SELECTION OF LIPIDS FROM BLUE-GREEN ALGAE

Karina Detsyura, Olena Chelnakova, Olha Novokhatko and Tetyana Kozlovska
Kremenchuk Mykhailo Ostrohradskyi National University, Kremenchuk, Ukraine
karina.detsyura@gmail.com

Annually Ukraine consumes about 200 million tons of fuel oil equivalent, however, the mining from country's natural resources is only 80 million tons. That is why, at present economic situation with such balance of domestic and imported energetic material biofuel can become an important potential resource.

Recently technologies for producing the biofuel with weeds as the main source have been developed. It is due to the fact that weed cells naturally synthesize a great amount of lipids, which can be effectively refined into biodiesel that is the fuel manufactured from biological material – the substitute for common diesel fuel.

Despite a large number of studies on the use of cyanobacteria for energy production, the technology of collecting and processing blue-green algae did not find mass application, due to the lack of data on the prospects for pre-processing biomass cyanobacteria with the goal of increasing the completeness and intensification of their biodegradation, lack of rational strategies and technologies for collecting and processing cyanobacteria. Therefore, conducting a complex of general studies that would allow the use of cyanobacteria during their vegetation as raw materials for energy production will allow not only to manage the ecological safety of the region but also to obtain an additional amount of energy needed by the state.

Lipids are a biological group of material that are distinguished by chemical structure, properties and physiological functions. The main characteristic of this material is indissolubility or bad dissolubility in water and dissolubility in such organic dissolvents as liquid carbons, spirits, eters and esters, acetone, chloroform etc. Lipids are the stocking form of energy and they perform an important role in the property of floating weeds. The total amount of lipids in weed cells ranges considerably. Blue and green weeds can contain from 2 to 18 percent from dry substance of bio mass, yellow and green ones can contain 5-10 percent, some green weeds can contain 37, 3 percent and diatoms contain 35 percent.

The aim of the investigation is providing ecological security of the Dnipro river under the conditions of the uncontrolled development of cyanobacteria and their usage as the material for producing energy sources.

The objective of this study is the extraction of lipids from cyanobacteria with the help of Folch method for obtaining energy sources and avoiding ecological risks by using them in energetic technologies.

The method of research include analytical and experimental investigation with the usage of modern control equipment, using Folch techniques.

Thus, the development of scientific investigations of using biomass of blue and green weeds for getting energy is an essential step in providing Ukrainian energy security. In this case the state of ecological safety is also improved (at the expense of reducing the impact of cyanobacteria products degradation on the environment).

Key words: Algae, Lipids, Biomass, Blue-Green Algae