

# Studies on Physicochemical Analysis of Water from Different Sources

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**Abstract— Introduction:** Water is one of the important natural sources for all living organisms. It is one of the ecological systems. It's the essential source for human health, food production and economic development. The quality of water is important is an important parameter to be noted. The quality of water is affected by various contaminants. The consumption of contaminated water may cause serious health problems due to the activity of microorganism present in it .Due to the activity of microorganism the quality of water becomes very poor and also causes harmful diseases. Thus in this study we are aimed to test the quality of water from different sources by means of physicochemical studies.

**Objectives:** The objective of the present studies is to provide information on the physicochemical characteristics & detailed ecological studies of Portable water and Lake water (Habitat) in order to discuss it's suitability for human consumption. Physicochemical aspects of the water have been investigated to assess the quality of water.

**Result:** The variations of physicochemical properties and comparative analysis of water different sources were analyzed.

**Keywords— Biochemical aspects, Ecological system, habitat, physicochemical studies.**

## I. INTRODUCTION

Water is one of the important natural sources for all living organisms. It is one of the ecological systems. It's the essential source for human health, food production and economic development (1). The quality of water is important is an important parameter to be noted. The quality of water is affected by various contaminants (2, 4). The consumption of contaminated water may cause serious

health problems due to the activity of microorganism present in it(2,4) .Due to the activity of microorganism the quality of water becomes very poor and also causes harmful diseases. Thus in this study we are aimed to test the quality of water from different sources by means of physicochemical studies (6, 10, 14).

## Sample Collection:

Portable water sample was collected from five different areas of Kanchipuram.

Habited water sample was collected from four different lakes of Kanchipuram, Mathuranthagamm Lake, Kolavai Lake, Karunguzhi Lake and Vedanthangal Lake.

## II. Material and Methods

The water sample was collected from four different lakes for the project work. The sample was taken in a closed bottle was dipped into the lake and opened the cap inside the lake and was closed again to bring it out at the surface (9). From the time of sample collection, biological and chemical reactions may change the quality of water sample. To minimize the growth of microorganism, we have to preserve soon after the collection of water sample (13, 9). Once the water sample is collected, the odour, taste and TDS should be analyzed and preserved by adding chemical preservations and lowering its temperature (13). The water analysis process was carried out for a period of four months. The collected water samples were brought to the laboratory and analysis were performed. pH was determined using pH meter, and similarly turbidity is measured by turbiditymeter (Verma Pradeep et al, 2012).

Table.1: Portable Water Samples

Sr. No.	Test	Processed Water Sample	Chengalpet Municipal Water Sample	Madhuranthaga m Municipal Water Sample	Vedanthangal municipal Water Sample	Kolavai Municipal Water Sample
1	Temperature (°C)	28	28	28	28	28
2	Colour (Unit)	<1	<1	<1	<1	<1
3	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	pH	6.9	7.0	6.9	6.8	7.0
6	Turbidity (NTU)	0.38	0.29	0.30	0.28	0.30
7	TDS (ppm)	141	140	144	140	146
8	Dissolved oxygen (ppm)	6.1	6.2	6.3	6.1	6.3
9	Dissolved carbon dioxide(ppm)	38	36	40	38	37
10	Alkalinity (ppm)	8	8	9	8	10
11	Chloride (ppm)	58	30	41	33	35
12	Calcium (ppm)	6.2	7	6	8	7
13	Barium (ppm)	Nil	Nil	Nil	Nil	Nil
14	Magnesium (ppm)	2.2	3	3	3.5	2.5
15	Total Hardness (ppm)	4	4.5	4.5	5	4.9
16	Copper (ppm)	0	0	0	0	0
17	Sulphate (ppm)	8	10	14	16	11

Table 2: Lake Water Samples

S. No.	Test	Chengalpet Lake Sample	Mathuranthagam Lake Sample	Vedanthangal Lake sample	Kolavai Lake Sample
1	Temperature	28	27	29	28
2	Colour (Unit)	< 2.3	<3	<2.5	<3
3	Odour	Disagreeable	Disagreeable	Disagreeable	Disagreeable
4	Taste	Disagreeable	Disagreeable	Disagreeable	Disagreeable
5	pH	8.3	8.6	8.7	8.8
6	Turbidity (NTU)	8	9	11	10
7	TDS (ppm)	900	946	987	735
8	Dissolved oxygen (ppm)	5.7	5.9	4.4	5.0
9	Dissolved carbon-di-oxide(ppm)	7.0	6.9	6.6	6.1
10	Alkalinity (ppm)	150	168	164	170
11	Chloride (ppm)	84	83	60	74
12	Calcium (ppm)	72	73	68.6	67
13	Barium (ppm)	41	32	31	36
14	Magnesium (ppm)	32	15.2	7.8	8.2
15	Total Hardness (ppm)	280	279	343	321
16	Copper (ppm)	19.76	15.27	17.43	15.89
17	Sulphate (ppm)	74	62	61	71

