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Russian Society of Plant Physiologists

**The 2nd International Conference
with the Elements of Scientific School for Youth
«PHYTOBIOTECHNOLOGY PROSPECTS
FOR IMPROVING THE QUALITY OF LIFE IN THE NORTH»**

M A T E R I A L

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Conference devoted to the discussions of fundamental and applied problems of phytobiotechnology using innovative approaches and methods of molecular genetic and cellular technologies. Compendium of conference includes reports of two sections for molecular and cellular phytobiotechnologies.

The conference proceeding is intended for students, postgraduates, undergraduates, laboratory personnels, teachers and scientists of the biology field.

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MICROALGAE: RAW MATERIAL FOR BIOFUELS**Z.S. Shakirov¹, I.V. Safarov¹, N.A. Khuzhamshukurov², N.R. Yunusova²**¹Institute of Microbiology, Academy of Sciences of the Republic of Uzbekistan, Tashkent²Tashkent Institute of Chemical Technology, Uzbekistan, Tashkent

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The world energy mostly depends on mined resources - oil, coal and gas. Today the need for energy resources constantly increases and their stocks are being reduced. In this connection there is a great interest in creation of alternative renewable sources of energy that could provide stable power generation for a long period of time. Biodiesel is a renewable alternative energy source produced from vegetable or animal lipids in the process of interesterification (Dermibas, 2007). Today microalgae can be a potential producer of lipids for biodiesel. Their production is not seasonal and it can be grown all year round (Chisti, 2007; Chisti, 2008). The average accumulation of oils in microalgae cells is 10 - 20 times higher than the oils obtained from oil plants (Tickell, 2000).

This work is aimed at studying of lipids and fatty acids of *Chlorococcum* and *Scenedesmus* microalgae. We have taken the aqueous samples of Tashkent, Syrdarya, Surkhandarya and Kashkadarya regions in Uzbekistan in order to extract local strains of *Chlorococcum* and *Scenedesmus* microalgae.

The study of biomass and lipids accumulation showed that the air-dry biomass of cultures *Chlorococcum* sp.4, *Chlorococcum* sp.8, *Chlorococcum* sp.12 and *Chlorococcum* sp.39 was 1.8-2.5 g / l, and the lipid content was within 41,8% to 58% of the total dry biomass of cultures.

Microalgae of *Scenedesmus* type formed a biomass within 1 to 2.4 g / l. High lipid accumulation was observed in cells of *Scenedesmus* sp.29 and *Scenedesmus* sp.37 cultures: 40,3% and 48,0%, respectively.

According to the study results, there were revealed 15 fatty acid in the strains of microalgae *Chlorococcum* sp.4, *Chlorococcum* sp.8, *Scenedesmus* sp.37, *Scenedesmus* sp.42: palmitic acid (16:0) with the largest amount of saturated fatty acids - 25.0% - 39.43%, the amount of stearic acid (18: 0) is also significant and makes up 5.44% to 14.12%. As for unsaturated acids, the amount of octadecenoic (18:1) and alpha-octadecatrienoic acid (18: 3) prevails and makes up from 36.64% to 53.75%. The proportion of octadecadienoic acid (18: 2) in *Chlorococcum* sp.8 cultures is the smallest. It is notable that all samples contain biologically active polyunsaturated fatty acids: γ -18:3 gamma-linolenic acid and 18:4 ω 3 - stearadone acid which are intermediate products in biosynthesis of prostaglandins. The content of these acids is within 0.67% to 1.91%.

The lipids of *Chlorococcum* sp.4, *Scenedesmus* sp.37 and *Scenedesmus* sp.42 cultures mainly consist of unsaturated fatty acids (53,09 - 66,82%).

Thus, local microalgae can serve as producers of biodiesel according to their biomass formation, lipids accumulation and fatty acid composition.

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