

PRELIMINARY OBSERVATIONS OF BLUE GREEN ALGAE IN SHIVNA RIVER OF MANDSAUR (INDIA)

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Abstract

Blue green algae are important component of aquatic system. Present investigation was undertaken to observe blue green algal diversity and correlation with water quality of Shivna river of Mandsaur. Samples were collected from two sites of Shivna river viz. near Pashupatinath temple and near railway over bridge during year 2012.

Key Words: *Blue green algae, Shivna river, Mandsaur*

Introduction:

Rivers have played a significant role in progress of Indian economy and social life. They provide not only water for irrigation and drinking but also conserve aquatic biodiversity.

Blue green algae are commonly recorded from different types of water bodies. Their occurrence specified particularly in polluted area. Certain genera such as *Anabaena*, *Microcystis* and *Lyngbya* release toxic alkaloids with pungent smell during the decay (Palmer, 1980).

Shivna river is an important tributary of Chambal river which originates in Rajasthan and flows along

border of Madhya Pradesh. It enters in Mandsaur district near Archera. Shivna river plays an important role in social, economic and cultural life of Mandsaur district.

In the present work, monthly variations of blue green algae and their relationships with various physico-chemical parameter of water such as water temperature, pH, total hardness were under taken.

Materials And Methods:

Algal samples were collected every month in the year 2012. These samples were preserved in 4% formalin and used for further analysis. In similar manner, water samples were also

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collected from selected site of the river. Algal species were identified with the help of book, Cyanophyta (Desikachary, 1959). The pH and temperature of water was also recorded at the time of sampling by pH meter and thermometer respectively. Other parameters were estimated in laboratory using standard method (APHA, 1989).

Results And Discussion:

Eleven algal genera of family: Cyanophyceae (blue green algae) were recorded from Shivna river such as *Anabaena*, *Cylindrospermum*, *Gleotrichea*, *Lyngbya*, *Merismopedia*, *Microcystis*, *Nostoc*, *Oscillatoria*, *Rivularia*, *Scytonema*, *Spirulina* (Table-1 and Figure 1, 2 & 3). Naaz *et. al.* (2011) studied blue green algae in lower lake of Bhopal and recorded 28 species of Cyanophyceae.

During the investigation water temperature 20.2 to 25.5 °C, pH 7.0 to 7.4, total hardness 550 to 830, chloride 1100 to 1130, nitrate 54 to 55, total alkalinity 250 to 255 were recorded. Jackson (1961) found that 50-110 ppm range of alkalinity is optimum for blue green algae.

Growth of blue green algae is increased when water temperature is slightly increased (Hammer 1964). Lin (1972) also supported that high summer water temperature favour the blue green algal blooms. Bicarbonates play also an important role in the growth of

Cyanophyceae (Desikachary, 1959). During winter, filamentous blue green algae such as *Oscillatoria* and *Spirulina* were observed. Cyanophyceae also showed significant positive correlation with temperature, pH, total hardness, nitrate, calcium and negative correlation with chloride and alkalinity. Greater member of blue green algae were found in summer as compared to winter and monsoon (Mathur, 1990).

Oscillatoria was found mostly in rainy season while *Spirulina* was recorded throughout the year in the river. It has been shown that Shivna river is polluted day by day and its impact clearly seen in the form of algal blooms which was made of blue green algae.

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Table-1: Different species of blue green algae recorded from Shivna river

A. Chroococales	B. Nostocales
1. <i>Microcystis aeruginosa</i>	1. <i>Spirulina major</i>
2. <i>Microcystis elongata</i>	2. <i>Oscillatoria subbrevis</i>
3. <i>Microcystis flos-aquae</i>	3. <i>Oscillatoria limosa</i>
4. <i>Chroococcus minor</i>	4. <i>Lyngbya magnifica</i>
5. <i>Chroococcus minutes</i>	5. <i>Cylindrospermum musicola</i>
6. <i>Merismopedia punctata</i>	6. <i>Cylindrospermum indicum</i>
7. <i>Merismopedia elegans</i>	7. <i>Nostoc microscopicum</i>
	8. <i>Anabaena oscillarioides</i>
	9. <i>Anabaena flos-aquae</i>
	10. <i>Rivularia aquatica</i>
	11. <i>Gloeotrichia kurziana</i>

