



DIATOMS OF DOMESTIC SEWAGE WATER

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ABSTRACT Domestic sewage water contains organic and inorganic nutrients. Present study deals with the diatoms of domestic sewage water. Diatoms are Bacillariophyceae algae. While studying algal flora of domestic sewage water authors came across some interesting taxa of diatoms. Algal samples were collected for the period of one year i.e. from July 2015 to June 2016. Collected diatom taxa were identified on the basis of important taxonomic characters. A total of 13 taxa under 6 genera were identified and recorded. All taxa recorded are pennate diatoms. *Fragillaria brevisstrata*, *Fragillaria construens* and *Nitzschia palea* were found dominant. Seasonal variation study of diatom flora reveals that abundance of diatoms were found in summer and winter seasons.

KEYWORDS :Diatom, Domestic sewage water and seasonal variation.

INTRODUCTION

Diatoms are well defined group of algae belongs to class Bacillariophyceae. They are characterized by the presence of silicified walls. Diatoms are ubiquitous and form an important group in aquatic ecosystems (Sarode and Kamat 1979, Barhate and Tarar 1983, Kumawat and Jawale 2002, Talekar and Jadhav 2010, Mahadik and Jadhav 2014, Sawdekar and Jadhav 2017). Polluted water habitat harbours particular type of diatoms (Mahajaan and Nandan 2006, Talekar and Jadhav 2009). Domestic sewage water is rich in organic and inorganic nutrients, under certain condition can support a luxuriant growth of aquatic plants especially algae. There are only a few detailed studies on the diatom flora of domestic sewage water (Singh and Saxena 1969, Singh et.al. 1969 and 1970, Nandakar et.al. 1983, Sahai et.al. 1985, Talekar and Jadhav 2009). While studying algal flora of domestic sewage water, the authors came across a number of interesting taxa of diatoms.

MATERIALS AND METHODS

In order to study diatoms of domestic sewage water, Kham river of Aurangabad city which flows through the North-South part of city has been selected. The domestic waste water is discharged through an open and closed drain into Kham river. Collection of algal samples were made at monthly intervals from selected sites of Kham river for the period of one year i.e. from July 2015 to June 2016. Collections were made in acid washed collection bottles. For identification, the diatoms were cleaned according to Brun's method (Sarode and Kamat 1984). Diatom taxa were identified according to Hustedt (1930), Venkataraman (1939) and Sarode and Kamat (1984).

RESULTS AND DISCUSSION

A total of 13 taxa of diatoms under 6 genera were identified and recorded throughout the period of study (Table 1). All diatom taxa recorded are pennate diatoms. Singh et.al. 1970, Nandkar et.al. 1983, Sahai et.al. (1985), Talekar and Jadhav (2009) also reported pennate diatoms from domestic sewage water. On the basis of occurrence of diatom taxa *Fragillaria brevisstrata*, *Fragillaria construens* and *Nitzschia palea* were found dominant. Genus *Nitzschia* was represented by 6 species which shows quantitative dominance. Similar kind of observations were made by Talekar and Jadhav (2009). Singh et.al. (1970) reported dominance of taxa of *Navicula*, *Pinnularia*, *Cymbella* and *Nitzschia*. Sahai et.al. (1985) recorded dominance of *Navicula*, *Pinnularia* and *Nitzschia*. Seasonal variation study reveals that abundance of diatoms were found in summer and winter seasons. Sahai et.al. (1970) reported maximum number of diatoms in monsoon season.

Hence, it is concluded that organic and inorganic nutrients present in domestic sewage supports growth and development of diatoms which ultimately leads to richness in distribution and diversity of diatoms in domestic sewage water. *Nitzschia palea* was the most frequently encountered species.

Table 1: Diatoms recorded from domestic sewage water.

Sr. No.	Name of the Diatom
1	<i>Fragillaria brevisstrata</i>
2	<i>Fragillaria construens</i>
3	<i>Fragillaria pinnata</i>
4	<i>Navicula cupsidata</i>
5	<i>Pinnularia doldosa</i>
6	<i>Cymbella aspera</i>
7	<i>Nitzschia apiculata</i>
8	<i>Nitzschia closterium</i>
9	<i>Nitzschia irremissa</i>
10	<i>Nitzschia obtusa</i>
11	<i>Nitzschia palea</i>
12	<i>Nitzschia philippinarum</i>
13	<i>Gomphonema sp.</i>

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