



## ASSESSMENT OF WATER QUALITY OF ANER DAM AND RIVER OF DHULE DISTRICT (MAHARASHTRA) BY SAPROBIONTIC ALGAE.

**M. R. KUMAVAT**

*P.G. Department of Botany, S. S. V. P. S.'s L. K. Dr. P. R. Ghogrey. Science College, Dhule-424005 (M.S.)*

### ABSTRACT:

Earlier workers had attempted to arrange Saprobiontic algae in to different levels. Saprobiontic algal communities are capable of tolerating various degrees of pollution. In the present study three stations of Aner dam & three stations of Aner river were selected for collection of water and algal samples. The saprobity indices for all stations of Aner dam & river were calculated according to Pantle and Buck (1955). In the present study the system of Kolkwitz and Marssons is followed to find out saprobity index of Aner dam & river. All six stations of study area sites were found □ - mesosaprobic in nature. Saprobity indices hold good for assessing the water quality of Aner dam and river in present study.

**Keywords :** *Algae, Saprobity system, Water quality..*

### INTRODUCTION:

In recent years limnological studies have attracted many workers attention in this field. Some major contributions from Maharashtra are those by Gunale & Balakrishan (1981), Goel et.al. (1985) and More and Nandan (2001). The present investigation was carried out by selecting 3 stations of Aner dam and 3 stations of Aner river of Dhule district of Maharashtra. Aner dam is situated on the Aner river in first range of Satpuda. The dam was constructed in the year 1973 & situated towards east north direction of Shirpur of Dhule district, on the boundary of Madya Pradesh. The river Aner is coming from Satpuda range of Madya Pradesh with main tributaries. The Aner river flows east north direction at 193 meter above MSL. Aner river is one of the important tributary of river Tapi.

### MATERIALS AND METHODS

Algal and water samples were collected at monthly intervals during January 2000 to December 2001. From three stations of Aner dam and 3 stations of Aner river. The chemical analysis of water samples were carried out by standard

methods of APHA (1975). The phytoplaktons, the attached epiphytic and floating forms of algae were collected in acid washed collection bottles and preserved in 4% formalin for further taxonomic investigation. The algal taxa were identified with the help of Standard monographs.

The saprobity indices for 3 stations of each station of dam & river were calculated according to Pantle & Buck (1955).

$$M=\{S\}=\Sigma sh / \Sigma sh$$

Where, S : is saprobity index,

s : is the degree of saprobity,

h : is the frequency with which the single species occurs.

For the calculations the following numerical degree are used.

Oligo-saprobic indicator organism s = 1

β-mesosaprobic indicator organism s = 2

□-mesosaprobic indicator organism s = 3

Poly-mesosaprobic indicator organism s = 4

Species found per chance h = 1

Species found frequently h = 3

Species occurring in abundances h = 5

The following numerical values for the individual zones have been followed:

- i) 1-1.5 denotes Oligo (o) saprobic zone
- ii) 1.5-2.5 denotes Oligo  $\beta$  - mesosaprobic zone
- iii) 2.5-3.5 denotes Oligo  $\square$  -mesosaprobic zone
- iv) 3.5-4.0 denotes poly saprobic zone

In present study the system of Kolkwitz and Marsson (1908) was used for assessing water quality of Aner dam & river.

### RESULT & DISCUSSION:

The saprobity indices for 3 stations of Aner dam & 3 station of Aner river were calculated according to Pantle and Buck (1955) as shown in table-1. The system of Kolkwitz and Marsson (1908) comprises 4 saprobic levels viz.

- 1] Very heavily contaminated polysaprobic zone (p)
- 2] Heavily contaminated  $\square$  -mesosaprobic zone ( $\square$ )
- 3] Moderately contaminated  $\beta$  - mesosaprobic zone ( $\beta$ )
- 4] Scarcely contaminated Oligo saprobic zone (o)

The following algal taxa were observed for 3 stations of Aner dam and 3 station of Aner river. They are classified in above saprobic level according to Kolkwitz and Marsson (1908).

