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Research Article

STUDY OF THE PREVALENCE OF FREE LIVING PROTOZOA FROM MUMBAI REGION, MAHARASHTRA

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ABSTRACT
Free living protozoa are the excellent model for providing the information about the vital process of life. They play a key role in the ecosystem defining and designing the nature saprobes, protozoa are the reliable indicator of pollution. They help in improvement of water quality. The present study regarding water quality of taxonomic importance will be a landmark to create the awareness in the masses of the society. The biodiversity of protozoa changes from place to place and time to time, because of environmental make-up. Their presence, absence and abundance classifies the water quality (Chandraprakash 1983).Protozoan are free living as well as parasitic. Free living protozoans are present in vast number in nature and in great variety of habitats. The minute size, multiplication and formation of various stages facilitate their wide distribution in all possible environmental condition(Barkelo and calkins 1980).In free living aquatic protozoa most of them are ciliates. Many species of ciliated protozoa are used as indicator for the ecological monitoring of water quality. And they can also be used in ecological studies of aquatic habitats in which mosquitoes and intermediate hosts of disease causing organisms are breeding (Bhatia, 1936 and Bick, 1972).

Key Words: *Protozoa (Protozoology), Free Living Protozoans, Mumbai Region*

INTRODUCTION
Protozoans are unicellular, eukaryotic organisms that are placed in kingdom Protista. The word protozoa comes from the Greek word ‘protos and zoon ‘meaning ‘‘first animal, are eukaryotic Protists. They occur generally as single cells and may be distinguished from other eukaryotic Protists by their ability to move at some stages of their life cycle and by their lack of cell wall Protozoa are predominantly microscopic in size. The majority are between 5 and 250 um in diameter. Colonies of protozoa also occur in a protozoan colony; the individual cells are joined by cytoplasmic threads or are embedded in a common matrix. Thus colonies of protozoa are essentially aggregates of independent cells. The study of these eukaryotic Protists called Protozoology. By a conservative estimate, there are more than 65,000 described species of protozoa distributed among seven named phyla. Curde et al., (1973) and built small-scale, activated sludge plant in which protozoa were present. The result were quite clear, the presence of protozoa reduced the amount of organic material, the viable count of bacteria and the turbidity of the effluent. This result indicated that protozoa represent a necessary component in the efficient biological treatment of sewage.

MATERIALS AND METHODS
The water samples were collected from Mumbai city and its vicinity.
Water sample were collected in plastic bottles and plastic bags or in plastic cans. Care should be taken that water must be collected along with submerged plants, decaying leaves or any other detritus material. Most of the samples were collected in morning time as the temperature affects the abundance of protozoa and they found more abundant at low temperature.
These samples were brought to laboratory and examined under the microscope for the further study and observation. Water samples were observed directly by taking a water drop on a slide and it was covered with cover slip so that water cannot be dry. Protozoa are usually swim rapidly in water and hence unable to identify. To immobilize those, 10% methyl cellulose was added to the water drop on slide. This slows the movement of organism without immediate death or bursting.

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Culture Method

When protozoa are less abundant in the water sample their population can be increased by culturing them. For cultivation of these organisms following methods are used.

i) Hay infusion ii) Wheat infusion iii) Rice infusion

RESULTS AND DISCUSSION

Samples were randomly collected from different fresh water bodies and month wise prevalence was recorded for two years i.e. from December 2008 to November 2010

During the year Dec-2008 to Nov-2009, total 122 water samples were collected, of which 77 samples were found to be positive for protozoa and total percentage of prevalence was 63.11. The maximum percentage of prevalence was recorded in the month of November (90%) which gradually decrease up to April (14.29). In the month of May there was no protozoa recorded from given samples and hence the prevalence reaches to zero. Then it again gradually increases from June (66.67) to July (85.71) and decreases from August (60%) to September (70%) and again increases from November (90%), Table-1.

Table 1: Percentage of Prevalence (%) Of Fresh Water Protozoa during the Period Dec-2008 To Nov-2009

Sr.no.	Months	Total no. of samples collected	No. of samples positive	Percentage of prevalence(%)
1	December	10	08	80.00
2	January	12	08	66.67
3	February	10	05	50.00
4	March	08	03	37.50
5	April	07	01	14.29
6	May	06	00	0.00
7	June	12	08	66.67
8	July	14	12	85.71
9	August	10	06	60.00
10	September	10	07	70.00
11	October	13	10	76.92
12	November	10	09	90.00
	Total	**122**	**77**	**63.11**

