Eurasian Journal of Comprehensive Clinical Medicine and Translational Research

Vol. 1 (2023)

E J C C M T R

E-mail Id: editor@iifard.org
url: www.iifard.org/about-journal/

Eurasian Journal of Comprehensive Clinical Medicine and Translational Research

Eurasian Journal of Comprehensive Clinical Medicine and Translational Research
https://www.iifard.org/web/AmYIZQRkBj8=/EJCCMTR
www.iifard.org

ISSN:

EJCCMTR

Volume 1
2023
Published by
International Institute For Academic Research and Development
Email: trustforacademic@gmail.com, editor@iifard.org

Eurasian Journal of Comprehensive Clinical Medicine and Translational Research
https://www.iifard.org/web/AmYIZQRkBj8=/EJCCMTR
www.iifard.org

ISSN:

About Journal - EJCCMTR

Eurasian Journal of Comprehensive Clinical Medicine and Translational Research (EJCCMTR) is an autonomous, peer reviewed online journal. It mainly serves as universal discussion identified with building training, distributed at present quarterly in the field of medical sciences. EJCCMTR welcomes researchers and academicians to submit their original research work which meets the journal criteria of significance and scientific excellence. EJCCMTR is scholarly online open access and peer received journals emphasising on research studies and application in the field of Medicine Medical Science, Pharmacy and Biotechnology. Researchers are requested to submit their original articles, clinical research online for a peer review and analysis before its publication. The editorial board encourages Doctors, Academicians, SRF, JRF, Research scholars and partitions to publish their articles of relevant fields.

EJCCMTR publishes its journals in full open access format. The scientific and medical community and the general public can unlimitedly and immediately access all content published in our journals for free as soon as it is published on the Internet. Therefore, EJCCMTR needs to defray its editorial and production costs by collecting article processing charges from authors' institutes for research funding bodies. EJCCMTR is committed to keep its open access publication charges at a minimum level.

EJCCMTR invites contribution in the following categories:

- Original research work.
- Original Clinical Observation
- Detailed Case study
- Review articles, comprehensive review on a topic.
- Survey on a topic
- Self-contained articles on ongoing research.
- Technical Notes.
- Medical History with authentic observation

EJCCMTR is committed to publishing only original work including research which has neither been published elsewhere, nor is under review elsewhere. All manuscripts that are found to have been plagiarized from a manuscript by other authors, whether published or unpublished, will incur plagiarism sanctions.

Conference papers are very welcome; however it is imperative that these papers are significantly revised and updated. Actually, such papers have a better chance of acceptance if their merits were already pre screened at high quality conferences.

There is a risk that the same material is published twice, so special care should be taken. We would advise authors to change the contents of the paper to that extent that slight modification of the manuscript title would be justifiable.

Manuscript should be submitted at **https://www.iifard.org/web/AmYIZQRkBj8=/EJCCMTR**
All correspondence should be made to **editor@iifard.org trustforacademic@gmail.com**
Phone no./WhatsApp: +918005351780, +67581509800

Welcome to Eurasian Journal of Comprehensive Clinical Medicine and Translational Research!!!

Eurasian Journal of Comprehensive Clinical Medicine and Translational Research
©EJCCMTR
Vol. 1 Issue 1

Analysis of Water Pollution in Pond Harahi and Gangasagar Situated in Darbhanga Town

Maryam Parween
Department of Biotechnology, J.M.D.P.L College L.N.M.U. Darbhanga, Bihar, India.
Subhra Sucharita Sahoo
Department of Biochemistry, School of Medical Sciences & Research, Sharda University, Greater Noida, Uttar Pradesh, India.
Suni Ann Thomas
Department of Biochemistry, Al Azhar Medical College, Thodupuzha, Kerala, India.
Shailza Verma (Corresponding Author)
Department of Biochemistry, School of Medical Sciences & Research, Sharda University, Greater Noida, Uttar Pradesh, India.
Arindam
Department of Botany, J.M.D.P.L College, L.N.M.U Darbhanga, Bihar, India.
S.R. Kumar
University Department of Chemistry, C.M Science College, L.N.M.U, Darbhanga, Bihar, India.

Abstract*: This paper analyses the pollulants present in the water of the ponds HARAHI and GANGASAGAR situated in the mid of Dharbhanga town. The parameters employed for the study were temperature, T.D.S, pH conductivity, calcium& Magnesium bicarbonate chloride, carbonate, Na and K. The water samples of these ponds were studied and have been observed that there was a slight fluctuation in the physico, chemical and biological parameters. The present study reveals the water quality of these two ponds with respect to W.H.O. (Patil & Patil, 2010)*

Keywords: Pond water, Physico-chemical biological effluents, Parameters, water quality

1. Introduction

The direct linking of water quality with man-kind is very much concerned with the human welfare, such as health as well as the population of living animals (Raja et al 2002) and is extremely essential for the survival (Patil et al 2001) of all living organism. The problems of water quality (WHO guideline 1993) are much more acute (ALPHA standards 1995) in the areas which are densely populated, thickly industrialized successful use of pesticides detergents and fertilizers which shallow ground water level. Water quality is further affected due to over escalation of resources and improper waste disposal practice (Chapolikar et al 2010). Considering these aspects of water in ponds (Harahi &Gangasagar) an attempt (Trivedy and Goel 1984) has been made to assess the physico-chemical and biological effluents.

