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Original Research Paper

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DESMIDS OF DAIRY WASTE WATER IN BEED CITY

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ABSTRACT Dairy industry is one of the major food industry in India. Dairy is an industry where milk is processed and various milk products are manufactuared. Water is continuously required for cleaning and processing operations in a dairy plant. Water from surface supplies is contaminated by milking equipments, storage and transportation etc. Waste water discharged from the milk processing unit is white in colour

The desmids belongs to the class Chlorophyceae. The order Desmidials is commonly called Desmids. Demids are single celled sometimes filamentous or colonial .One of the more common desmid genera, the sickle-shaped *Closterium,* often contains gypsum crystal in cell vacuoles. The global value of green algae is incredibly important. They serve as the primary source of food for other aquatic organisms and they contribute largely to the supply of oxygen. The present study 20 algal taxa were identified from 03 genera, out of which 7 species of *Closterium* , 11 species of *Cosmarium* and 1 species of *Bambussina*. Similarly physicochemical water analysis and seasonal variation of physicochemical parameter, Temperature, pH, Turbidity, Alkilinity, Calcium, BOD, COD and TDS were studied.

KEYWORDS : Biodiversity, Waste water and Parameters.

INTRODUCTION:

Algae serves as indicator of water quality in various ways. Taxonomical study of Chlorophycean algae was started in India earlier by Iyengar (1932). The Father of Indian Phycology by studying zygnemales from India. Jose and Patel (1992) have given a systematic account of Chlorophyceae, Chloropyta is an extremely diverse group of Eukaryotic organisms and play important role in all type of water bodies.

Biodiversity of algae from different aquatic habitats were studied extensively in India. But very few workers have paid their attention on biodiversity of desmids in Dairy waste water. Dairy waste water is rich in organic contents and shows eutrophic condition. In Vidarbh Maharashtra (Kamat1975), Marathwada. Maharashtra (Asthekar and Kamat 1979), Nagpur Maharashtra (Tarar et al.1998), Jalgaon North Maharashtra (Mahajan and Nandan 2008) (Dhande and Jawale 2009)and (Patil et al. 2012).

MATERIALS AND METHODS:

Algal and water samples were collected from study area of Shaskiya Doodh Yojana ,Solapur road ,Beed during the period of two years i.e. June 2016-May 2018.For quantitative and qualitative study of algae , algal samples were collected at monthly interval for two years and preserved in 4% formalin for further study of taxonomy. The algal taxa were sketched by line drawing with the help of camera lucida. Desmides was identified with the help of monographs and recent literature (Gunnar Nygaard 1972, Taketoshi Hinode 1962, Bernard 1909, Shashikant 1998 ,Smith G.M. 1920, Sengar et al 1985, Nandan and Patel 1984a,1985a,Scott and Prescott G.W. 1961,West and West 1907,Bodas 1991.)

Water sample were collected form study area and brought immediately to the laboratory for analysis. Water quality parameter analysis Temperature and pH were measured in situ, using mercury-glass thermometer and portable pH meter (Eutech, Malaysia), respectively. Turbidity, TDS, Alkalinity, Calcium, BOD,COD were analysed using standar methods of APHA (2005) .

RESULT AND DISCUSSION

The present study 20 algal taxa were identified from 03 genera, out of which 7 species of *Closterium* , 11 species of *Cosmarium* and 1 species of *Bambussina*. were identified from study area. Among *Cosmarium* is dominant in present study, similar kind of observation seen in Nandan S.N. and D.S.Jain (2005) in Biodiversity of Desmids in Sonvad project Dam and Devbhane Dam of Dhule district of Maharashtra. And Santosh Talekar and Milind Jadhav (2009) in Biodiversity of Desmids in Manjara river of Maharashtra.

Temperature of Dairy waste water was ranged from 32-36^{0}C and maximum temperature was recorded in Monsoon season.P^{H} value of Dairy waste water was varied from 9 -12**.**Turbidity was varying from 34-64 NTU. The turbidity depends upon the strength upon waste water. The stronger or more concentrate the waste, the higher is the turbidity. Alkalinity values varying from 528-560 mg/L. Higher values of total alkalinity was obtained during rainy season due to addition of buffering material by surface runoff, similar kind of observation found in Yakub , Anshu Bala and Rai, M.K Kanungo, V.K. (2012) In Study of waste water Quality of milk processing unit and its Utilization. Calcium values were fluctuated from 22-53 mg/L for dairy waste water. Calcium value is more in Winter season.1% ≥ dilution range of BOD value is prescribed by Trivedy and Goel (1984) is 520-1105mg/L. The chemical oxygen demond (COD) varied from 1940-4283 mg/L.COD values were higher in Monsoon season and lower in winter season. Total dissolved solid values were varying from 613-969 mg/L. Increase in concentration of TDS was due to greater input of dissolved solids in water, while the minimum TDS values was noted in Monsoon season and Maximum in Winter season.

Table.01 Desmides encountered form Dairy waste water in Beed City.

Sr.No.	Name of algal Desmides	Sr.No.	Name of algal Desmides
01	*Closterium biclavatum* Borges	11	*Cosmarium decoratum* West and West
02	*Closterium Cynthia* De. Notaris	12	*Cosmarium depressum* (Nag.) Lund Var.*opertum*
03	*Closterium dianae* Ehrbg. Var. *pseudodianae* (Roy)	13	*Cosmarium leave* Rab. Var. *septentrionale* wille *fa.protuberns*
04	*Closterium gracile* Breb	14	*Cosmarium lundelliidum*
05	*Clostreium leibleinii* Kutezing	15	*Cosmarium nudum* (Turn.) Gurn
06	*Closterium libellula* Focke	16	*Cosmarium ordinatum* (Borges) West and West
07	*Closterium navicula* (Breb.) Lutkem	17	*Cosmarium porrectum* Nordst.
08	*Cosmarium blyttii* wille Var. *novaesilvae* West and West	18	*Cosmarium pyaramiditum* Breb.Var.*minor*.
09	*Cosmarium contractum* kirchner Var. *incrassatum*	19	*Cosmarium subtumidum* Nordstedt v.*minutum* (Klebsii)
10	*Cosmarium cucurbitinum* (Biss.) Lutkem Var. *Longum* Scott	20	*Bambusina brebissonii* Kuetz

Table. 02. Physico-chemical parameters in Dairy waste water in Beed City.

Sr.No.	Name of Parameters	June 2016 to May 2017			June 2017 to May 2018		
		Monsoon	Winter	Summer	Monsoon	Winter	Summer
01	Air Temperature(^{0}C)	36	34	35	38	36	35
02	Water Temperature(^{0}C)	34	33	33	36	35	34
03	pH	09	09	11	10	09	12
04	Turbidity (NTU)	62	34	58	63	37	61
05	Alkalinity (mg/L)	557	532	524	560	536	528
06	Calcium (mg/L)	22	51	29	25	53	30
07	BOD (mg/L)	1100	520	1050	1105	524	1052
08	COD (mg/L)	4280	1940	3920	4283	1948	3925
09	Total Dissolved Solids (mg/L)	613	967	688	615	969	691

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