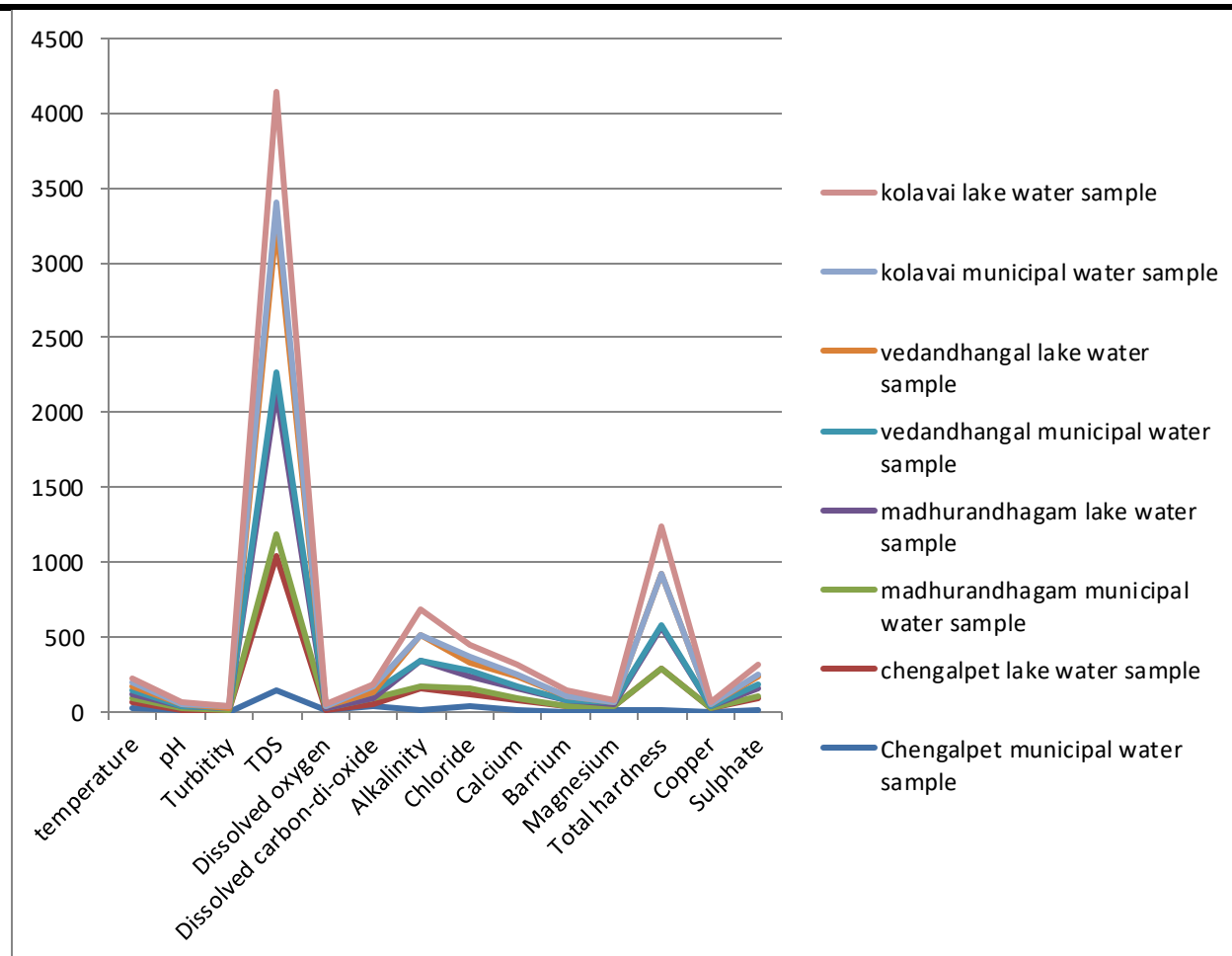


Fig.:1: Comparative graph for municipal water sample and lake water sample

### III. DISCUSSION

Physical parameters like Odour & Taste was agreeable in portable water. The general ISI standard for Drinking water's Turbidity is 5 NTU is considered unhealthy (2). In Different areas of portable water the Turbidity ranging from 0.2 NTU to 0.4 NTU (13). In Municipal water, observed higher Turbidity than other area. The normal pH range of drinking water is between 6.5 to 7.0. The pH municipal water was observed between 6.5 to 7.0. So that the criteria of pH range was acceptable. For Portable water, Dissolved carbon dioxide & Dissolved oxygen were found to be 6.2 and 38 (Average value of five different areas) respectively (8). TDS of water sample showed range below 1000 ppm & it complied with the given criteria of Indian standard. Minerals like Calcium, Magnesium, Chloride, Sulphate, Barium, and Copper are essential for human body. Tests of these minerals were performed on portable water sample (9). The results complied with the given range to be Test for Minerals. Alkalinity & Total Hardness of potable water

samples should less than or equal to 10 and 300 ppm respectively (13). Results were complied with the given limits of both tests. Turbidity of lake water sample ranges from 4 NTU to 11 NTU. The Total dissolved solid recorded ranges from 668 ppm to 942 ppm.

### IV. CONCLUSION

The result obtained during study was compared with ISI standards. Portable water is water safe enough to be consumed by the humans and the habited water is generally used by animals & birds & aquatic life. After physicochemical analysis we found that the sample of Portable water and habited water are free from pollution & ecologically balanced.

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