INTRODUCTION

Water is the most important in shaping the land and regulating the climate. It is one of the most important compounds that profoundly influence life. The quality of water usually described according to its physical, chemical and biological characteristics. Rapid industrialization and indiscriminate use of chemical fertilizers and pesticides in agriculture are causing heavy and varied pollution in aquatic environment leading to deterioration of water quality and depletion of aquatic biota. Due to use of contaminated water, human population suffers from water borne diseases. It is therefore to check the water quality at regular interval of time. Water is one of the most important compounds to the ecosystem. Better quality of water described by its physical, chemical and biological characteristics. But some correlation was possible among these parameters and the significant one would be useful to indicate quality of water. Due to increased human population, industrialization, use of fertilizers in agriculture and man-made activity. The natural aquatic resources are causing heavy and varied pollution in aquatic environment leading to water quality and depletion of aquatic biota. It is therefore necessary that the quality of drinking water should be checked at regular time interval because due to use of contaminated drinking water, human population suffers from a variety of water borne diseases. It is difficult to understand the biological phenomena fully because the chemistry of water reveals much about the metabolism of the ecosystem and explain the general hydro biological relationship. The physicochemical parameters of water and the dependence of all life process of these factors make it desirable to take as an environment. Physicochemical analysis of drinking water of Bagalkot district of Karnataka state, India has been investigated intensively\(^1,2\). Bore well water is generally used for drinking and other domestic purposes in this area. The uses of fertilizers and pesticides, manure, lime, septic tank, refuse dump, etc. Are the main sources of bore wells water pollution\(^3\). In the absence of fresh water supply people residing in this area use bore wells water for their domestic and drinking consumption. In order to assess water quality index, we have reported the physicochemical analysis of bore wells drinking water. Fluoride is found in all natural water at some concentration. In ground water however low and high concentration of fluoride can occur depending upon the nature of the rocks and the occurrence of the fluoride – bearing minerals. Fluorosis has been described as an endemic of tropical climate\(^4\). The main source of fluoride intake is water\(^5\). Much of the current concern with regards to environmental quality is focused on water because of its importance in maintaining the human health and health of the ecosystem. Fresh water is finite resource, essential for agriculture, industry and even human existence, without fresh water of adequate quantity and quality, sustainable development will not be possible\(^2\).

MATERIALS AND METHODS

The Water Samples from Bagalkot, India were collected from four different stations in the morning hours between 9 to 11 am, in polythene bottle regularly for every month. The water samples were immediately brought in to laboratory for the estimation of various physicochemical parameters like water temperature and pH were recorded at the time of sample collection, by using thermometer and pocket digital pH meter. Transparency was measured with the help of secchi disc. While other parameters such as, TDS, hardness, chlorides, alkalinity, nitrite and nitrate were estimated in the laboratory by using Standard Methods as prescribed by APHA, AWWA\(^6\), Trivedy and Goel\(^7\), Kodarkar\(^8\).

Study Area

According to the 2011 census Bagalkot district, India has a population of 1,890,826, roughly equal to the nation of Lesotho or the US state of West Virginia. This gives it a ranking of 249\(^9\) in India (out of a total of 640). The district has a population density of 288 inhabitants per square kilometre (750 / sq mi). Its population growth rate over the decade 2001-2011 was 14.46 %. Bagalkot, India has a sex ratio of 984 females for every 1000 males and a literacy rate of 69.39 %. Bagalkot is the second largest district in the Belgum Division and the 15\(^{th}\) most populous district in Karnataka, India. With over 1,651,892 inhabitants of which 28.97 % were urban, Bagalkot accounts for over 18 % of the total population of the Belgum Division. Bagalkot, India has 6 taluks, comprising a total of 18 hobies and 627 villages. Of the 6 taluks, two are categorised as "More Backward Taluk" and one as "Most Backward Taluk". The district has 163 Gram Panchayats and 12 urban agglomerations.
Bagalkot, with a decadal growth rate of about 19\% is one of the
ten fastest growing districts in Karnataka, India. Over 86\%
of the population in the district is Hindu, while 11\% of thepopulation is Muslim. Jains account for a little over 1\% of
the population, while Christians account for 0.17\%.Scheduled Castes and Tribes constitute about 17\% of the
total population. Communal tensions are fairly uncommon in
Bagalkot, India.

