# MICROORGANISM STUDIES FROM VARIOUS AQUATIC AREAS IN BHILAI, CHHATTISGARH

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**ABSTRACT**:

Microorganisms are usually simpleunicellular, multicellular,organismsthat are found within four kingdoms-distributed worldwide in nature. Their primary constituents include fungi, bacteria, and protozoa, many of which belong to genera that are pathogens to animals as well as human beings. It is necessary to separate out the types of microorganisms that may be observed in the various water habitat of Bhilai (C.G.). A range of free-living microorganisms, some of which are dangerous to both people and animals (protozoans, arthropods, fungi, bacteria, algae, etc.), are the focus of this research.

Key words: Microorganism, Pathogen, Ponds.

## INTRODUCTION:

A microorganism, often known as a microbe, is a minuscule living being made up of either an individual cell or a collection of cells. According to Jain literature, the possibility of unseen microscopic life has been proposed as early as the sixth century B.C. in India. The observation of microorganisms under a microscope by the Dutch scientist Anton van Leeuwenhoek in the 1670s represented the starting point of scientific investigation of microbes.

There are tiny organisms, frequently referred to as microbes or microorganisms, everywhere around us and even inside our own bodies. Microorganisms are simple, singlecelled, multicellular, or cell clusters organisms that can be found all around the world and it is widespread in nature. They may be composed of prokaryotic or eukaryotic cells. They are found within four Kingdoms-the plant kingdoms, Bacteria, Fungai and Protozoa. There are many types of microorganisms and bacteria are found in Aquatic regions, like Ponds, rivers, dam etc. There are many infectious microorganisms found in the Aquatic environment bacteria (salmonella, Escherichia coli), virus (Rota virus), protozoans (entamoeba, giardia) may be found in water. Some microorganisms are not harmful, infect some are helpful, but majority of them cause lots

of disease in man and in animals.(Mishra et al., 2021), Tamang et al., 2016) (Khanjani et al., 2022), (Cavicchioli et al., 2019, Danquah et al., 2022, Gryta, 2002, Microorganisms are therefore extremely interesting as potential sources of novel bioactive chemicals. Some of the microbes are able to tolerate tough seawater conditions. As we know that all the microorganisms are seems, same at first but they are actually perhaps the most diverse group of organisms in the world.

**MATERIAL AND METHODS**:

Various bodies of water in Bhilai City were sampled for water throughout the academic year (2020–2021). Water samples were taken in plastic bottles, and care was made to ensure that they came from various ponds and regions. Because temperature impacts the quantity of microorganisms in water, water samples were collected in the early morning. To prevent bacteria from moving, a drop of methyl cellulose is added to the water sample before it is spread out on the slide, covered with a cover sheet, and examined using a compound microscope. Protozoan identification is based on the presence of locomotor organs (cilia, flagella, and pseudopodia), whereas arthropod identification is based on the presence of paired appendages in each segment and body form.Identification of protozoans is based on the presence of locomotor organs (cilia, flagella, and pseudopodia), while identification of arthropods is based on the presence of paired appendages in each body segment and structure. Morphological and biochemical identification of bacteria has also been performed. The identification of fungi was done using their morphological traits.

**RESULT AND DISCUSSION:**

The overall amount and distribution of microbes in pond water vary significantly depending on the season and location, and their patterns are similar to those of other microbial communities. The environment has an impact on how these bacteria develop and reproduce. In this study, the prevalence of bacteria, cyclopean bacteria on arthropods, fungus, algae, and free-living pathogenic protozoa is investigated in water samples from Bhilai (C.G.). Numerous species are gathered during the research from different locations in Bhilai, but it soon becomes clear that Plasmodium Entamoeba hystolytica, Dhapnia, and Rhizopus are more common and are gathered from the village of Ringni- Ringni- Pond, Dhachabhawan Pond, Surya Kund Pond, and Jawahar Udhyan Pond. Both people and animals can get illnesses from these species, including diarrhea, filariasis,ascariasis,etc. During the year 2020-2021 total 90 water samples were collected from

the months of September to July out of which only fewsamples were found to be positive withmicroorganisminSept,Oct, Nov, Dec and Jan, Feb, Since no microorganisms were found in the water sample that was obtained in March, Apr, May, June and July Aug, the presence of microorganisms was zero.

