

Growth of diatoms *Pinnularia microstauron* (Ehr.) Cl. in mono- and mixed cultures with cyanobacterium

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Axenic culture of limnetic diatoms *Pinnularia microstauron* (Ehr.) Cl. and cyanobacterium *Stratonostoc linckia* (Roth) Elenk. were cultivated on Fitzgerald medium in mono- and mixed cultures.

Diatoms biomass was increased substantially higher in phases of linear and exponential growth than the intensity of cell proliferation cyanobacterium. Multiplication constant of mixed culture at all phases of growth, at least two times lower than in monocultures. Diatoms began to die in mixed culture: at 20-day was alived only about 20% of the cells, while the cyanobacterium continued its development, the vitality of population also decreased to 60%, although this value in monoculture - 71%. Unfavourable conditions for diatoms in mixed culture can be related to exhaustion of nutrients in the cultivation process. It is found that the content of phosphorus in diatoms culture liquid in growth has gradually increased, reaching a peak of 15-days (300 µg/100 ml), then declined to 20-day up to 50 µg/ml. In cyanobacterium was defined the highest content of phosphorus in culture liquid on the 10th day of cultivation (660 g/ml) with followed by a decline to 20-day. In mixed culture dynamics of phosphorus in culture liquid adhere to the patterns found in cyanobacterium. Maximum accumulation was observed on 10-day (830 µg/100 ml). Two-thirds of total nitrogen was revealed as nonprotein form in a medium of diatoms monoculture. In cyanobacterium twofold total nitrogen prevailed as protein forms. In medium of mixed cultivation was determined mean of both value of total nitrogen and protein nitrogen content increased to 74%. Direct measurements of protein in culture liquid were confirmed an increase of extracellular protein excretion in mixed culture. It was determined high biological activity of exopeptids with a molecular mass 13 kDa, that at concentrations of 100 and 10 µg/ml are almost completely blocked the growth of carrot callus. Exopolymeric compounds of monocultures have show stimulate effect to carrot callus, the growth is accelerating in 3 and 4 times, respectively.