SHORT COMMUNICATION

PHYTOPLANKTON ASSEMBLAGE IN THE SOLAR SALTPANS OF KANYAKUMARI DISTRICT, TAMIL NADU

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Abstract : The quantity and quality of salt production in a solar salt work is determined by the bydrobiological activity (Davis, 1974). Here we report on phytoplankton identified in different saltpans (Kovalam, Thamaraikulam and Puthalam) of Kanyakumari District, India. Totally 45 taxa of phytoplankton were identified in four divisions such as *Bacillariaphyta*, *Chlorophyta*, *Cyanophyt*a and *Dinophyta*. Kovalam saltpan shows high marine cyanobacterial biodiversity than the other two saltpans.

Keywords: Phytoplakton, Saltpan, Cyanobacteria

INTRODUCTION

The microscopic community of plants (Phytoplankton) found usually free floating, swimming with little or no resistance to water currents are called plankton. Phytoplankton usually occurs as unicellular, colonial or filamentous forms and is mostly photosynthetic and is grazed upon by the zooplankton and other organisms, occurring in the same environment. Biological system can help or harm salt production. Benthic and planktonic communities compose the biological system. Benthic communities seal ponds against leakage and also increase the solar energy absorption (Davis, 1993 and Sammy, 1983). This study provides baseline information of the phytoplankton in saltpans for further assessment and monitoring of this type of ecosystems.

MATERIAL AND METHOD

In Kanyakumari District, currently there are three villages (Kovalam, Thamaraikulam and Puthalam) producing salt. Kovalam, Thamaraikulam and Puthalam are situated near the seashore of Kanyakumari District. Kovalam saltworks use the sea-brine from Arabian Sea for salt production. Thamaraikulam saltworks use backwater for salt production. Puthalam saltworks use sub-soil brackish water for salt production. The availability of phytoplankton was studied for a period of two years (March 2012 to March 2014). Phytoplankton samples were collected through plankton net having a mesh size of 10 µm. The collected samples were kept in plastic bottles and preserved in 5% formaldehyde solution for a short period. In the laboratory all the collected samples were screened with the help of an Olympus light microscope. The taxa were identified using standard manuals (Desikachary, 1959 and Presscott, 1962). Sarma and Khan (1980) identified species, photographs were taken with the help of a digital camera.

RESULT AND DISCUSSION

In this present investigation, totally 45 genera distributed in 3 different saltpans were recorded (Table – 1). Total of 45 genera belonging to 4 divisions, such as *Bacillariophyta* – 18 genera, *Chlorophyta* – 6 genera, *Cyanophyta* – 16 genera and *Dinophyta* – 5 genera. Among them Kovalam saltpan totally 30 genera were identified. *Bacillariophyta* contributed 10 genera, *Chlorophyta* contributed 3 genera, *Cyanophyta* contributed 15 genera and *Dinophyta* contributed 2 genera. In Thamaraikulam saltpan totally 34 genera were identified. *Bacillariophyta* contributed 15 genera, *Chlorophyta* contributed 5 genera, *Cyanophyta* contributed 11 genera and *Dinophyta* contributed 3 genera. In Puthalam saltpan totally 30 genera were identified. *Bacillariophyta* contributed 11 genera, *Chlorophyta* contributed 6 genera, *Cyanophyta* contributed 9 genera and in *Dinophyta* 4 genera were identified. Primary producers of the studied saltworks ecosystem consist of phytoplankton community. Bacillariophyceae and Cyanophyceae have their maximum growth at pH 7 to 8 (Touliabh *et al*., 2010). Kovalam site shows high marine Cyanobacterial biodiversity than the other two saltpans (Sugumar *et al*., 2011). The same trend of population was noticed in the present study. Diatoms commonly constitute the dominant group of algae in saltpan biofilm of Thamaraikulam saltworks (Wilsy *et al*., 2008). The same trend of population was noticed in the present study. Britten and Johnson (1987) found that the diatoms constituted in the low salinity, but did not occur in salinities above 130 ppt. which is correlated with the results of the present study. Phytoplankton are key organisms in the biological system of saltworks, which must be established and maintained in the ponds in the proper

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condition to allow the economical and continuous production of high quality salt (Ayadi *et al*., 2004). Hence, knowledge above the variability of the ecological factors is necessary to maintain or increase the salt production and improve its quality, proceeding with a careful biomanipulation of the system, when necessary.

Table 1. Phytoplankton identified from the Kanyakumari saltpan during the year 2012-2014.

S.No.	Name of the taxa	Division	Kovalam	Thamaraikulam	Puthalam
1	Achnanthes sp.	Basillariophyta	+	+	–
2	Amphora sp.	”	+	+	+
3	Amphiprora sp.	”	–	+	+
4	Biddulphia sp.	”	+	+	–
5	Chaetoceras sp.	”	+	+	–
6	Cocconeis sp.	”	–	–	–
7	Coscinodiscus sp,	”	+	+	+
8	Cymbella sp.	”	–	+	–
9	Cyclotella sp.	”	–	–	+
10	Fragilaria sp.	”	+	+	–
11	Frustulia sp.	”	–	–	+
12	Navicula sp.	”	+	+	+
13	Nitzschia sp.	”	–	+	+
14	Pinnularia sp.	”	–	+	+
15	Pleurosigma sp.	”	+	+	+
16	Surirella sp.	”	–	+	+
17	Synedra sp.	”	+	+	–
18	Thalasstrosira sp.	”	+	+	+
19	Chlorella sp.	Chlorophyta	–	+	+
20	Closterium sp.	”	–	–	+
21	Dunaliella sp.	”	+	+	+
22	Pyramimonas sp,	”	+	+	+
23	Rhizoclonium sp.	”	+	+	+
24	Volvox sp.	”	–	+	+
25	Anabaena sp.	Cyanophyta	+	+	+
26	Anacystis sp.	”	+	+	–
27	Aphamocapsa sp.	”	+	+	+
28	Aphanotheca sp.	”	+	–	–
29	Calothrix sp.	”	+	–	–
30	Chroococcus sp.	”	+	+	+
31	Gloeocapsa sp.	”	+	+	+
32	Gomphosphaeria sp.	”	–	+	+
33	Lyngbya sp.	”	+	+	+
34	Microcoleus sp.	”	+	–	–
35	Microcystis sp.	”	+	+	–
36	Myxosarcina sp.	”	+	–	–
37	Oscillatoria sp.	”	+	+	+
38	Phormidium sp.	”	+	–	–
39	Spirulina sp,	”	+	+	+
40	Synchococcus sp.	”	+	+	+
41	Amphidinium sp.	Dinophyta	+	+	–
42	Gyrodinium sp.	”	–	–	+
43	Hemidinium sp.	”	–	–	+
44	Peridinium sp.	”	–	+	+
45	Prorocentrum sp.	”	+	+	+

‘+’ Present ‘–’ Absent

CONCLUSION

As a result of this study it was found that majority of 15 sps. of *Cyanobacteria* are present in Kovalam saltpan, 15 sps. of *Bacillariophyta* members were present in the Thamaraikulam saltpan and majority of 6 sps. of *Chlorophyta* members were present in the Puthalam saltpan.

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