

# Periodic Research

## Study of Physicochemical Parameter of Benisagar Lake Panna (M.P.)



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### Abstract

The physicochemical factors include transparency, air, water, Temperature, pH etc. Benisagar lake is very ideal for present study. The physicochemical characteristics of the fresh water body are the factors which influence the productivity of the lake and have their specific role in the changes of aquatic environment.

**Keywords:** Physicochemical Parameter, Benisagar Lake.

### Introduction

In the last two decades, extensive research work is being done on the various physico-chemical and biotic characteristics of the lake and environment. Some of the important contributions are Ciosoceri (1968, 1975), Williams and Clesceri (1971, 1972 and 1973).

Each factor propounded its effect directly or indirectly or a contributor to the total of the circumstances inside a water body (Welch 1933).

### Material and Method

Bimonthly samples of the surface water were collected from the five fixed experimental sides of the lake for the qualitative analysis of the biotic components. Surface water samples for the quantitative analysis of physico chemical and biotic factors were collected from a fixed station. Sampling time was fixed (8A.M. to 9A.M.) in the morning and was conducted on 15<sup>th</sup> and 30<sup>th</sup> of each month accordingly.

Water temperature was recorded by a centigrade mercury thermometer, transparency was determined by standard black and white stripped disc of 20 on dia meter and the pH values were estimated by using the glass electrode pH meter.

In the schedule of chemical parameters only three gases Oxygen, Carbondioxide and Ammonia Nitrogen were considered for the quantitative analysis in the present study. The quantitative analysis of chemical parameter were detected, by using the standard methods.

The obtained values of physico chemical and biotic parameter were treated statistically to record the correlation coefficient and the significant levels.

### Observation

In this observation chemical & physical factor shown in Seasonal Variations in different season.

### Physical Factors

#### Seasonal Variations in Physical Parameters

S. No.	Month	Water Temperature in °C	Air Temperature in °C	pH	Transparency in cm
1.	July 30 <sup>th</sup>	29.7	28.6	8.4	19.3
2.	August 15 <sup>th</sup>	29.2	29.9	8.3	21.0
3	August 30 <sup>th</sup>	28.6	28.7	8.3	21.7
4	September 15 <sup>th</sup>	28.4	28.5	8.1	20.3
5	September 30 <sup>th</sup>	28.4	27.6.	8.1	23.4
6	October 15th	27.1	24.5	8.0	22.2
7	October 30 <sup>th</sup>	26.2	24.5	7.9	21.7.
8	November 15 <sup>th</sup>	24.3	23.2	7.6	21.6
9	November 30 <sup>th</sup>	22.6	20.0	7.9	22.0
10	December 15 <sup>th</sup>	20.4	18.2	8.1	23.1
11	December 30 <sup>th</sup>	22.2	19.4	8.3	23.2
12	January 15 <sup>th</sup>	22.1	19.2	8.3	23.2
13	January 30 <sup>th</sup>	22.0	19.1	8.2	23.5

### Transparency

Water transparency and its seasonal changes were noted in the present water body that was gradual but slow. It had shown an increasing

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trend after July but light decrease was noted due to the local rains in different months.

The minimum transparency was recorded in the month of July (19.3 cm.) while the maximum was noted in January (23.5 cm)

## Water Temperature

Surface water temperature ranged from 20.4°C to 29.7°C. It shown a continuous decreasing trend from July to January. The seasonal changes of water temperature were distinct but slow.

## Air Temperature

The air temperature on the lake side was also recorded during the collection of samples. It has shown the trend similar to water temperature. It fluctuated from 18.2°C to 29.9°C. The minimum was obtained in December while the maximum in August.

## p<sup>H</sup>

It is the factor which represent the alkaline, neutral or acidic condition of the water that is determined by the hydrogen and hydroxylions. p<sup>H</sup> of the Benisagar lake varied from 7.6 to 8.4. The maximum and minimum were recorded in the month of July and November respectively. It is clear from the above pH range that the water of the present lake was alkaline throughout the study period.

## Chemical Factors

Seasonal verifications in biotic and chemical contents are shown in Table.

## Dissolved Oxygen

It fluctuated from 3.6 ppm to 10.6 ppm. Continuous increasing trend was noted in the dissolved Oxygen contents. The maximum concentration was recorded in the month of January while the minimum in July.

## Free Carbondioxide

Free Carbondioxide saturation ranged from 3.6 ppm to 5.9 ppm. Sudden increase in carbondioxide concentration was noted in the month of August and January. The maximum and minimum values were obtained in the month of August and December respectively.

## Ammonia Nitrogen

The concentration of Ammonia Nitrogen was not in uniform pattern, Sudden increase in its concentration was obtained in the month of October and January. Decreasing trends were noted from July to September (0.84 to 0.33 ppm) and October to December (0.30 to 0.34 ppm) It ranged to be from 0.33 to 0.54. The minimum in September and maximum in July was noted.

### Seasonal Variations in Chemical Contents

S. No.	Month	Dissolved Oxygen ppm	Free Carbon dioxide ppm	Ammonia Nitrogen ppm
1	July 30 <sup>th</sup>	3.6	5.6	0.54
2	August 15 <sup>th</sup>	4.6	5.9	0.52
3	August 30 <sup>th</sup>	4.8	5.7	0.43
4	September 15 <sup>th</sup>	5.4	5.3	0.33
5	September 30 <sup>th</sup>	7.8	5.2	0.35
6	October 15 <sup>th</sup>	7.9	4.5	0.38
7	October 30 <sup>th</sup>	8.6	4.5	0.36
8	November 15 <sup>th</sup>	9.1	4.4	0.35
9	November 30 <sup>th</sup>	9.5	3.7	0.35
10	December 15 <sup>th</sup>	9.8	3.6	0.34

11	December 30 <sup>th</sup>	10.1	3.8	0.36
12	January 15 <sup>th</sup>	10.4	4.6	0.46
13	January 30 <sup>th</sup>	10.6	5.2	0.48

## Result and Dicission

A brief account of phytagraphy and geology of Panna has also been given.

The physico chemical factors include transparency, air and water Temperature, pH free carbondioxide, dissolved oxygen and Ammonia Nitrogen. The physico chemical characteristics of the fresh water body are the factors which influence the productivity of the lake and have their specific role in the changes of aquatic environment.

In physico chemical factors, the minimum and maximum oxygen values ranged from 3.6 ppm and 10.6 and Ammonia Nitrogen values ranged from 0.33 ppm to 0.54 ppm.

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