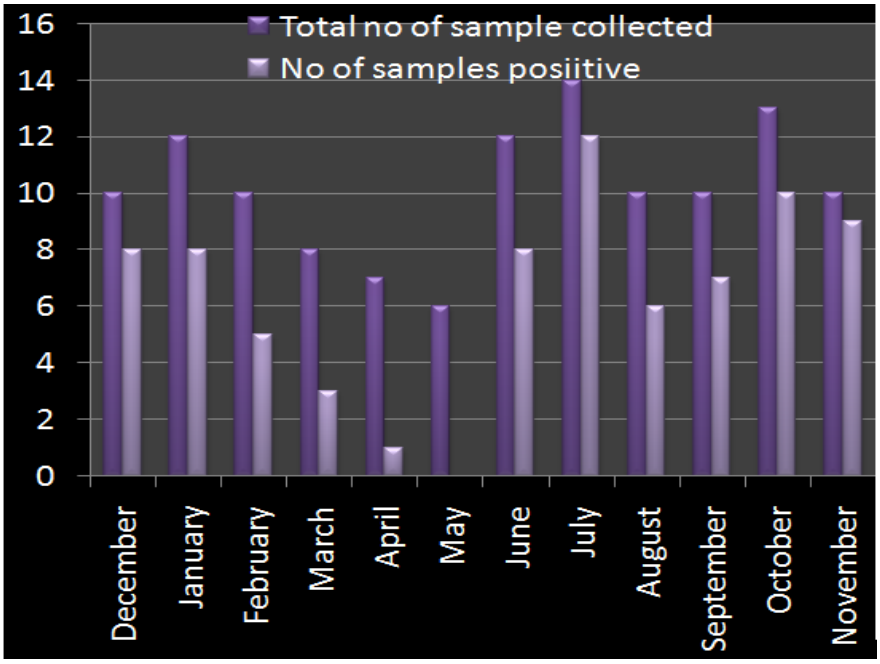

Figure 1: Showing Monthwise Prevalence (%) Of Fresh Water Roozoaduring Dec 2008 to Nov 2009

Table 2: Percentatage of Prevalence (%) Of Fresh Water Protozoa during the Period Dec-2009 to Nov-2010

Sr.no.	Months	Total no. of samples collected	No. of samples positive	Percentage of prevalence(%)
1	December	10	08	80.00
2	January	10	07	70.00
3	February	09	04	44.44
4	March	08	03	37.50
5	April	06	01	16.67
6	May	05	00	00.00
7	June	12	08	66.67
8	July	11	09	81.82
9	August	10	07	70.00
10	September	08	04	50.00
11	October	12	08	66.67
12	November	13	12	92.31
	Total	**114**	**71**	**62.28**

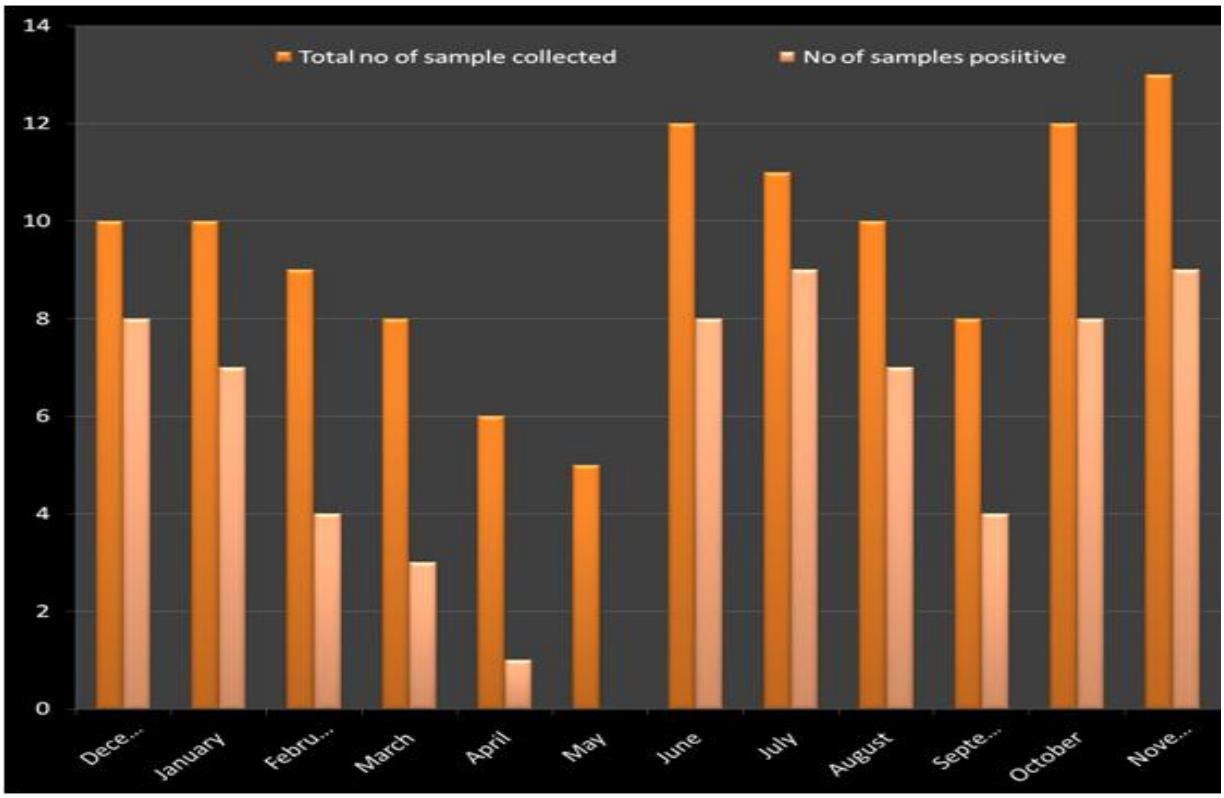

Figure 2: Showing the Months Wise Prevalence (%) Of Fresh Water Protozoa during the PeriodDec-2009 to Nov-2010

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