



## **ISOLATION AND INTRODUCTION INTO CULTURE OF A NEW STRAIN OF CHLAMYDOMONAS PARIENTARIA. DILL**

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<b>Received:</b> January 20 <sup>th</sup> 2023 <b>Accepted:</b> February 22 <sup>th</sup> 2023 <b>Published:</b> March 26 <sup>th</sup> 2023	In the article, the dominant species of algoflora in the bioponds of the Namangan city sewage treatment plant were isolated in an algologically pure state. Information on the introduction of a new species of <i>Parietaria</i> into culture. Data on photosynthetic productivity and morphology are presented
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On a global scale, there are more than 500 species of the genus *Chlamydomonas* Ehr (1,2), and in Uzbekistan there are more than 50 species. Most species of this genus are inhabitants of small, well-heated and polluted water bodies. *Chlamydomonas* algae are one of the main agents of self-purification processes of polluted natural waters in biological ponds. On the other hand, they contain a high percentage of 50-56% protein, 20-35% lipids and 0.1-0.2% vitamins. Representatives of the genus *Chlamydomonas* have a number of advantages compared to cultivated species - *Chlorella*, *Scenedesmus*, namely: large cells and easily destructible cell wall biochemical composition.

*Chlamydomonas* algae are able to move with the help of flagella, grow well on a medium without carbon dioxide replenishment, use bicarbonates, organic substances as a carbon source, and form a film on the surface that is easy to separate from the medium.

The urgency of isolating and introducing into culture a new species and strain of the genus *Chlamydomonas*, on the one hand, is associated with the possibility of obtaining biotechnological products, and on the other hand, these algae can be used in a waste-free technology as industrial and municipal wastewater utilizers. There are several methods of wastewater treatment: mechanical, physical, chemical, biological. Among them, the most effective and widely used method in the conditions of Uzbekistan is the biological method (3).

The purpose of this work is to study the floristic composition of microalgae by the seasons of the year in the bioponds of the treatment plant in the city of Namangan. Also, the isolation and introduction of promising species and strains in culture.

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The algoflora of bioponds was studied during 2019-2022, 186 algological samples (phytoplankton and benthic) were collected and processed. Collection and processing of the material was carried out according to algological methods (4,5). For morphological study, a Carl Zeiss microscope was used.

Seasonal studies have shown that many species and strains develop rapidly in the summer, forming a "bloom" of ponds. The collected samples were identified to species. The following species are mainly found in summer: *Euglena gracilis*, *Akistrodesmus acicularis*, *Scenedesmus qimrdicauda*, *Oocystis lakustris*, *Oscillatoria limmerman*, *Chlamydomonas parientaria* Dill, *Chl. reinhardtii* korsch., *Chl. glabosa*, *Chl. incerta*, *Chl. oblonga*, etc. In the autumn period, the total number of species decreases, and mainly there are: *Novikula gracilis*, *N. oblonga*, *Cymbella pediculus*, *Euglena gracilis*, *Chlamydomonas reinhardtii*, *Chl. parientaria*, *Chl. oblonga*.

The study of the floristic composition of the bioponds of the treatment plant showed that the dominant species are from the genus *Chlamydomonas* Ehr.

Of the dominant species of the genus *Chlamydomonas* Ehr. An algologically pure unstudied species of *Chlamydomonas parientaria* Dill was isolated. Using the methods of Vladimirov, Semenenko (4,5,6). The study of literature data showed that these species were not found in the Republic of Uzbekistan. To introduce a new isolated species of *Chlamydomonas parientaria* Dill into the culture, the optimal nutrient medium was selected based on the modified Sidorenko medium. In addition, it develops quite well in organic media. The strain *Chl. parientaria* UA-5-24 was grown on various nutrient media. Photo synthetic productivity *Chl. parientaria* (according to the number of cells) for 8 days of cultivation on Tamiya medium reached 97.0 million cells/ml, on Sidorenko medium up to 120 million cells / ml., on a modified medium - 142 million cells / ml., in an organic medium with the addition of 3 microelements 95.0 million cells / ml. The results obtained show that the new isolated strain of *Chl. parientaria* UA-5-24 grows well on all studied media. At the same time, the maximum increase in the number of cells is observed on the medium



developed by us up to 142 million cells/ml, and the dry weight reached 7 g/l.s.b.

The morphology of a new isolated strain of *Chlamydomonas parientaria* UA-5-24 was studied under laboratory conditions in various nutrient media and under the open sky. The results in laboratory extensive growing conditions show that the shape of the cell is ovoid, length 17-18  $\mu\text{m}$ , width 5-9  $\mu\text{m}$ . In front, gradually narrowed and pointed. The shell is dense, sometimes slightly behind the protoplast, forming a pointed nose in front. The length of the bundles is equal to the length of the cell. Reproduction by division in the transverse direction. Zygotes are spherical, conical-burgundy.

Under laboratory conditions, when grown under round-the-clock illumination, the cells rapidly divide, the cell size decreases, the cell length is 16.2  $\mu\text{m}$ . width 9.8  $\mu\text{m}$ . flagella are invisible, reproduction by division in the transverse direction and productivity on the 8th day was 6-7 g/l.s.b. The studied strain tolerates light of 100-200 W/m<sup>2</sup> PAR well and temperature of 35 C. Settling to the bottom of the vessel is weak, infection with other algae is insignificant. Under open-air conditions, the illumination ranged from 250 to 400 W/m<sup>2</sup>, the temperature was 18-36°C, and the pH of the environment was 6.5-7.0. Cell size 17-18.0 long microns, wide. 10-11.0  $\mu\text{m}$ . For 10-12 days, the cell density was 78.0 million cells/ml, and the photosynthetic "productivity" was 5.0 g/l.s.b.

Thus, the algoflora and dominant species of the bioponds of the treatment plant in Namangan were studied according to the seasons. A new strain of *Chlamydomonas parientaria* UA-5-24 was isolated and introduced into intensive culture. The optimal nutrient medium has been selected, and its resistance to increased light and temperature has also been shown.

## SUMMARY

In the article, the dominant species of algoflora in the bioponds of the Namangan city sewage treatment plant were isolated in an algologically pure state. Information on the introduction of a new species of *Parietaria* into culture. Data on photosynthetic productivity and morphology are presented

For growing in laboratory conditions, it has been developed an azouka medium, and it has been shown that it grows better in a mineral azouka medium, and is resistant to light and temperature, compared to an organic azouka medium. It is believed that this solution can be widely used as a promising new object of photobiotechnology.

The biological particularity new species of *Chlamydomonas* Ehr.

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The new species of *Chlamydomonas* Ehr was selected from communal sewage Namangan city and introduced in the intensive culture.

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