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COMPLEX USE OF MICROALGAE CHLORELLA SOROKINIANA FOR BIOFUEL PRODUCTION AND SORBENT MANUFACTURING

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Cultivation conditions were selected: light, medium composition, temperature and aeration. The design of the photo bioreactor has been developed, which allows obtaining the maximum amount of biomass. The methods of biomass concentration are studied: mechanical (microfiltration, centrifuging) chemical (using reagents). A comparative analysis of the method of drying biomass has been carried out, it has been established that freeze drying allows to fully preserving valuable components of biomass. Methods of microalgae cell disintegration have been studied, which allow maximum extraction of lipids from biomass. Investigated the disintegration using a homogenizer, processing enzymes, microwave processing "Osmotic" shock. It is shown that the most effective method of disintegration is treatment in a microwave mineralizer; developed biotechnology for producing lipids from microalgae *Chlorella sorokiniana*. To fully cure lipids from microalgae biomass, optimal extraction conditions were selected: time, temperature and solvent system. The variation of the parameters of cultivation and extraction allows obtaining lipids with different composition. From the resulting lipid fraction is recommended to be used as biofuel. After extraction of lipids from microalgae, residual biomass is formed, which is used as a sorption material for purifying wastewater from heavy metal ions.

BIOGRAPHY

Natalia Politaeva was awarded the Title of Professor in the specialty "Ecology" in 2016. She is an academician of the International Academy of Ecology, Human and Nature Safety since 2017. She passed an internship with the support of the DAAD Foundation at Hamburg University of Technology in 2018. Under the guidance of her, five Doctoral dissertations are defended on specialty 03.02.08-Ecology (in Chemistry and Petro chemistry). She has more than 200 scientific papers and 5 patents, including 5 monographs were published abroad. She has published seven teaching aids.

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