

Evaluation of the algal biodiversity of the ruparael area of the Alwar district of Rajasthan

Abstract

Algae are the heterogeneous group of the organisms, they have the profound effects of the different types of the ecosystem on the earth as well as on the aquatic ecosystem, they are existing on the earth from the billions of years and they have profound effects on the world biogeochemistry. In addition to the oxygen they produce large amount of the organic carbon on the earth biogeochemical cycle. Algae have the variety of the role in the earth biogeochemical cycles, they are form the single cells to the multicellular filamentous gigantism thallus. Algae are the major contributors of the world biodiversity, the estimated number of the large biodiversity ranges from the 36000, to around of the one millions. Each species has the unique traits and they play a major role in the world biodiversity.

Algae are attached with the other organism with the way of the food web, biogeochemical cyclers and the symbiotic associations. Here in this research paper we are presenting algal biodiversity of the one of the river area of the alwar district of Rajasthan in the ruparael area of the alwar Rajasthan. The river is the ephemeral and it follows around the 12 month, although the amount of the water is scared in the summer, we have try to enumerate the biodiversity of the algae are of that river in the different seasons and we found the considerable diversity. Total of the 10 genera's have been found in the algae river area. Some of the genera's also shows the pollution indicators.

Keywords: algae, heterogeneous, biodiversity, ruparael river, algal genera's, pollution indicators, different seasons.

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Introduction

Algae are the heterogeneous assemblage of the organisms, which ranges from the sizes form the single cells to the giant thallus. The length of the thallus ranges from the filamentous to the large kelps which covers the several meters area of the sea in India as well as the other parts of the world. The algae are the most photosynthetic species, produces mostly the oxygen's, they lives in the aquatic habitat. The algae lack the body of the higher plants as well as the other features of the higher plants. The photosynthetic features of the algae includes the eukaryotes as well as the prokaryotes natures, the prokaryotes natures includes the *cyanobacteria*. These have been termed as the blue green algae. Algae occurs in the several body types, algal body are so small that we need to use the microscope for the clear visibility, these algae have been termed as the microalgae. Algal body which are macroscopic and they covers the large area in the aquatic body are termed as the macro algae. many microalgae lives as the single cells, some of the algae are in the round shaped and they occurs in the coccid forms, some of the coccid forms together forms the colonies. In the coenobium has the definite number of the cells in the colony, some of the algae are propelled by the flagella and they have been termed as the flagellates.¹⁻⁵ Other features of the algae are they are filamentous; the cells are attached from one to one by the end. Some of the microalgae genera's are the periphyton and some of the algae are the phytoplankton, periphyton are attached to the some of the substratum in the aquatic body while the phytoplankton are free swimming kinds of the microalgae.^{6,7} Algae reproduce by the, means of the asexual and the sexual methods. Asexual reproduction occurs by the various means of the spores, these are the zoospores and the non motile aplanospores, the whole of the cytoplasm of the aplanospores are converted in to the nonmotile aplanospores. The alternation of the generation is two types, one of them is the isomorphic alternation

and another is the heteromorphy alternation of the generations. Algae has been classified in the various way, some of the common way for the classifying the algal genera's are the types of the storage foods as well as the Types of the flagella and the types if the pigmentation. Algae play a great role in the biogeochemistry, they also are the valuable part of the earth biogeochemical cycle. Algae are present in the sea, oceans as well as in the moisture environment. Some of the algae are the typical pollution indicators; some of the species of the algae are present in the environment which is rich of the many kind of the pollutants, so they act as the indicator of the high amount of the pollutions in the concerned sea or in the concerned rivers. The body of the algae is very primitive, they lack the true roots, stem, leaves and other kinds of the fruiting body, these features are very characterises for the higher plants.¹⁻⁵ Marine algae are very valuable and they are the rich sources of food, and they are also the very rich sources of the vitamins, mineral, and other kinds of the metabolites. Many of the algae are also used as the sources of the pharmaceuticals in the form of the medicines, however algae genera's are the potential sources of the many kinds of the food resources as well as some of the medicines as well as they are the sources of the environmental indicators⁸⁻¹⁵ Some of the algae genera's such as the *Stigcolonium*, *Nitzia*, *Gomphonema*, *Coccone*, *Navicula*, *ulothrix*. In addition to that many other genera also function as the pollution indicator.^{11,12,15,16-23}

Material and methods

Algal samples were collected in the plastic bags, the water sample were collected from the differ places from the different height of the river as well as from the different seasons. For the study purposes the river ruparael was selected, the river is the ephemeral and the water flows in the river in the 12 month. However the frequency of the water detriotes the typical summer seasons, in the rainy seasons and in

the winter seasons the algal biodiversity reaches at its peaks, in the middle of the river maximum biodiversity can be seen, the water with the algae were carefully seen and the genera were identified with the help of the monograph of the Geroge 1976, as well as the monograph Lund 1960, Swate 1978. after taking the sample from the river the sample were washed with the tap water, so that the debris can be eradicated and the whole of the sample is preserved in the 4% formalin and iodine solution. Alwar is the region in the arawali areas, there are very few rivers and lakes since it is present in the dry part of the city.

Result and discussion

The study in the river indicates the presence of them any kinds of the genera's, these algae genera are of the filamentous kinds and sometimes in excess of the water they forms the algal-blooms. The sites also contain many kinds of the microalgae, they are sometimes as the phytoplankton and sometime they are as the periphyton. Some of the algae genera's are as identified as:

- I. Ulothrix: The genus is collected from the upper region of the river and it is the best filamentous algae, the genus belongs to the ulotricales order, they are unbranched simple filaments, the chloroplast of the cells are simple and they covers the whole of the area of the cells, like the member of the chlorococcales. they are as the periphyton when young but become the free floating when the member young and they detach.
- II. Chlamydomonas: They belongs to the class chlamydomonadae. the features of the chlamydomonas are very similar to the typical member.
- III. Avicula: The species are not abundant, they are present only in the scattered patches. The diatoms have two valves, two kinds of the silica frustules with the silica walls. The morphology of the genera's like the typical diatoms.
- IV. Chlorella
- V. Volvox: Volvox is the member of the Volvocaceae family, in the colony there are about the 4-32 cells are present and they forms the colony.
- VI. Rivularia: The genera have the more or less mucilaginous sheath.

Conclusion

Overall this is the short work on the algae distribution in the alwar district of Rajasthan, the algae are large world and a lot of the work can be done on it, however there are huge seasonal variations in the algae composition in the river area. Some of the genera are of dominant and they form the large net on the water body. They are very valuable in the ecological cycles of the water body. However a large production never occurs so they cannot be utilised as the sources of the food and the other purposes. In soil microbiology they may lay a vital role but more research work needs to be done.²⁴⁻²⁶

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Conflict of interest

Author declares there is no conflict of interest in publishing the article.

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