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# Water Quality Assessment of Kangrali Water Body of Belagavi

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**ABSTRACT:** Water is a main natural resource, a basic need for life. Pollution of water bodies is one of the areas of major concern to the environmentalists. Water quality is an index of health of the organisms. Due to overpopulation almost all the water bodies are completely changing into residential areas. In the present study attempt has been made to know the water quality. Water samples were collected and brought to the laboratory for analysis. Concentrations of investigated parameters were within the permissible limits, but chloride values were more in the summer is due to the anthropogenic activities such as washing animals, washing vehicles, bathing, etc. It is also observed that most of the houses are having pit latrines that may be the cause for slight increase in the chloride values.

**KEYWORDS:** Kangrali, Physico-chemical parameters, water quality, correlation, water assessment.

## I. INTRODUCTION

Water is one of the three major components of the environment, there exists a close linkage between the quality of water and the environment which bears an almost importance for ecosystem. Natural bodies of water are not absolutely pure as various organic compounds and inorganic elements remain in dissolve form. The physical and chemical quality of water vary according to the basin depth, shape size, penetration of light, temperature, pH and nature of soil etc. The quality of drinking water is of vital concern for human health and life. Fresh water supply provides water for domestic use for population. Water resources are critical importance to both natural ecosystem and human development. It is essential for domestic purposes for cleaning, cooking bathing and in agriculture for irrigation, power generation fisheries etc. Acquiring potable water is day to day struggle for most of the people, Indian water bodies are being progressively degraded. Water quality of a system is influenced by both natural and anthropogenic effects which include local climate, irrigation practices, planned water management etc. A healthy lake or pond or water body could conserve natural and social balance by contributing healthy environment of its location.

In the present scenario urban lakes/ponds are under direct threat of qualitative and quantitative degradation by means of pollution. Anthropogenic activities such as domestic sewage, run off from agricultural land, laundering increases pollution load and alters physic-chemical properties. Variation in these properties influence the distribution and richness of the aquatic organisms.

In the last few decades, there has been a growing necessity for conservation our sources. Assessment of water quality is based on the physico-chemical parameters. The healthy aquatic system supports a varied and rich community of organisms [1]. City planners were very much aware about the fact that lakes can improve the life quality of human civilization [2]. Thus they have usually constructed big lakes in almost all developed cities for great many purposes such as drinking water source, bathing and cleaning, agricultural irrigation, fishery, sustainable use for industry, boosting of natural ground water level, aesthetic value and many other livelihood. A healthy lake eco-system could conserve natural and social balance by contributing healthy environment of its location. Nowadays naturally existing dynamic equilibrium of water bodies like rivers, lakes and estuaries are affected by the human activities[3,4&5].

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Several researchers made investigations on water resources and usefulness for various purposes. The hydrobiological studies on the fresh water bodies located in Tamil Nadu [6], Kerala [7], Madhya Pradesh [8], Karnataka [9 & 10] North West [11].

## II. MATERIALS AND METHODS

The observation of water quality parameters of Kangrali was made between August 2007 and July 2008. Kangrali water body is situated 5 Kms away from the west of the Belagavi city and lies in between 15° 52' North latitude and 74° 29' East longitude at about 747 meters above the sea level. The main source of water is rain and surface drainage. The water body having a small surface area of 3 hectare and the maximum depth is about 4 to 5 meters. Four sites were selected for collection of water samples, they are 4 around water body.

Samples were collected in 2 litre PVC containers and were analyzed for the 3304 physico-chemical parameters. For the analysis of physico-chemical factors the surface water was collected from fixed spots of the tank every month between 6 am to 8 am for a period of one year. Physical parameter such as temperature and pH were analyzed at site by thermometer and broad range pH paper. Chemical parameters such as total hardness, chloride, TDS, sulphate, DO, BOD, Na, K and iron were analyzed in the laboratory by following procedures of standard methods. DO by using Winklers azide modified method, total hardness by EDTA titrimetric method, sodium and potassium by flame photometric method, chloride by using argentometric method. The results were evaluated in accordance with the standards prescribed under Indian standard drinking water specifications and WHO standard. Chemical and biological methods for water pollution by [12]. The present study was undertaken to investigate the water quality of the Kangrali water body. The results are discussed in the light if available literature with comments on recorded ecological correlations.

## III. RESULTS AND DISCUSSION

The data on physico-chemical analysis has been presented in Table 1, seasonal variations of physico-chemical parameters and simple correlation coefficient test is presented in table 2 and 3 respectively. The physico-chemical factors may vary substantially at different seasons of the study period, and vary place to place and time to time.

Temperature is an important physical parameter of the water body which regulates natural process within the environment and governs physiological function in organism. Temperature is basically important parameters and affects on the chemical and biological in the organisms of water [12]. According to [13] fast microbial decomposition followed by release of energy could one of the reasons for increased temperatures.

Water temperature fluctuate between 21°C to 29°C during limnological studies of Kangrali water body. Highest temperature recorded in May and lowest temperature in June. John Mohammad [14] recorded 21°C to 30.9°C in Wyrta reservoir of Telangana and [15] observed that water temperature fluctuate between 21°C to 29°C during limnological studies of Udaipur lakes. Seasonally more temperature recorded in summer. It is noticed that water temperature is always lower than that of air temperature due to various reasons like gases in the air, humidity, dust and other colloidal particles. Statistically it significantly correlated with TDS ( $r=0.847$ ), Total hardness ( $r=0.746$ ), Calcium ( $r=0.778$ ), Na ( $r=0.833$ ) and negatively correlated with SO<sub>4</sub> ( $r=-0.610$ ) and Turbidity ( $r=-0.380$ ).

pH is most important in determining the corrosive nature of water. Lower the pH value higher is the corrosive nature of water. pH was positively correlated with electrical conductance and total alkalinity [16]. As most of the chemical and biochemical reaction are influenced by the pH it is of great practical importance. pH values were found between 6.9 to 7.9. It is indicating that it possesses alkalinity nature throughout the study period. The high values may be due to the sewage discharged from agricultural fields and higher temperatures. PH values were important for plankton growth. The pH of water effects many chemical and biological process in water. The largest variety of aquatic animals prefer a range of 6.5- 8.0.