STUDY OF DYNAMIC THE TRACE ELEMENT OF BIOMASS FRESHWATER ALGAE LEMNA MINOR FOR MAKING DIFFERENT IN CULTURE MEDIUM DOSES OF IODINE

V. O. Velichko¹, S. V. Merzlov², R. O. Ryvak¹, E. G. Zarycka¹

¹State Scientific-Research Control Institute of Veterinary Medicinal and Feed Additives,
11, Donetska str., Lviv, 79019, Ukraine

²Bila Tserkva National Agrarian University
8/1, Soborna area, Bila Tserkva, Kyiv region, 09117, Ukraine

In the article the necessity studying of the natural trace element composition of freshwater algae biomass Lemna Minor and its dynamics by introducing a culture medium of various doses of Iodine. The article contains a description of the method of research findings, made their analysis and conclusions.

To study the trace element composition of freshwater algae biomass Lemna Minor and its dynamics, conducted research on its cultivation by entering into a nutrient medium Iodine different doses, such as 40, 260, 380, 500, 1000 mg/dm³. Algae taken from the environment were grown for 30 days in a humidity and temperature. At the end of the experiment, grown biomass algae were collected and dried at a temperature of 105º C.

Sample preparation for determining manganese, zinc, copper, cobalt performed by acid mineralization measuring Selenium, Lead, chromium and cadmium, the method mineralization samples in closed analytical autoclaves. The content of trace elements were determined by atomic absorption spectrometer AA240 Z VARIAN company with effect Zeymana equipped with a graphite furnace for selective absorption of light atoms of matter, translated into a gaseous state using electro-thermal atomiser and temperature range 1500-2500º C.

The obtained results indicate that freshwater algae biomass Lemna Minor is a source of important for the body of animals and birds micronutrients like Manganese, Selenium, Zinc, Copper, Chromium, Cobalt.

The study of the dynamics of trace elements for making various doses of iodine nutritional environment for growing algae have shown that increasing doses of Iodine from 40 to 1000 mg/kg differently affects their contents. In culture medium promotes Growth doses of Iodine the content of trace elements like Manganese, Selenium and
Cobalt.

Growth Manganese content was observed in all dose introducing Iodine: 40 mg/kg – 28.8%, 260 mg/kg – 53.0%, 380 mg/kg – 69.2%, 500 mg/kg – 88.5% compared to its content in natural biomass. By entering into a nutrient medium 1000 mg/kg Iodine content of Manganese increased by 2.8 times.

Adding iodine in doses of 40, 260 and 380 mg/dm³ helped to reduce the amount of Cobalt by 1.5-2 times, however, increasing the concentration of Iodine 500 and 1000 mg/dm³ of Cobalt returned to its level in the natural biomass.

The content of Selenium increased in proportion to the increase in the concentration of Iodine in nutrient media and was on 10.1-30.4% higher compared to its content in natural dry biomass of seaweed.

Content Zinc in natural biomass was 162.0 mg/kg. When added to the culture medium 40 mg/kg Iodine, Zinc to 54.3%, with addition of 260 mg/kg – 57.5%, 380 mg/kg - by 49.6%, in doses of 500 mg/kg - to 84.1% and 1000 mg/kg - declined to 80.4% compared with its content in natural dry biomass. The results confirm the fact of antagonism between these micronutrients.

Adding of various doses of Iodine nutritional environment also contributed to the reduction of Chromium and Lead, and did not significantly affect the dynamics of Copper and Cadmium.

Thus, the study of the dynamics of trace elements for making various doses of Iodine nutritional environment for growing algae showed that the increase in Iodine doses from 40 to 1000 mg/kg differently affects their contents.

**Keywords**: BIOMASS, LEMNA MINOR, TRACE ELEMENT, ACCUMULATION, ATOMIC ABSORPTION METHOD.