2. Experimental Material and Method

Darbhanga is an old town and has proud historical palace due to kingdom and culture (Raja et al 2002). The geographical area. It is bounded in southeast of Madhubani & Nepal. Muzaffarpur in the west, Patna in southwest with river the Ganga, South east has Samastipur. Darbhanga is densely populated. The sex ratio 965 female per 1000 males. There are mainly three urban areas namely Benipur, Benipatti and Biraul people with basic occupation (Chapolikar et al 2009). Agriculture, Aquaculture especially Makhana& Fisheries, utilize pond water i,e ground water for farming domestic and many other purposes. Literature survey reveals (Chapolikar et al 2011) that no water quality management studies have been carried in this region; it is why? This present paper was planned and taken into consideration.

The physico-chemical analysis of Harahi & Gangasagar water samples, like pH, Temperature, conductivities, calcium, Magnesium, bicarbonate (Nisha et al 2010, Mahananda et al 2010) chloride, total

hardness, $CaCO_3$, K, Na and biological activities that were compared with standard values recommended by WHO (Patil et al 2001, Jha et al 2012)

All the samples were collected in bottle having tight stopper. Before sample collection, bottles were well cleaned thoroughly. After sample collection in the bottle, it was then closed with stopper immediately. Water samples were collected from depth of one meter from surface in Harahi & Gangasagar ponds. Each sample bottles were clearly labeled with a permanent marker and relevant details. All the samples were preserved by diluting with nitric acid and were analyzed within 24 to 48 hours. Monthly investigations (Nisha et al 2010) were performed during the year January to December.

The analyses of pond water were carried by instrument and non-instrument method pH, temperature, conductivity, TDS, were determined by water analysis kit. Hardness, Na, K, Ca, Mg, bicarbonate chloride, and all other parameters were performed by procedure mentioned in APHA (WHO guideline 1993). Elemental analysis was determined by digital flame photometer. The reagents employed for the analysis were AR. Grade and double distilled water was used for preparation of solutions. Biological analyses were also performed by using standard conventional methods.

3. Results and Discussions

The physico-chemical analysis of the pond water (Harahi & Gangasagar) was carried out their average values of seasonal variation are presented in the Table No.1.

Temperature: It is very important for effect in chemical and biological reactions in the organism living in water. In the present study the temperature varied within the range of 18^0C to 37^0C.

pH: pH is the measure of intensity of acidity or alkalinity of water. All chemical and biological reactions are directly dependent upon the pH variation 5.6 to 10.7. Maximum pH was recorded in rainy season and minimum in winter. The pond water was recorded and confirmed that it is basic in nature.

Conductivity: The conductivity of water depends upon the concentration of ions and their nutrient status. Based on electrical conductivity values the water quality can be classified as poor, medium or good. In the present investigation maximum conductivity was observed in rainy season and minimum conductivity in the winter.

Chlorides: Chloride contents in pond water are largely influenced by evaporation and precipitation. Chloride ions are generally more toxic in comparison to sulphates in most of the plants and are best informer of pollution. Chloride concentration in pond water samples varied from 218-742 mg/liter to 378-852 mg/liter.

Hardness: Hardness is the properties of water which prevent leather formation with soap and increases the boiling point of water. Hardness of water mainly depends upon the amount of calcium or magnesium. The range of concentration of major constituent is shown in Table no.1

Biological pollution: It is due to discharge of bacteriological impurities. This is caused by the presence of pathogenic bacteria making water, dangerous for human consumption and health. The pathogenic bacteria are generally inherent in the coli acrogenous or coliforn group of bacteria of which B. coli or E. coli is important.

The E. coli bacteria inhibit the intestinal tracts of warm blood animals and human beings. They appear in very large number in their daily fecal discharge and also in crude sewage along with the medical wastes,

industrial wastes along with the drain water discharge of the house. They are harmful and their presence indicates the presence of other bacteria like typhoid bacillus etc.