RESULTS AND DISCUSSION

The physicochemical parameters of the Bagalkot have been
given in the Table 1. The physicochemical features of
Bagalkot water were influenced due to the discharge of
domestic waste and agriculture at discharges. pH of water
Bagalkot water ranged from 5.0 to 9. The factors like air
temperature bring about changes the pH of water. Most of
bio-chemical and chemical reactions are influenced by the
pH. The reduced rate of photosynthetic activities reduces the
assimilation of carbon dioxide and bicarbonates which are
ultimately responsible for increase in pH, the low oxygen
values coincided with high temperature during the summer
month\(^1\). Higher values of the pH at this station as
consequence of acid-forming substances such as sulfate,
phosphate, nitrates release into the river basin. These
substances as abundance in fertilizer usage might have
altered the acid-base equilibria, resulted in the reduced acid-
neutralizing capacity and hence raising the value of pH\(^2\).The
value of hardness fluctuates from 168 to 825 mg / l. High
value of hardness (825 mg / l) can be attributed to decrease in
water volume and increase of rate of evaporation of water.
Total hardness in water is the sum of concentration of
alkaline earth metal cat ion such as Ca\(^++\), Mg\(^++\). The total
hardness is the total soluble magnesium and calcium salts
present in the water expressed as its CaCO\(_3\), equivalent. Total
hardness are also includes the sulfates, chlorides of calcium
and magnesium. In most natural water the predominant ions
are those of bicarbonates associated mainly with calcium to
lesser degree with magnesium and still less with sodium
potassium. Mishra and Saxsena\(^3\), reported high values of 295
mg / lit in Ganga River. The values of chlorides range from
45 to 984 mg / l. The maximum chloride content was found
to be 984 mg / l and the minimum chloride content was
found to be 45 mg / l in Bagalkot. The higher content of
chloride in ponds may be due to animal origin like human
feciaces and sewage inflow. Chloride increases with the
increasing degree of eutrophication. Similar results were
reported by Swarnalatha and Narsing rao\(^4\). The variation in
fluoride of water ranged from a minimum of 0.2 mg / lit to a
maximum of 4.4 mg / l respectively. Fluoride at a lower
concentration at an average of 1 mg / lit is regarded as an
important constituent of drinking water\(^5\)(8). But as its high
concentration cause serious health problem in that concern it
is well below. Surface water generally contains less than 0.5
mg / lit fluoridc. However, when present in much greater
concentration, it becomes a pollutant. Iron content ranges
from 0.1 to 0.4 mg / l. Total alkalinity of the lake was varied
from 75 to 850 mg / l. Das and Chand\(^7\) recorded low
alkalinity during monsoon, which might be due to dilution
effect of rainfall. Katariya et al\(^8\) have measured maximum
value of alkalinity due to confluence of industrial and
domestic waste. Our results are in well agreement with the
findings of above authors. The values of nitrate ranged from
5 to 50 mg / l. This indicates that continuously applied the
common N-P-K fertilizer or chicken dung\(^9\) into agriculture
scheme practice during early stage of cultivations will lead
much more potential of being nitrate leached or surface run
off into the river. Nitrite content ranged from 0.01 to 1.8 mg / l.
There was no arsenic in the study area. The Sulfate ranged
from 5 to 375 mg / l. Sulfate is a substance that occurs
naturally in drinking water. Health concerns regarding sulfate
in drinking water have been raised because of reports that
diarrhea may be associated with the ingestion of water
containing high levels of sulfate. Of particular concern are
groups within the general population that may be at greater
risk from the laxative effects of sulfate when they experience
an abrupt change from drinking water with low sulfate
conzentations to drinking water with high sulfate
concentrations. Sulfate is one of the least toxic anions. The
lethal dose for humans as potassium or zinc sulfate is 45 g.
The reported minimum lethal dose of magnesium sulfate in
mammals is 200 mg / kg\(^10\). Sulfate doses of 1000 to 2000 mg
(14 to 29 mg / kg bw) have a cathartic effect on humans,
resulting in purgation of the alimentary canal\(^11\). Sulfate in
drinking water currently has a secondary maximum
contaminant level (SMCL) of 250 milligrams per liter (mg /
L), based on aesthetic effects (i.e. taste and odor). This regulation is not a federally enforceable standard, but is provided as a guideline for States and public water systems. EPA estimates that about 3% of the public drinking water systems in the country may have sulfate levels of 250 mg/L or greater. Dehydration has also been reported as a common side effect following the ingestion of large amounts of magnesium or sodium sulfate.22

CONCLUSION
Physicochemical analysis yields information about the possible physicochemical causes that may influence the quality status of the natural resource “water”.

ACKNOWLEDGEMENTS
Authors are also thankful to management and staff of chemistry dept for valuable assistance during sampling activities.

REFERENCES
16. NM Kugali and MS Yadawe. IJABPT 2010; I(2).

Cite this article as:

Source of support: Nil, Conflict of interest: None Declared