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PHYSICO-CHEMICAL ESTIMATION OF JHALAMAND FRESH WATER RESERVOIR, JODHPUR (RAJASTHAN)

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Physico-chemical estimation of Jhalamand water reservoir of Jodhpur was studied during 12 months from February, 2010 to January, 2011 and some parameters (temperature, pH, dissolved oxygen, alkalinity, free carbon-di-oxide, nitrate and phosphate) were estimated. Nitrate and phosphate fluctuate between 0.72 to 2.58 and 3.42 to 7.08 in the pond, respectively and pH ranged from 6.8 to 8.4 and dissolved oxygen was measured 1.04 to 5.88 mgm/l. The pond is not receiving any type of waste and the water is used for drinking and other house hold purposes by the local inhabitants.

Keywords: Alkalinity; Fluctuate; Parameter; Physico-chemical.

Ever since the pre-historic times, man is intimately associated with water and it has been conclusively proved by the evidene of post civilization that all historic human settlement were around inland fresh water resources. The inland water includes mainly fresh water bodies. In India, an area of about 6.5 million hectare is covered by inland water bodies including 27,359 km^2 of reverine systems. Such limnological work is quite megre and some studies have been conducted[1-6]. The prolems of wetlands have also been reviewed by Ahmad[7] and Gaur[6].Considerable work has been done on water bodies in various parts of world but a little in western Rajasthan. Hence, an attempt has been done to study the physico-chemical estimation of Jhalamand water reservoir.

The physico-chemical characteristic of water is an important determination of the aquatic system. Their characteristics are greatly influenced by the climatic, vegetation and general composition of water. The investigated fresh water pond at Jhalamand is situated 10 Km far from Jodhpur city with 26^0 17' N to 73^0 01' E. The pond was built in 1940-41. It has an area of about 243.80 square feet with the maximum depth of 30 feet. Investigation was carried out for a period of 12 months. Water samples were collected at monthly intervals from a fixed site. Temperature by simple thermometer, pH by portable pH meter, dissolved oxygen by modified Winkler's method - APHA, free carbon-di-oxide by Welch method[8], alkalinity[9], nitrate[10] and phosphate[11] were estimated.

The results obtained by physico-chemical analysis of all samples are given in Table 1. The present study showed that the ambient and water temperature has wide variation with 17.5 to 36.9^{0}C and 14.8 to 34.5^{0}C, respectively. These variation in surface water temperature in some water bodies of this region is in comformity with the finding of Vyas and Nama[3], Rawat[12] and Gaur[6].

pH value did not show much variation at the pond. It fluctuated from 6.8 to 8.4 which is in accordance with the observation of Vyas and Nama[13] and Gang[14] .

In Jhalamand pond dissolved oxygen was recorded in range 1.04 to 5.98 with the maximum in August and minimum in the month of May. Dissolved oxygen is one of the abiotic factor indicating the quality of water. This is similar to the finding of Dwivedi and Pandey[15] and Sharma and Sarang[16].

Free carbon-di-oxide is found to be present in the pond. It fluctuate between 18 to 38 in the absence of the months March, June, July and October, respectively, which is in accordance with the observation of Rawat[12] and Gaur[6].

In present study carbonate was noticed only in the months of March, June, July and October. And bicarbonate was noticed with in the limit 68 to 104 mgm/l. The finding of carbonate in the reservoir agree with Vyas and Nama[3].

The nutrients study of nitrate and phosphate were estimated. Nitrate concentration was found to range between 0.72 to 2.58 mgm/l and phosphate concentration was noticed 3.42 to 7.08 mgm/1, which is in accordance with the finding of Mirdha[17], Jakhar and Rawat[18].

The present study leads to the following conclusion -

- Jhalamand pond is pollution free receiving no domestic or industrial waste.
- The study of such water bodies in the area will help for

Table 1.

Months	Air Temp.	Water Temp.	pH	$D.O_2$	CO_3	HCO_3	NO_3	PO_4	CO_2
Feb.	21.60	19.50	7.80	4.02	Abs.	86	0.96	5.68	24
Mar.	28.80	26.60	8.00	2.62	19	100	0.72	7.08	Abs.
Apr.	33.80	32.20	8.40	3.55	Abs.	74	1.28	6.48	29
May	36.40	34.50	7.80	1.04	Abs.	88	2.18	5.48	27
June	34.40	31.80	7.60	5.08	21	102	2.23	4.98	Abs.
July	32.50	30.40	7.50	2.84	40	76	2.58	4.36	Abs.
Aug.	30.00	27.50	7.30	5.98	Abs.	82	1.88	4.82	21
Sept.	28.70	26.20	7.70	4.12	Abs.	68	1.56	3.42	23
Oct.	28.70	25.80	7.30	3.68	33	72	1.86	4.02	Abs.
Nov.	23.30	21.50	7.20	3.24	Abs.	92	1.56	3.76	38
Dec.	17.50	14.80	6.80	2.84	Abs.	98	1.80	3.58	29
Jan.	18.20	15.80	7.20	1.90	Abs.	104	2.22	3.46	18

better management and water conservation.

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