	Chemical Parameter of Pond Water	Average value for Harahi Pond			Average value for Gangasagar Pond		
		Summer	Rainy	Winter	Summer	Rainy	Winter
1.	pH	8.78	10.12	7.6	8.9	10.15	7.46
2.	Specific Conductance	550-2500	578-2800	560-2800	536-2600	565-2810	556-2620
3.	Calcium in mg/L	19.85	20.12	18-60	19.85	20.15	17-64
4.	Magnesium mg/L	10-112	16-112	7-118	11-120	17-116	8-109
5.	Chloride in mg/L	19-432	20-461	18-456	19.5-435	21-470	17-476
6.	Total Hardness in mg/L	196-360	195-362	194-318	196-358	195-956	195-355
7.	Na in mg/L	69-74	93-95	40-59	70-76	88-90	70-89
8.	K in mg/L	35-275	37-278	35-267	35-274	37-277	36-272
9.	COD in mg/L	118	120	117	118	119	118
10.	BOD in mg/L	15	15	15	15	14	15
11.	DO in mg/L	0.4	0.2	Nil	0.4	0.3	Nil

Table no.1 Physico-chemical analysis of the pond water

4. Euthrophication

Increase in biological productivity of water body because of nutrient enrichment from natural or man-made sources is turned as eutrophication productivity in water is controlled by phosphorus nutrients from human excrements and detergents. It has been reported that human excrement provides 1 to 1.2 lbs phosphorus per person annually whereas contribution from detergents is 3.3 lbs of phosphorus per person. Thus detergents are most suitable sources of nutrients.

Both ponds water (Harahi & Gangsagar) has approximately the same value of euthrophication.
Taste and odour of water is due to dissolved organic matter due to industrial, medical or due to micro-organism such as algae growth.

5. Conclusion: The study was undertaken to assess the quality of pond-water samples (Harahi & Gangasagar situated in Darbhanga town) were carried out monthly considering the three seasons, summer, Rainy & Winter. The analysis of water samples was performed using the above parameters. The results obtained from analysis revealed that Gangasagar pond water as well as Harahi pond water is not suitable for drinking purposes but are more effective for agriculture and aquaculture activities (Patil et al 2001, Mahananda et al 2010, Jha et al 2012, Suryakant et al 2014, Kumari et al 2011).

Acknowledgement: *The authors are highly obliged and thankful to university department of Biochemistry, School of Medical Sciences and Research, Greater NOIDA, U.P especially to H.O.D. for providing facilities for tests and data.*

References:

1. V Patil and PR Patil. 2010. Physicochemical Analysis of Selected Groundwater Samples of Amalner Town in Jalgaon District, Maharashtra, India. Journal of Chemistry 7(1):111.
2. Raja R, Sharmila L, Princy M, Christopher G. 2002. Physico- Chemical Analysis of Ground Water Samples of Selected Districts of Tamil Nadu and Kerala. Indian J Environ Prot, 22(2): 137.

3. PR Patil, SR Badgujar, AM Warke 2001. Evaluation of Ground Water Quality in Ganesh Colony Area of Jalgaon City. Orient J. Chem 17(2): 283.
4. 1993. W.H.O guidelines for water quality-1 recommendation, 2nd Geneva WHO. Source Internet search. https://digitallibrary.un.org/record/150780?ln=en.
5. APHA 1995. Standard method for the examination of water and wastewater 29: 179.
6. A Chapolikar, J Bharad, B Madje, M Ubale 2010. Microbiological and Physico-Chemical analysis of Ground Water from Thane-Belapur Industrial Area, Mumbai, India. Asian J. Research Chem 3(1):102-105.
7. RK Trivedy, PK Goel 1984. Chemical and Biological Methods for Water Pollution Studies. Environmental Publications, Karad:1-22.
8. A Chapolikar, J Bharad, B Madje, F Chavan, M Ubale 2009. Assessment of Physico-chemical status of ground water samples of Bhoom area of Marathwada Region, India. Int. J. Chem Sci 7(1): 475-480.
9. A Chapolikar, J Chamargore, J Bharad, M Ubale 2011. Assessment of Physico-chemical status of ground water samples of Paranda area of Marathawada Region, India. Biochemical science 1(1).
10. Nisha A, Vineetha C, Dhanya V, Sreelata KP 2010. Asian Jour of Chem & Env. Res 3(3): 92-94.
11. MR Mahananda, BP Mohanty, NR Behera 2010. Physico-chemical analysis of surface and ground water of Bargarh district, Orissa, India. IJRRAS 2(3): 284-295.
12. D Jha, M Singh, J Jadoun 2012. Assessment of Physico-chemical Status of Groundwater Samples of Dholpur District, Rajasthan, India. International Journal of Chemistry 14 (1): 103.
13. Suryakant B, Kumar K, Bhupendra N, Kumar SR 2014. J chem 16(1): 117-120.
14. P Kumari, SK Pravin, M Kumar, SR Kumar 2011. Physico-chemical studies of underground water of Darbhanga Raj campus. J chem 13(2): 477-480.