

## Studies on Algal flora of Dangania Pond, Raipur

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### Abstract

Present paper deals study on algal flora of Dangania pond, Raipur. The Dangania pond water is mainly utilized for bathing and washing by human beings and cattle's therefore the quality of pond water has become highly eutrophic. The diverse algal varieties and forms were identified from this pond. The species of *Euglenophyceae*, *Chlorophyceae* and *Cyanophyceae* are growing dominance, which belongs to the tolerant species.

**R**aipur District is situated in the fertile plains of Chhattisgarh region. This District is situated between 22°33' N to 21°14' N latitude and 82° to 38' E longitude and 260 M above sea level, Dangania is situated almost west boundary of the city. The pond which is formed by excavation is rectangular in shape. It is perennial with almost a constant algal bloom throughout the year. The algal bloom indicating highly eutrophicated condition is mainly due to faecal contamination, cattle bathing and human bathing & washing. Decomposition of algae like *Anabaena*, *Microcystis* impart bad odour and toxic to the water. In polluted water a Characteristic algal flora come up and they serve as indicator of the quality of water<sup>6</sup>. Algal blooms lead to oxygen deficiency to the other aquatic forms. Due to lack of awareness human interference with these water bodies causing serious threat to health and water system. According to Akasaka *et al.*,<sup>1</sup> the land use pattern around the pond has direct effect

on water quality and aquatic vegetation. Soni and Bhatt<sup>8</sup> have described the degradation of an urban pond in Gujarat, India due to sewage disposal. The pond has become unfit for use due to proliferating algae, macrophytes and pathogens.

The water sample were collected randomly from the site. The physico-chemical parameters Like pH, temperature, dissolved oxygen, free CO<sub>2</sub>, Phosphate, Nitrate were determined by using standard methods<sup>2</sup>. Algae were separated from water sample through filtration. Concentrate sample were collected and preserved in 2-5 % formalin and few drops of glycerine for detailed study of algal flora. Direct microscopic examination of algae was performed after through washing. Micrographs of the sampled algae were taken. Taxonomic characterization of algae was done through standard monographs available in literature<sup>3</sup>.

Table-1 Water quality parameters in winter and summer

Parameters	Winter	Summer
pH	8.4	8.9
Temperature	26°C	39°C
DO (mg/l)	5.2	6.5
Free CO <sub>2</sub> (mg/l)	20.4	23.3
Phosphate (mg/l)	18.4	13.8
Nitrate (mg/l)	0.77	0.75

Table-2. Algal flora recorded by tolerance species *i.e.* *Euglenophyceae*, *Chlorophyceae* and *Cyanophyceae*

<i>Class- Euglenophyceae</i>	<i>Chlorophyceae</i>	<i>Cyanophyceae</i>
<i>Phacus caudatus</i>	<i>Oocystis solitaria</i>	<i>Microcystis aeruginosa</i>
<i>Phacus orbicularis</i>	<i>Oocystis crassa</i>	<i>Anabaena spiroides</i>
<i>Phacus hispidulus</i>	<i>Scenedesmus dimorphus</i>	<i>Oscillatoria</i> sp.
<i>Phacus acuminatus</i>	<i>Scenedesmus quardicauda</i>	<i>Lyngbya</i> sp.
<i>Phacus platalea</i>	<i>Chlorella vulgaris</i>	<i>Gloeopcapsa</i>
<i>Euglena acus</i>	<i>Tetraedron muticum</i>	<i>Nostoc</i> sp.
<i>Euglena proxima</i>	<i>Spirogyra</i> sp.	<i>Spirulina gigantia.</i>
<i>Euglena gracilis</i>	<i>Zygnema indicum</i>	
<i>Euglena viridis</i>	<i>Ankistrodesmus falcatus.</i>	
<i>Trachelomonas volvocina</i>		
<i>Trachelomonas cylindrica</i>		
<i>Lepocinclis fusiformis</i>		
<i>Lepocinclis stenii</i>		

The analyzed result of water quality for pH, temperature, DO, free CO<sub>2</sub> and phosphate, nitrate is presented in Table-1.

The algal flora recorded by tolerant species belonging to *Euglenophyceae*, *Chlorophyceae* and *Cyanophyceae* is presented in Table-2.

The physico-chemical parameters of this pond indicate that the water is highly eutrophicated and are progressing towards hypertrophication due to pollution through fecal contamination, human & cattle bathing and washing. The lower concentration of DO appear to be due to pollution. Organically heavily polluted water bodies may have lower

oxygen concentration<sup>4</sup>. The higher concentration of phosphate, nitrate in the water of pond indicates that the water of Dangania pond is highly eutrophicated. This higher phosphate concentration appears to be the main cause for all-round the year bloom of *Microcystis aeruginosa*<sup>7</sup>. The planktons of Dangania pond belongs to the tolerance species of *Euglenophyceae*, *Chlorophyceae*, *Cyanophyceae*. Phytoplanktons population depends on cumulative effect of temperature pH, DO, nitrate & phosphate & organic matter<sup>5</sup>. High concentration of nitrate & phosphate in water favours the Eulenophyceae and chlorophycean members. The permanent bloom of microcystis Indicate it as eutrophic water body. They impart unpleasant odour & toxic to water and make it turbid and unusable for various purposes.

References :

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