Observations about the Eutrophication Process of Green Algae under the Action of Biomudalations DEA Type

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Abstract. Algae are a large and diverse group of autotrophic organisms, ranging from unicellular to multi-cellular forms, of different colors, like orange, violet, red, blue, green or brown. They are photosynthetic plants. Green algae belong to Chlorophyta phylum, and they are unicellular organisms isolated in colonies, and also multi-cellular organisms, filamentous. Green algae contain chlorophylls a and b, and store nutrients as starch in their plastids. Eutrophication is an increase in the concentration of chemical nutrients in an ecosystem, and it is specific to water ecosystems. In this experiment were used two aquariums, in which was created a biological equilibrium (balance), and were observed during 60 days. The DEA bio-phyto-modulators stimulates in excess the development of green algae, which had a negative impact on the population of fish and it influenced in a negative way the water quality.

Keyword: algae, aquarium, DEA bio-phyto-modulator, water quality.

INTRODUCTION

The term algae is restricted to the eukaryotic organism. All true algae therefore have a nucleus enclosed within a membrane and plastids bound in one or more membranes, and they could be wrapped with silicon case (like diatoms), with carbonates case (like peridineae), with sheaths of mucilage, with compact gelatin, or on the contrary may lack the strict protection, the cellular membrane.

The cell of algae is composed of: cellular membrane, cytoplasm, nucleus, stigma, chromatophory. Surrounded by starch granules; in cytoplasm are found vacuoles, and the cellular membrane is cellulosed.

The multiplication of green algae can be vegetative, asexual or sexual. Asexual multiplication is made through spores, which could be zoosporas with scourges, mobile and aplanospores. And the sexual multiplication is made after two haploid gametes fusion from which results one egg or a zygote.

The colors displayed in the algae world are due to pigments, from which the most important are chlorophylls, ficobilines, xantofiles, and carotenoids (Peterfi, 1976). The most algae live in waters, and they have a very important role for biosphere because of their potential of producing organic substances in huge amounts.

Green algae belong to Chlorophyta phylum, and they are unicellular organisms isolated in colonies, and also multicellular organisms, filamentous.

The eutrophication phenomenon is characteristic for aquatic ecosystems, and it is a pollution form, organic type. Eutrophication was first evident in lakes and rivers as they became chocked with excessive growth of rooted plants and floating algal (Cojocaru, 1998). Eutrophication represents an unwanted form of water pollution, being an inadequate habitat for the majority water biocenosis.
MATERIALS AND METHODS

There were created two ecosystems in two aquariums with a volume of 100 liters (Fig. 1 and 2), with water provided from the drinking water network (80%) and water from natural lake Chios Park, Cluj-Napoca (20%).

One of the ecosystems was exposed to intense light throughout the research period. The second ecosystem was exposed, alternatively 12 hours per day, to light and darkness, throughout all the research period.

In both aquariums were created a biological equilibrium (balance), and afterwards were observed during 60 days.

The aquariums were populated with exotic fish from the following species: *Colisa* sp., *Paracheirodon innesi*, *Betta splendes*, *Pterophyllum scalare*.

RESULTS AND DISCUTIONS

In the first 30 days, because of the bright light at which was exposed the first tank it was observed the appearance of green algae: *Spyrogira* sp. and *Cladophora* sp., which occupied 5% from the tanks volume.

Starting with the third day of the energizing process of the ecosystem was observed a multiplication of green algae density, and during 7 days the green algae occupied 30% of the tanks volume.
After 14 days the green algae (Spyrogira sp. and Cladophora sp.) invaded in a 50% proportion of the tanks volume (Fig. 3 and 4). Also in this period died the first fish. In the next interval of 20-40 days the volume of green algae occupied 90% of the tanks volume resulting the eutrophysation of the entire ecosystem (Fig. 5), and also the death of 70% of the fish population. In the second tank – control aquarium (Fig. 6) – the water transparency was normal, without to be observed algae traces.

CONCLUSIONS

It is obvious that the effect of energizing the water creates a spectacular development of green algae.

The DEA biofitomodulators stimulated in excess the development of green algae, which had a negative impact on the population of fish and it influenced in a negative way the water quality.

The DEA biofitomodulators are recommended for increasing the algae population which can be used for organic fertilizer, primary matter for obtaining food, cosmetic and pharmaceutical dyestuff.

REFERENCES