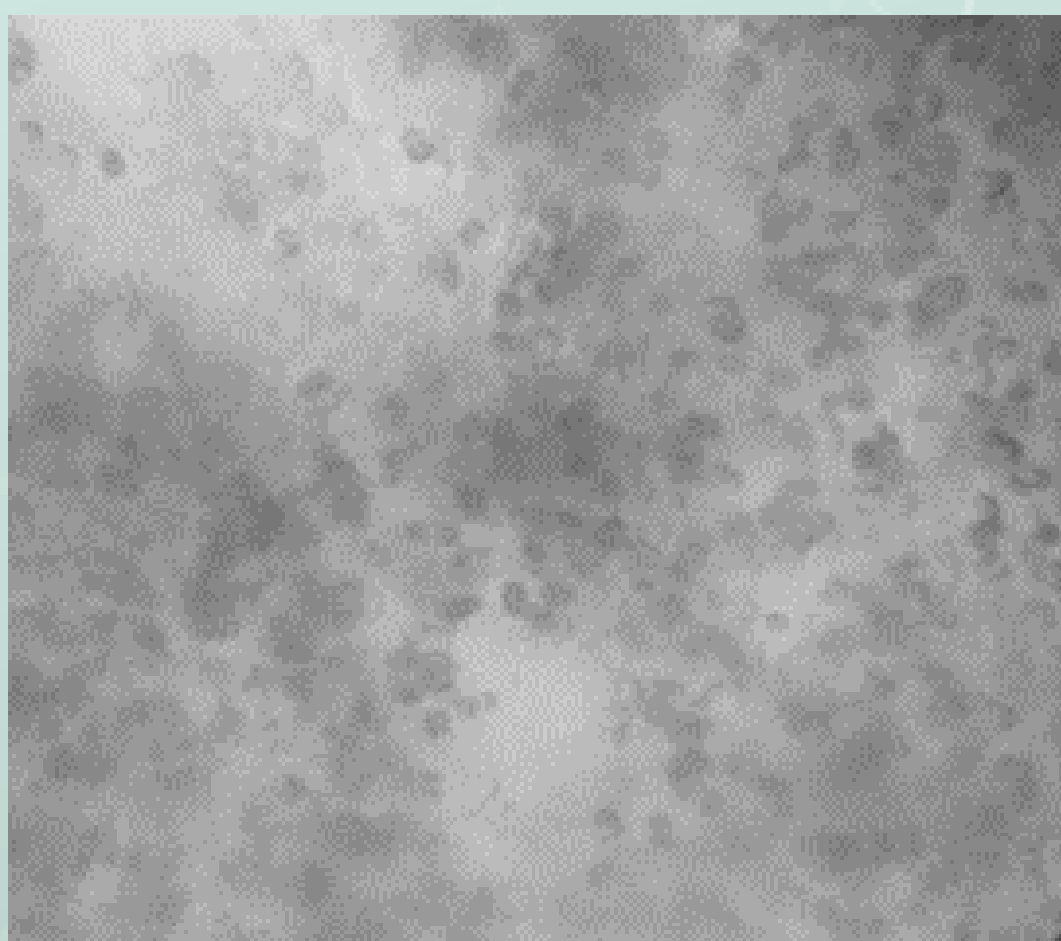


INVOLVEMENT OF OPTICAL METHODS FOR CONDITION ASSESSMENT OF CYANOBACTERIA CELLS UNDER THE ACTION OF TiO₂

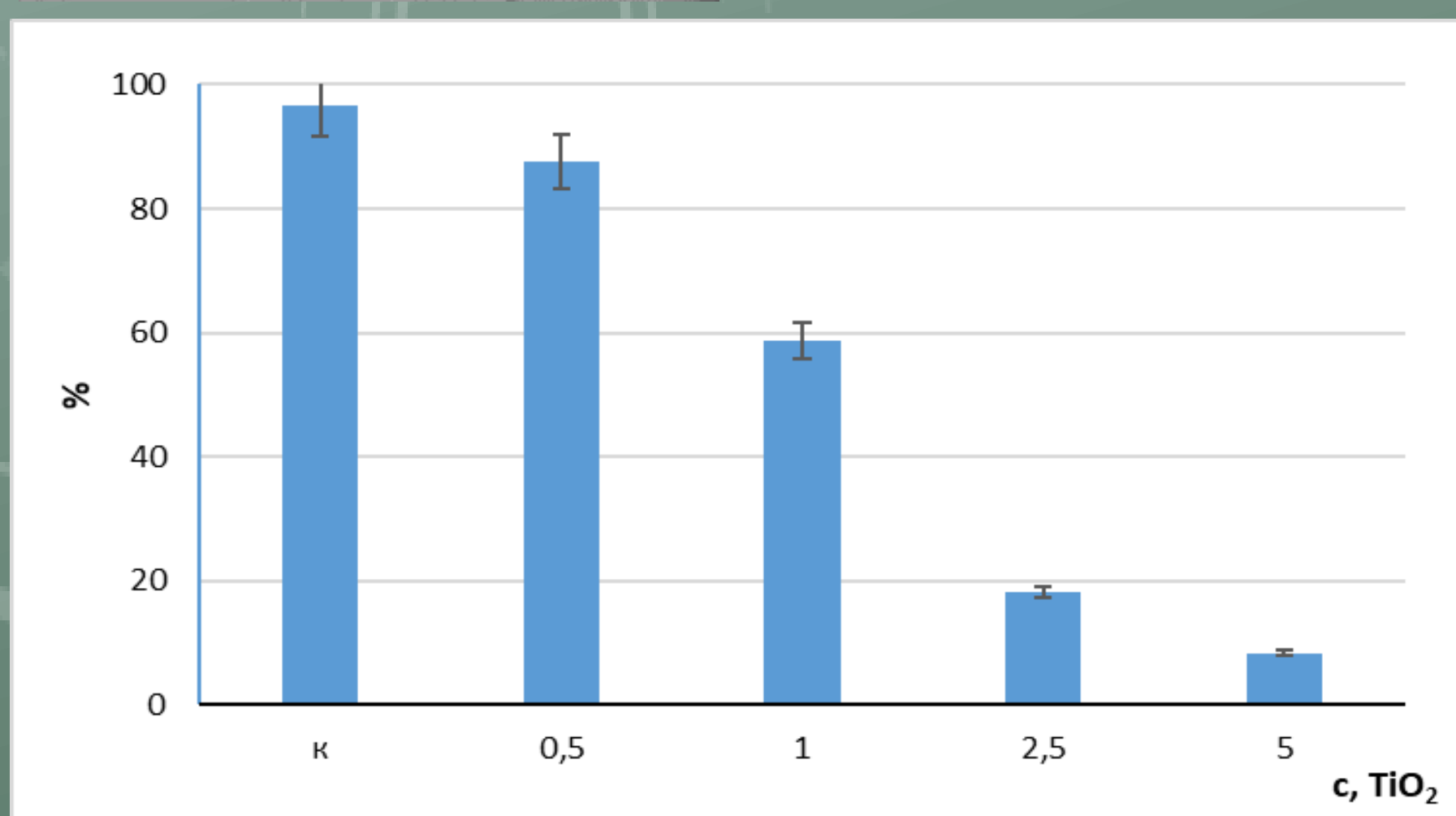
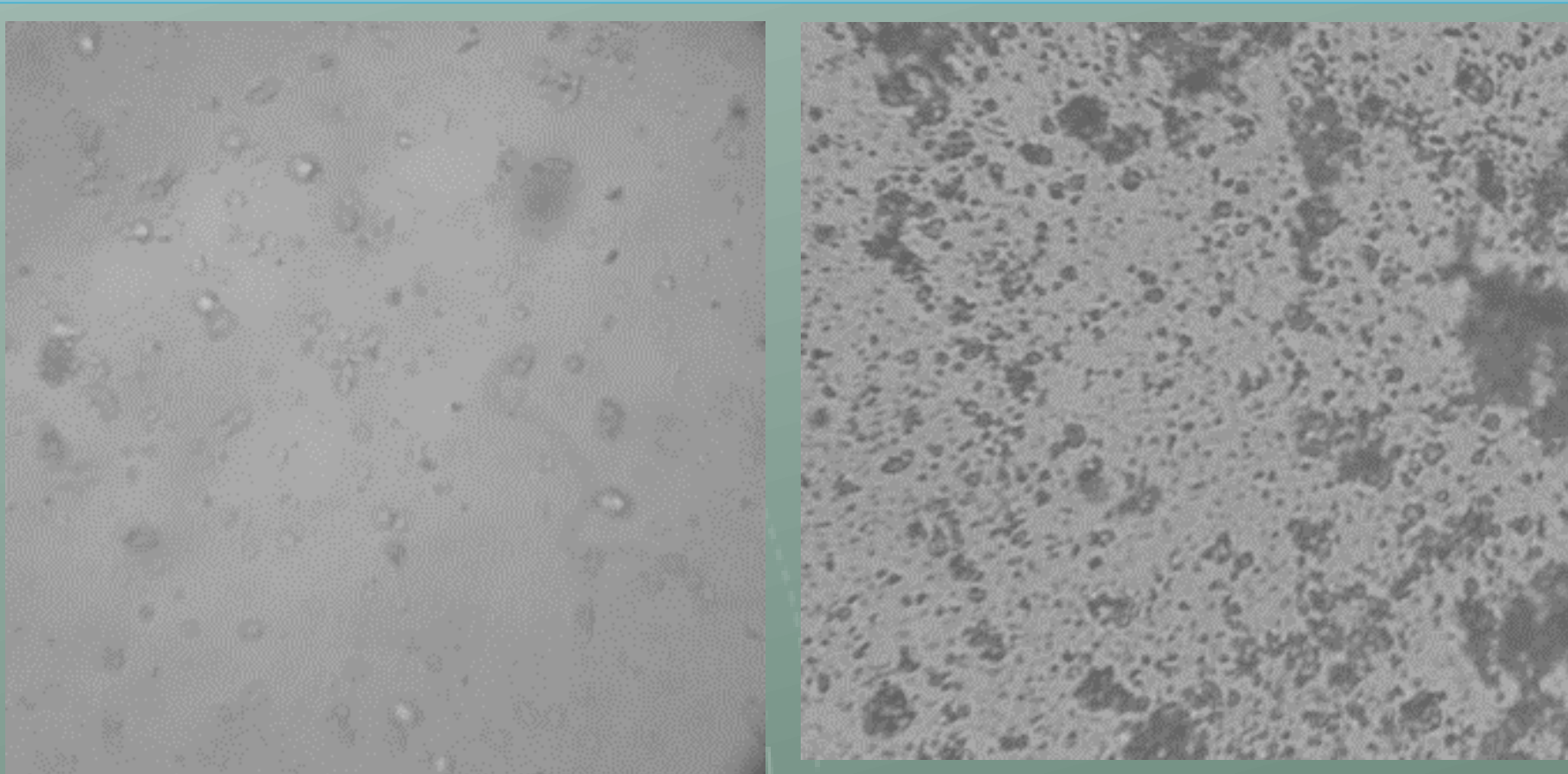
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The aim of the work was to involve methods of microscopy of native and stained drugs to assess the physiological state of *Microcystis pulverea* (H.C. Wood) Forti under the action of TiO₂