**Table 1: List of some microorganisms found in Aquatic regions of Bhilai (C.G)**

| S.no | Group | Location | Microorganisms | Jan to Feb | March to April | May to June | July to Aug | Sept to Oct | Nov to Dec |
|---|---|---|---|---|---|---|---|---|---|
| 1. | Protozoa | Ringni Pond | Paramecium | 9 | 2 | 0 | 0 | 4 | 11 |
| 2. | Protozoa | Dhachabhawan Pond | Plasmodium | 10 | 4 | 0 | 0 | 4 | 15 |
| 3. | Protozoa | Dhachabhawan Pond | Amoeba | 11 | 4 | 0 | 0 | 5 | 13 |
| 4. | Protozoa | Dhachabhawan Pond | Euglena | 9 | 5 | 0 | 0 | 6 | 12 |
| 5. | Protozoa | Surya Kund Pond | Entamoeba histolytica | 12 | 6 | 0 | 0 | 7 | 16 |
| 6. | Arthropoda | Ringni Pond | Cyclops | 13 | 6 | 0 | 0 | 6 | 10 |
| 7. | Arthropoda | Ringni Pond | Volvox | 13 | 6 | 2 | 0 | 5 | 6 |
| 8. | Arthropoda | Jawahar Udhyan Pond | Daphnia | 17 | 7 | 3 | 0 | 5 | 9 |
| 9. | Bacteria | Ringni Pond | Pseudomonas | 7 | 5 | 1 | 0 | 4 | 11 |
| 10 | Bacteria | Ringni Pond | Cyanobacteria | 8 | 0 | 0 | 0 | 3 | 12 |
| 11. | Bacteria | Suryakund Pond | Clostridium botulinum | 7 | 6 | 0 | 0 | 4 | 6 |
| 12. | Fungi | Jawahar Udhyan Pond | Rhizopus | 9 | 5 | 0 | 0 | 7 | 15 |
| 13. | Fungi | Suryakund Pond | Aspergilus | 9 | 5 | 0 | 0 | 8 | 6 |
| 14. | Fungi | Dhachabhawan Pond | Actinomycetes | 8 | 4 | 0 | 0 | 6 | 7 |
| 15. | Fungi | Ringni Pond | Amanita subjunquillea | 9 | 8 | 0 | 0 | 4 | 5 |

