



PHYSICO-CHEMICAL WATER ANALYSIS OF TWO DIFFERENT COUNTRIES ACROSS THE GLOBE – A COMPARATIVE PERSPECTIVE

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ABSTRACT

Present paper deals with the study of Physico-chemical parameters of water sample from River Jordan, Israel and Sea of Galilee, Israel. Variations in the physical and chemical parameters such as pH, Electric Conductivity, Carbonates, Bicarbonates, Sodium, Calcium+Magnesium, Chloride were investigated. All the parameters were beyond the permissible limits. The main focus of the work was to study the water characteristics and to study the Physico-chemical parameters. Results show that all the two selected places of Israel have medium or high content. There were significant differences in the chemical contents of two water samples collected from Israel.

Key words: Physicochemical, Electric Conductivity, Water samples.

INTRODUCTION.

Water is a natural resource with limited and uneven distribution in time and space. Water is an essential component of the environment and it sustains life on the earth. All organisms depend on water for their survival (Smitha et.al 2007). All forms of life and all human activities are dependent on water. Water resources are of great importance to human life and are the main source of meeting the demand for drinking water, for irrigation of lands and industries and socio-economic development of a country. (Xhelal et.al 2014). The need for clean water, as one of the biggest problems the global environment. Currently, more than 1.2 billion people worldwide have no access to drinking water while some 3 billion people (half the world's population) do not have adequate sanitation services. More than 200 diseases are originating from contaminated water and about 6,000 people a day lose their lives just by diarrheic diseases (Xhelal et.al 2014).

The quality of drinking water is essential for life. Contaminants such as bacteria, viruses, heavy metals, nitrates and salt have polluted water supplies as a result of inadequate treatment and disposal of waste from humans, livestock, industrial discharges, domestic discharge and extensive use of limited water resources. (Onwughara et.al 2013). There are a number of reported cases of typhoid, diarrhoea and other water borne diseases arising from the consumption of contaminated water. Different works have been reported by many researchers on water quality assessment. Today, contaminated water kills more people than cancer, AIDS, wars, terrorism or accidents (Uduma 2014). According to the World Health Organization, an estimated 5 million people die each year from the consumption of contaminated water. Considering the current trend of urbanization in the world by 2025, nearly 3 billion people will need water supply and more than 4 billion for access to sanitation. In Kosovo, as in many countries, human health and meeting their needs is increasingly threatened by the poor quality or lack of clean water. (Xhelal et.al 2014). Physico-chemical properties of the water gets varied season wise and in addition, anthropogenic activities such as agriculture, urbanization, domestic sewage, etc in the catchment area result in the deterioration of water quality (Verma et.al 2012).



The present study deals with the assessment of physico-chemical characteristics of water. The physicochemical properties of water samples from two different locations of River Jordan, Israel and Sea of Galilee, Israel were analyzed

MATERIALS AND METHODS.

Physico-chemical properties were analysed from Soil Health Clinic, Krushi Vigyan Kendra M.S.S.M, Jalna District. Jalna.(M.S) India.

(a).Collection of sample :

The estimation of Physico-chemical parameters of water sample collected from River Jordan, Israel and Sea of Galilee, Israel.were carried out in the present study.

(b). Determination of physico-chemical parameters:

Physico-chemical parameters were observed from water sample from River Jordan, Israel and Sea of Galilee, Israel.The samples were analyzed by using different standard methods. The physical and chemical parameters such as pH, Electric Conductivity, Carbonates, Bicarbonates, Sodium, Calcium+Magnesium, Chloride were investigated and the concentrations of the Physico-chemicals were presented in different units.

RESULTS AND DISCUSSION.

1.Physico-chemical analysis of water sample, River Jordan, Israel

Physico-chemical analysis of water sample, River Jordan, Israel was studied. The results are mentioned in table 1. The analyzed chemical and physical properties show the wide variation range, as can be seen in the results summarized in table 1. The pH of all soil samples were found to be ranged in 7.2 of water. The rang of different physicochemicals shows variations as Electric Conductivity (1.04), Bicarbonates (6.2) Sodium (0.42) Potasium (0.63) Calcium+Magnesium (6.6) Chloride (8.2).There were significant differences in the elemental contents of water samples collected from River Jordan, Israel.