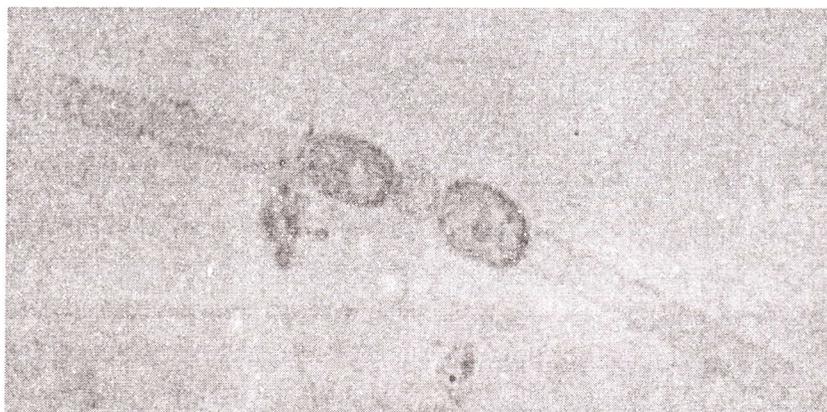


Fig.-1: Anabaena oscillarioides

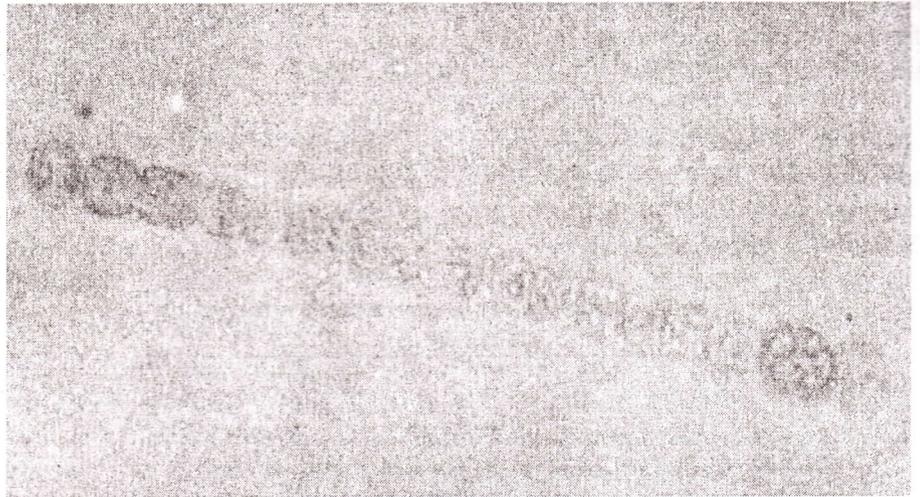


Fig.-2 : *Cylindrospermum musicola*

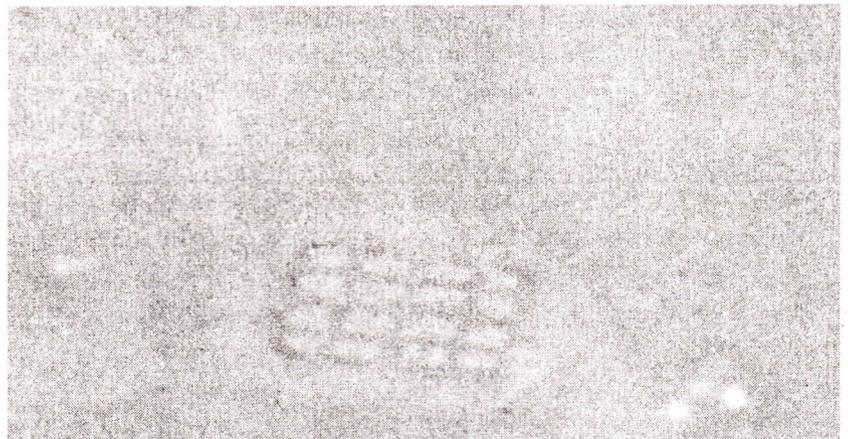


Fig. 3: *Merismopedia punctata*