The aim of the research was the development and testing of bioreactor for intensive cultivation of algae *Chlorella vulgaris* Beij. with fully controlled conditions within the operating parameters according to the selected evaluation criteria of the cultivation process. To check the
functioning efficiency of the designed photobioreactor, the growth of *Chlorella vulgaris* Beij. (CHLOROPHYTA) in Fitzgerald’s medium modified by Zender and Gorham (No 11) under the artificial illumination with daylight electric lamps (intensity of 2 500 Lx) for 16 hours a day at 22–25 °C was studied. It was found that at stabilization of culture conditions the maximum value of culture density was observed at the 18th day of cultivation. In this moment, the amount of cells reached 269.2 ± 3.0·10⁹ cells/l, while cells amount in stationary phase was within 110.1 ± 4.9·10⁹ cells/l. This makes it possible the continuous chlorella cultivation with an average productivity in stationary mode of about 110 ± 4 mg/l of dry mass with protein content about 60 mg, carbohydrates about 35 and lipids about 12 mg of dry mass/l. Sunlight and activators of biosynthesis of organic substances of individual classes allow changing the ratio of proteins, carbohydrates and lipids that is prospective for further research.

**Key words:** chlorella, photobioreactor, continuous cultivation.

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