The cyanobacterial culture was grown on Fitzgerald medium in the modification of Zender and Gorham №11, at a temperature of 21 °C and a 16-hour photoperiod in a climatic room. The effect of TiO₂ on the number and viability of *M. pulverea* cells was studied. To do this, in 5 ml of culture with a cell number of 4.5 x 10⁶ cells/ml was made white powder TiO₂ in different concentrations: 0.5%, 1%, 2.5%, 5%.



Microscopy of samples after cultivation of *M. pulverea* in different concentrations of TiO₂



The number of metabolically active cells of *M. pulverea* under the action of TiO₂

In samples with high concentrations of titanium dioxide, the cells remained unprotected. It is noted that the mucus was adsorbed around TiO₂. The lowest degree of adsorption was characterized by samples containing 0.5% TiO₂, and the highest degree - with 5% TiO₂. When using TiO₂, more than 2.5% can completely release cells of cyanobacteria in the aqueous medium from the mucous that protects their cells, and then use other drugs for lysis.

An increase in the number of dead cells was observed in cyanobacterial culture. In *M. pulverea* culture, the number of metabolically active cells decreases sharply with increasing concentration of TiO₂. Incubation with TiO₂ led to a gradual decrease in the number of metabolically active cells: from 96% (in the control sample) to about 9% in the presence of 5% TiO₂. Although this culture remains relatively alive, but loses the ability to actively metabolize. It can be predicted that over time the number of *M. pulverea* cells will decrease sharply, which will lead to the death of the culture as a whole.