Table.1 - Physico-chemical analysis of water sample, River Jordan, Israel.

Sample No	Parameters checked	Water Sample	
		River Jordan, Israel.	
		Report: W04288/18	
		Unit	Observations
1.	pH	--	7.2
2.	Electric Conductivity	$\mu\text{m}/\text{cm}^{1/2}$	1.04
3.	Carbonates	meq/l	0.0
4.	Bicarbonates	meq/l	6.2
5.	Sodium	meq/l	0.42
6.	Potasium	meq/l	0.63
7.	Calcium+Magnesium	meq/l	6.6
8.	Chloride	meq/l	8.2

2.Physico-chemical analysis of water sample, Sea of Galilee, Israel.

Physico-chemical analysis of water sample, Sea of Galilee, Israel was studied. The results are mentioned in table 2. The Physico-chemical properties show the wide variation range, as shown in the results summarized in table 2. The pH of all soil samples were found to be ranged in 7.2 of water.



The rang of different physicochemicals shows variations as Electric Conductivity (0.96), Bicarbonates (4.8) Sodium(0.93) Potasium (0.17) Calcium+Magnesium (6.2) Chloride (8.4). There were significant differences in the elemental contents of water samples collected from Sea of Galillee, Israel.

Table.2.Physico-chemical analysis of water sample, Sea of Galillee, Israel.

Sample No	Parameters checked	Water Sample	
		Sea of Galillee, Israel.	
		Report: W04288/18	
		Unit	Observations
1.	pH	--	7.2
2.	Electric Conductivity	$\mu\text{m}/\text{cm}^{1/2}$	0.96
3.	Carbonates	meq/l	0.0
4.	Bicarbonates	meq/l	4.8
5.	Sodium	meq/l	0.93
6.	Potasium	meq/l	0.17
7.	Calcium+Magnesium	meq/l	6.2
8.	Chloride	meq/l	8.4

Several workers have performed such type of experiments on the pH. pH in water samples range of 7.0 to 7.85 and pH of water is important for the biotic communities as most of the plant and animal species can survive in narrow range of pH from slightly acidic to slightly alkaline condition (Goher 2002). Magnesium is often associated with calcium in all kinds of waters, but its concentration remains generally lower than the calcium. Magnesium is essential for chlorophyll growth and acts as a limiting factor for the growth of phytoplankton (Solanki 2012). The chloride in drinking water originates from natural sources, sewage and industrial effluents, urban runoff containing de-icing salt and saline intrusion (Solanki 2012). Conductivity shows significant correlation with ten parameters such as temperature , pH value , alkalinity , total hardness , calcium , total solids, total dissolved solids , chemical oxygen demand , chloride and iron concentration of water. Navneet Kumar et al (2010).

Poonkothai and Parvatham (2005) had been studied and observed the physico-chemical and microbiological studies of automobile waste water in Nammakkal, Tamil Nadu, India indicated that the values for physico-chemical parameters were on the higher side of permissible limits of BIS similarly Rokade and Ganeshwade (2005) concluded that the high fluctuations in the physico-chemical parameters indicating the intensity of pollution. Premlata Vikal (2009) has been work out the physico-chemical characteristics of the Pichhola lake water. He studied various parameters like air and water temperature, pH, free CO₂, dissolved oxygen, biochemical oxygen demand, chemical oxygen demand, conductivity, total dissolved solids, hardness, total alkalinity, chloride, nitrate, phosphate and sulphate.

The results showed that the values of conductivity and sulphate were found to cross the standard limits in water samples. The coefficient of correlation (r) among various physico-chemical parameters was also made. Basawaraj simpil et al. (2011) observed monthly changes in various physico-chemical parameters of Hosahalli water tank in Shimoga district Karnataka. Concluded that all parameters are within the limit and tank water non polluted and it can be used for domestic, irrigation and fishery purpose.



CONCLUSION.

This paper has examined the physico-chemical characteristics of water sample collected from River Jordan, Israel and Sea of Galilee, Israel. Characterization of water sample of River Jordan, Israel showed quite rich in physico-chemicals as compared with Sea of Galilee, Israel water sample.

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