Study of freshwater desmid algae from machagora dam of chhindwara district, mp india

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Abstract
With the objective of investigations, the 6 genera of Closterium cosmum, Desmidium, Euastrum, Pleurotaenium and Staurastrum, four collection stations (A, B, C, D) along the Machagora Dam were set for us. This resulted in the research work all these genera were recorded for the first time from this study region. The present work will be carried out in June 2020 to June 2021. Samples were preserved with 4% formalin solution. The qualitative analysis was done by compound microscope 06 genera of the class Chlorophyceae were described each one illustrated by means of photomicrography and ocular micrometer

Keyword: Desmid, Machagora Dam, Freshwater, Algae, Microalgae, cosmerium.

1. Introduction
Freshwater aquatic systems are a beneficial natural source. Desmid microalgae play a prominent role in any freshwater bodies, Desmids are Photoautotrophs algae and refill oxygen compounds in aquatic systems. It is the dominant Primary (algae) producer and produces productivity for the freshwater system. Chhindwara has a huge variety of freshwater aquatic bodies. Desmids are unicellular members of the order Zygnematales and under class chlorophyceae, symmetrical cells with very beautiful morphology, and favorite subject for microscopists. The study of freshwater desmid (Algae) from chhindwara has been overseen from the taxonomic, documentation point of view that is why the important component of Desmid is chosen for the present study. Desmid of different regions of the worlds have been studied by Dickcie (1882), West and west (1902), Kreiger (1932), Iyengar and Vimala (1941), Prescotts and scott (1945, 1952), Dutta et.al. (1973), Patel and Ashok Kumar 1979 Prasad and Misra (1982), Kumar and Rai (2005), Suseels and Toppo (2006), Bhakta et. Al. (2010), Yasmid (2011), Poul and Sreekumar (2022) Das and Keshri (2013), Patil and Jawale (2014), Reddy and Chaturvedi (2017), Rout and Bharadwaj (2017), contributed on the Algal Flora including the Desmid diversity.

Machagora dam is known as the biggest dam of chhindwara district of Madhya Pradesh. It is situated near the village of Machagora on the Pench river in chhindwara district. The Machagora dam area is located at latitude 22° 7’ 10” north and longitude 79° 10’ 25” east. This is elaboration of these studies here the six genera were taxonomically evaluated and presented.

2. Materials and Methods
Desmid samples were collected from four stations A, B, C, D. During June 2020 to June 2021, Algal samples were collected in Plastic bottles. The sample was preserved in 4 % formalin solution; detailed studies were made under compound microscope with camera attachment and ocular micrometer. Algae were identified with the help of standard books, floras, Monographs and relevant research publications. West and West (1904, 1905), Smith (1924), Agarkar DS (1969), Scott and Prescott (1961), Kouwets (1987), Prasad and Misra (1992).

3. Result and Discussion
The present study the analysis of the sample resulted in the identification of six genera belonging to six species. Their characteristic, taxonomic details are as follows.
Systematic enumeration
Kingdom – Plantae
Division - Chlorophyta
Class - Chlorophyceae
Order - Zygmematales
Family - Desmidiaceae
Common name - Green Algae (Desmid)
Genus - Closterium
Species - Closterium Kuetzingii Brebission
CLOSTERIUM KUETZINGII BREBISSON var. KUETZINGII
pl. no-1 Fig.1
Cell shape -38 to 40 times longer than wide, 390-420 µm long, 8-11 µm wide, apex 4-5 µm wide, Axial chloroplast, 4-6 pyrenoids
Genus- Cosmarium
Species - COSMERIUM SUBCUCUMIS SCHIDLE
Plate no-1 fig. 2
Cell shape- Variable, each semicell -hemispherical, spherical, rectangular, kidney shaped
Cell size- long 50 to 63 µm, broad 30.0 to 36.0 µm, isthmus 15.0 to 17.0 µm long and broad 1.67 to 1.75.
Genus- Desmidium
Species- DESMIDIUM BAILEYI NORDSTEDS
Plate no-1 Fig- 3
Cell shape - Long, filament (straight), envelope without gelatinous Median constriction not very clear
Cell size- 33 to 36 µm x 22 u to 26 µm
Genus- Euastrum
Species - EUASTRUM BOMBAYENSE BRANDHAMB
Plate no. 1 Fig- 4
Cells shape- Medium to large, trilobulate,
Isthmus-Deeply constricted, sinus- Narrow, closed, chloroplast- Axil and one each semicell.
Cell size- 65 µm long, 36 to 40 µm broad and isthmus 12 to 15.5 µm length.
Genus- Pleurotaenium
Species - PLEUROTAENIUM RECTUM var. RECTUM
Pl. no.1 fig.5
Cell shape-Straight, cylindrical, slender, chloroplast in row with pyrenoids,
Cell size- Length 303 to 329 µm, Mid diameter 1921.30 µm, Isthmus 17.1 µm, Apex 11 to 12.8 µm.
Genus-STAUARSTRUM
Species - STAUARSTRUM MARGARITACEUM
Pl. no.-1 Fig.-6
Cell shape- Small, broad as long cell wall rough constriction slight, open. Each semicell cup or spindle shaped and lower angle is rounded, lateral divergent, straight. Apex- Convex and triangular angle, form short arm which are slight convergent and straight, few series of granules
Cell size- 25 µm to 28 µm × 25 µm to 28µm, Isthmus 7 u to 9 µm.
Plate 1

Figure-1 Closterium kuetingii
Figure-2 Cosmerium Subcucumis Schidle
Figure-3 Desmidium Baileyi Nordsteds

Figure-4 Euastrum Bombayense

Figure-5 Pleurotaenium Rectum

Figure-6 Staurastrum Margaritace
4. Conclusion

The present investigation Desmids are the least explored algae in the chhindwara district, six genera were observed to represent by family Desmidiaceae which support six species Closterium Kuetzingii Brebission, Cosmarium sbcucumis, Desmidium baileyi, Euastrum bombayense, Pleurotaenium Rectum, and Staurastrum Margaritaceum result of undisturbed environmental condition and ecological condition in these study areas.

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Conflict of Interest

In this manuscript the authors declare that there is no conflict of interest.

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