#### 1) Aner Dam -

- 1- Polysaprobic - Nil
- 2-  $\square$  - mesosaprobic - *Oscillatoria brevis*
- 3-  $\beta$  - mesosaprobic - *Pediastrum sp*

#### 4- Oligo saprobic - *Cyclotella meneghiniana*

*Phacus pyrum*

#### 2) Aner river

- 1- Polysaprobic - Nil.

#### 2- $\square$ mesosaprobic - *Oscillatoria princeps*

#### 3 - $\beta$ - mesosaprobic - *Pediastrum sp*

#### 4 - Oligo saprobic - *Cyclotella meneghiniana*

In present study the presence of *Spirogyra*, *Closterium* & *Cosmarium* indicate mesosaprobic zones as agreed with the observations of Thomas (1944). The presence of *Spirogyra* & *Oscillatoria* indicate the organic pollution (Patrick, 1965; Nandan and Patle, 1983). All these taxa were observed in present study. Jeeji Bai and Rajendran (1980) showed the species of *Scenedesmus*, *Pediastrum*, *Chlorella* and *Pandorina* which are capable of different degree of myxotrophic and heterotrophic growth. Similar genera were observed in present study.

In present investigation the most of the forms in present study were categorised into mesosaprobic. The saprobity index of all 6 stations of Aner dam & river showed mesosaprobic nature of water. The saprobity indices & systems of Kolkwitz & Marsson (1908) hold good for assessing to water quality of Aner dam & river as agreed with Nandan & Patel (1984).

### ACKNOWLEDGEMENT

The authors are grateful to Principal S.N.Nandan S.S.V.P.S's L.K.P.R.G. Science College for providing facilities of the work. Author (MRK) is also thankful to Principal Dr.B.V.Kambale S.S.V.P.S's A.C.S. College Shindkheda.

### REFERENCE:

Sarode & Kamat, p. 128, pl. 15, f.335 Values 31.3  $\mu$  long 6.9  $\mu$  broad, narrowly lanceolate with slightly produced rounded ends; raphe thin and straight axial area very narrow; central area small rounded striae 14-16  $\mu$  curved, radial in the middle and convergent at the ends.

**REFERANCE :**

APHA (1975). 16th Edition American Publ. Hlth. Asso; New York.

Gunale V.R. and M.S.Balakrishnan (1981). J.Environ.Hlth.23 (4):316-322.

Goel P.K. S.D. Khatavkar, A.Y. Kulkarni and R.K. Trivedy,(1986). Pollution Res.2:79-84.

Jeeji bai.N and S. Rajendran (1980). Proc.National Workshop Algae systems\_267-270.

Kolkwitz. R. and M.Marsson.(1908).Deutsch Bot G 25:505-519.

More. Y. S. and S. N. Nandan. (2001). Ecol. Env. and Cons.7(2):337-339.

Nandan S.N. and R. J. Patel.(1983). Indian J. Ecol. 10(1):11-15.

Nandan S.N. and R. J. Patel.(1984).\_\_Indian Botanical Report 3(2):129-132.

Pantle R. and H. Buck.(1955).\_Gasand Ubsserfach. 96:604.

Patrick.R. (1971).Limnol.Oceangr. 16 (2):405-421.

Thomas E.A.(1944). G t Lebonsmittle Lunter such U Hyg.ebie 35:199-218

**Table 1 : Saprobity index of 3 stations of Aner dam and 3 stations of Aner river.**

Sr.No.	Stations	Saprobity Index	Degree OF Pollution
I	<b>Aner Dam</b>		
	<b>DS-I</b>	1.61	B - Mesosaprobic zone
	<b>DS-II</b>	1.69	$\beta$ - Mesosaprobic zone
	<b>DS-III</b>	1.66	$\beta$ - Mesosaprobic zone
II	<b>Aner River</b>		
	<b>RS-I</b>	1.66	B - Mesosaprobic zone
	<b>RS-II</b>	1.69	$\beta$ - Mesosaprobic zone
	<b>RS-III</b>	1.74	$\beta$ - Mesosaprobic zone

DS-I-Aner dam station I

RS-I -Aner river station I

DS-II Aner dam station II

RS-II Aner river station II

DS-III Aner dam station III

RS-III- Aner river station III