**Fig .1 Plasmodium**

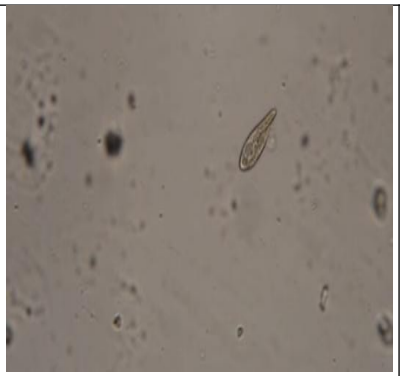

**Fig .2 Paramoecium**

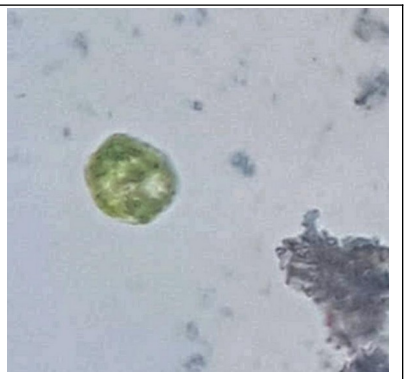

**Fig .3 Volvox**

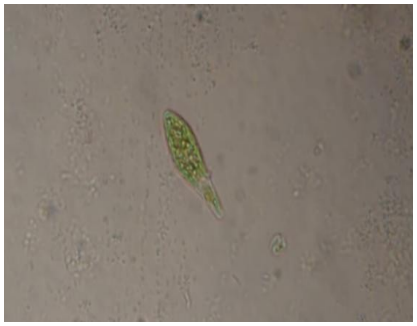

**Fig .4 Euglena**

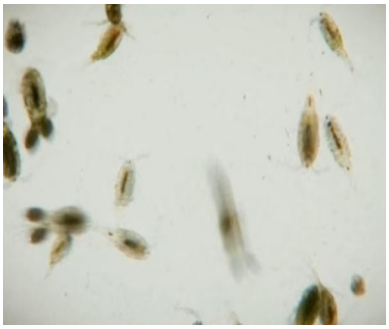

**Fig . 5 Cyclops**

**Fig . 6 Daphnia**

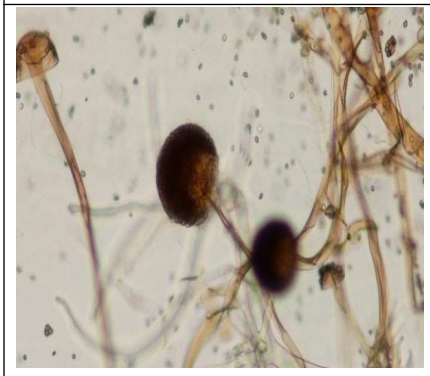

**Fig . 7 Rhizopus**

**Fig. 8 Aspergillus**

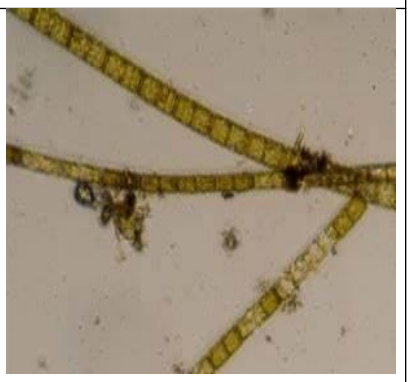

**Fig . 9 Cynobacteria**

**PLATE 1:Microscopic photograph of some species found in study area**

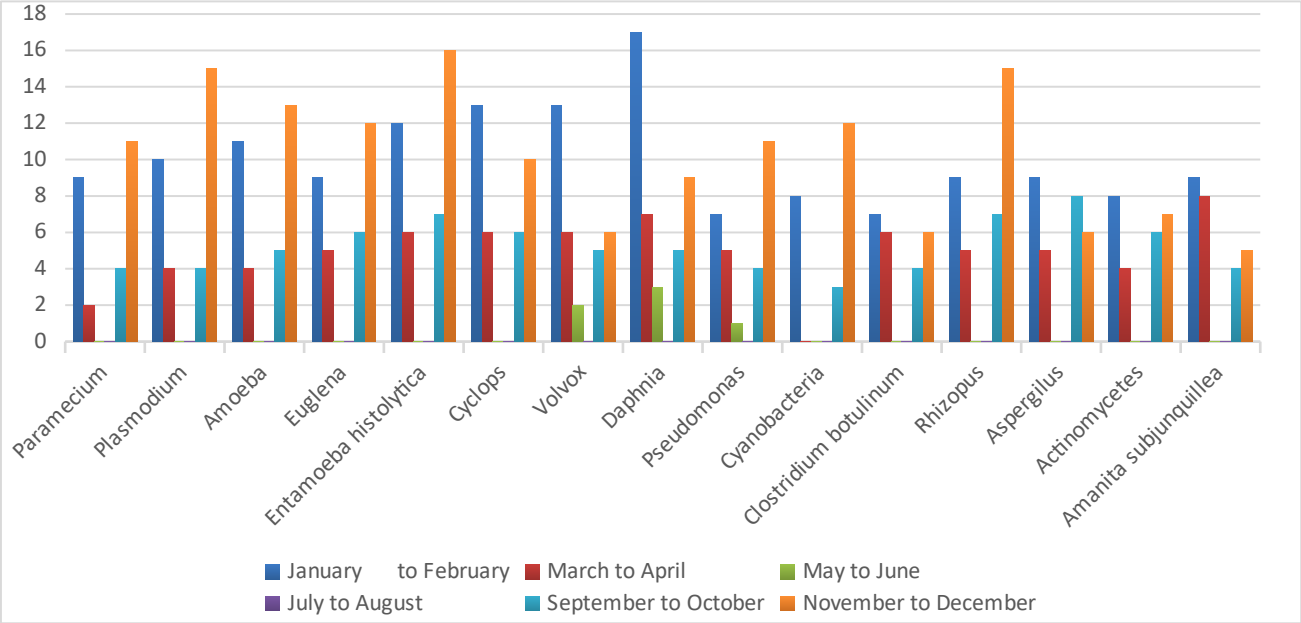
18
16
14
12
10
8
6
4
2
0
Paramecium
Plasmodium
Amoeba
Euglena
Entamoeba histolytica
Cyclops
Volvox
Daphnia
Pseudomonas
Cyanobacteria
Clostridium botulinum
Rhizopus
Aspergilus
Actinomycetes
Amanita subjunquillea
January to February
March to April
May to June
July to August
September to October
November to December

**Fig. 10 Ringni- Pond**

**Fig 11 Jawahar Udhyan Pond**

**Fig. 12 Dhachabhawan Pond**

**Fig. 13 Suryakund Pond**

## CONCLUSION:

The proposed methods clearly shows the presence of microorganismsin different pond water from different areas of Bhilai, we have to realise that there are lots of diseases waiting for us in the form of microorganisms which is harmful for us as well as animals.

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