Journal of Plant Science & Research



Volume 12, Issue 2 - 2025 © Archana Pandey. 2025 www.opensciencepublications.com

Study of Physico–Chemical Charactertics of Jhumka Dam; District Korea Chhattisgarh

Research Article

Archana Pandey*

Department of Botany, Govt R.P.S.D.P.G. College, Baikunthpur (CG.), India

*Corresponding author: Dr. Archana Pandey, Department of Botany, Govt. R.P.S.D.P.G. College, Baikunthpur (C.G.), India. Email id: archanami159@gmail.com

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Article Information: Submission: 15/04/2025; Accepted: 22/05/2025; Published: 27/05/2025

Abstract

The paper deals with the physico – chemical status of water quality of Jhumka dam in korea dist. The purpose of present study was undertaken as first step toward monitoring the water quality for the assessment of pollution level. The pH ranges between 7.2 to 8.5, whereas dissolved oxygen (DO), free carbon dioxide (CO₂), BOD, alkalinity, dissolved solids and chlorides ranged between 4.4 to 6.5 mg/l, 8.8 to 2.4 mg /l, 18.5 to 36.5 mg/l, 18.3 to 20.2 mg/l, 175.1 to 414.2 mg/l and 19.1 to 42.7 mg/l respectively.

Introduction

Jhumka dam is 5 km away from the railway station of Baikunthpur, the headquarters of Korea dist. This dam looks exactly like the sea. As far as the eyes go, there is water. The issue of pollution of water of Jhumka damat district due to Jhumka dam at korea district due to sewage an industrial waste has assumed a great significance and present stydy was undertaken as first step toward monitoring the water quality for the assessment of pollution level. Earlier we have worked on Jhumka dam in korea dist. Most of the civilians are being used as sites for disposal of domestic sewage and their waste leading the grave problem of water pollution of Jhumka dam in korea dist.

Jhumka dam important sources of fresh water are being used for drinking, bathing, recreation, fisheries and irrigation almost all dams of India facing acute water pollution. The Jhumka dam one of the polluted dams of the korea dist. The sewage and Chemical (as detergent, Soap) waste are being discharged into it throughout its course. As such, this investigation was done to assess the water quality of this dam from May 2024 to December 2024.

Materials and methods

The water samples were collected from four sampling station of

Jhumaka dam. Sampling stations in a stretch of about 20.80 squarkm. were set to study the various physico chemical parameters. Samples were collected from different samplings area. Physico- chemical parameters such as temperature, pH and free and CO_2 were done at the spot while other chemical parameters are analyzed in a well-equipped laboratory of the Botany Department of Govt. R.P.S.D.P.G. College Baikunthpur (C.G.) following standard Methods.

Result and Discussion

The samples were collected in two seasons winter and summer from May 2024 to December 2024. The data on physico – chemical parameters of the four sampling stations has been given in Table 1. The maximum temperature recorded during the summer was 31.50C and the lowest was noted in the month of December (8.00C). The pH ranged between 7.2 to 8.5 but the highest pH (8.5) was observed at Ghat 1 and Ghat 2 during summer.

The value of Dissolved oxygen was recorded between 4.4 to 6.5 mg/l. The highest value observed was at Ghat 3 in monsoon and the least concentration of DO was found at Ghat 1. The low DO at Ghat 1 during summer indicates the presence of heavy organic waste which threatens the survival of aquatic organisms, at a minimum of 5mg/l.

JOURNAL OF PLANT SCIENCE & RESEARCH

Table 1: Seasonal Variation in the physico-chemical characteristies of the Jhumkadam dist. Korea, May 2024To Dec. 2024.

Parameters	The ghat located on the bank of dam (G1)			The ghat situated at the turn of dam (G2)			Ghat situated along the bushes and trees (G3)			Ghat situated on the banks of the village and town (G4)		
	S	М	w	S	М	W	S	М	W	S	М	W
Temperature PH DissolvedO ₂ (Mg/I) Free CO ₂ BOD (Mg/I) Alkalinity (Mg/I) Dissolved Soild (Mg/I) Chloride (Mg/I)	30.5 8.3 4.4 20.0 30.0 200.0 258.1 24.2	27.5 7.6 6.2 8.3 22.0 190.0 219.0 21.0	10.0 8.0 5.3 11.3 22.4 201.5 180.3 20.0	31.0 8.5 5.0 22.5 35.0 193.0 414.0 32.3	25.0 7.2 6.0 9.3 25.0 192.0 408.0 19.1	11.0 7.7 5.4 10.4 36.5 205.1 387.0 22.1	29.5 8.5 5.2 24.0 32.1 198.5 331.6 42.7	20.0 7.5 6.3 8.8 18.5 183.0 229.1 20.5	8.0 7.8 6.0 11.6 35.1 202.0 193.3 26.0	31.5 8.2 4.5 21.0 26.8 186.0 291.2 40.0	23.5 7.3 6.5 9.2 30.0 192.0 175.1 22.1	9.0 8.0 5.3 12.5 32.0 199.0 177.4 24.0

S= Summer, M= Monsson, W = Winter

*An average of two month in each season has been given

Oxygen is essential for fish fauna. Free CO_2 exerts certain specific effects upon aquatic biota. In the present study the CO_2 was found to be inversely proportional to the oxygen. The minimum BOD 15.5 mg/l, was recorded at Ghat 3 during monsoon whereas the maximum BOD (36.5 mg/l) was noted at Ghat 2 during winters. The BOD ranged between 26.8 to 35.0 mg/l in summer. 18.5 to 30.0 mg/l in monsoon and 22.4 to 36.5 mg/l in winter.

The total alkalinity showed fluctuation from 183.0 to 202.0 mg/l being minimum in monsoon and the maximum daring's winters. The alkalinity is frequently increased by the discharge of sewage and as the volume of water decreases particularly during summer, the alkalinity gets elevated. The total solids raged between 175.1 to 414.2 mg/l and the highest value was noted at Ghat 2. The greatest source of chlorides in freshwater is sewage and the chemical waste the detection of which is done for assessing the amount of sewage. In the present investigation the chlorides were 24.2 to 42.7 mg/l during summer and were reduced during monsoon from 19.1 to 22.1 mg/l.

Normally, water of the dam is suitable for drinking after disinfections. The study also points out toward the need of

monitoring the Dam of water quality on long terms basis as it comes under influence of a variety of polluting factors like non-point source, sewage, cremation grounds, slaughter houses and industrial zones.

Seasonal Variation in the physico-chemical characteristies of the river Bebus water collect at Sagar District during May to Dec. 2004.

References

- Waghre A (2020) Limnological studies on Godavari basin at Nanded, Maharashtra India, Ph. D thesis, Maharashtra University, Aurangabad.
- Kordarkar MS (1992) Methodology for water analysis public. 2 Indian association of aquatic biologists (IAAB), Hyderabad Pp: 2-50.
- APHA (1995) Standard Methods for the examination of water waste water, American Public Health Association Inc., New York Pp: 874.
- M.B. Rao Mukhopadhyaya, S.K. Muloy,(1981) E.V.&Siobtigi,S.Z.BullZoo. Serv India 4 : 61-66.
- 5. Mishra RK, Dubey SC (2023) Fresh water Availabillity and It's Globle Challenge.
- Joshi H, Al Obaidy AHMJ, (2014) Hydrological and environmental assessment of urban growth in a sub – tropical town in India. Water science and technology 70: 1721-1728.