International Journal of Pharmaceutical Archive-9(6), 2020, 1-3
Available online through www.ijpaonline.info ISSN 2319-7226

STUDIES OF PHYSICOCHEMICAL PARAMETERS OF WATER SAMPLES

ARTICLE

K. RAJU*[1], A. SRINIVAS NAYAK[2]

**[1]Department of Chemistry,
Satavahana University, Karimnagar, Telangana 505 002, India.**

**[2]University College of Pharmaceutical Science,
Satavahana University, Karimnagar, Telangana 505 002, India.**

(Received on: 23-05-2020; Revised & Accepted on: 17-06-2020)

ABSTRACT

W*ater is a central part of human life, physicochemical analysis of underground drinking water be carried out during a winter season. All the samples were composed from the dissimilar places. People used water for drinking as well as irrigation purpose. Ground water samples were collected from dissimilar Nagaram of Hasanparthy taluka, Warangal Urban District (India). These water samples from four different villages of Hasanparthy taluka were analyzed for their physicochemical character. Laboratory tests be performed for the analysis of samples for pH, Hardness, Chloride, Alkalinity, TDS, Conductivity Temperature Calcium Magnesium, hardness & total hardness, sulphate, phosphate, nitrate, & COD were studied.*

Key words: *Physicochemical, fresh water, water pollution small lake in Nagaram.*

INTRODUCTION

Water is essential natural occurring property for human life and environment that we have always thought to be available in abundance and free god gift of nature (1-2). The water for the consumption of human beings comes in different forms and from different sources. There were two main sources of drinking water; one is a surface water resources river, lakes. Under ground water mainly from the seepage of surface water and is held in the subsoil and in previous rock. About 94% of total available water all over world is in the form of ground water. In villages the main source of drinking water is under ground water available from wells, bore wells or hand pumps (3-5).

Review of literature

(1) Jain CK, Bhatia KKS and Vijay T, 1995.: Ground water quality monitoring and evaluation in and around Kakinada,
(2) APHA, 1989.Standard methods for the examination of water and waste water,
(3) ISI, 1983. Indian Standard specification for drinking water
(4) W.H.O, 1984. Guidelines for drinking water quality, Vol.1, Recommendations WHO, Geneva.
(5) Sharma M R, 2004. J Pollut
(6) Renn C E, 1970. Investigating water problems, Educational Products Division, LaMotte Chemical Products Company,

MATERIALS AND METHODS

All the water samples were collected in the month of march Samples were collected in pre-cleaned blue colored Sample bottles of one litre capacity, using the standard method for collection of samples. The villages form Nagaram taluka, S1 Nagaram, S2 Erragattu, S3 Mucharla S4 Hasanparthy, Standard procedure was used for determination of physiochemical parameters. The chemicals used for analysis and determination of certain parameters they were analytical grade. The water quality analysis of different ground water samples have been carried out for pH, Electrical conductivity, TDS, Total hardness, Ca ion, Mg ion, Chloride, and Sulphate, nitrate, COD.

Corresponding Author: K. Raju*[1],
[1]Department of Chemistry, Satavahana University, Karimnagar, Telangana 505 002, India.

RESULTS AND DISCUSSION

Table 1 shows physicochemical parameters of underground water from six villages of Hasanparthy taluka, Warangal Urban District. The temperature, pH, conductivity and dissolved solids of the water samples were determined by using a thermometer; pH meter, conductometer. The samples were analyzed using various analytical methods; Total hardness and calcium were measured by EDTA titration method (7-9). Chloride was determined by Mohr's method using potassium chromate indicator. The data revealed that there were considerable variations in the examined samples from different sources with respect to their chemical characteristics. The results indicate that the quality of water considerably varies from location to location (10-12).

Table-1: shows physicochemical parameters of underground water from six villages of Hasanparthy taluka, Warangal Urban District (approximate)

Sr. No	parameter	Unit	S1	S2	S3	S4
1	Temperature	0C	22^0 c	23^0 c	22^0 c	20^0 c
2	PH		7.11	7.23	7.67	7.98
3	TDS	(mg/L)	412	620	566	543
4	Ca hardness	(mg/L)	120	145	146	134
5	Mghardness	(mg/L)	87	116	89	83
6	total	(mg/L)	200	261	238	217
7	Chlorides	(mg/L)	55.9	95	232	280
8	Sulphates	(mg/L)	7.1	49.7	62.3	55.9
9	Nitrates	(mg/L)	0.23	11.6	17.5	18.6
10	Phosphate	(mg/L)	6	0.34	1.12	60.83
11	DO	(mg/L)	11.9	7.0	7.2	7.1
12	COD	(mg/L)		12.1	12.8	13.4
13	EC		980	890	1250	1350

In the present study pH value of water samples varied in a narrow range within the permissible limits in all sources. The pH has showed significant positive relation with electrical conductivity and alkalinity. The variation of pH values are shown In the present study The EC values were found higher at S3 village (1250 µmhos/cm) and very low conductivity was found at S2 village.(890µmhos/cm).EC values can be used to estimate the dissolved solids concentration which may affect the taste of water and suitability for various uses. Higher the conductivity values indicate higher the dissolved solids concentration in water. Higher the concentration of acid, base and salts in water, more will be the conductivity (13-15). Hardness is the measure of the capacity of water to produce lather with soap or detergent. Hardness is one of the very important properties of ground water from utility point of view for different purposes. Calcium and magnesium are directly related to hardness and hence they are discussed in combined. The acceptable limits for calcium and magnesium for domestic use are 75 mg/L and 30 mg/L, respectively in ground water (16-19).

CONCLUSION

1. The study of various physicochemical parameters such as hydrogen ion concentration (pH), electrical Conductivity, total alkalinity, dissolved Oxygen, chloride, total hardness, magnesium, calcium, total dissolved solid, chemical oxygen demand (hereafter COD), was carried out by using various standard methods reported in the literature. Specific representative six villages of nagaram Taluka selected. From the study it was clear that the water of all these sources is suitable for drinking purpose after some treatment, with respect to the studied physicochemical parameters.
2. The statistics obtained from the physic-chemical analysis of the water quality in the small pounds, Warangal clearly indicates that most of the important quantities such as turbidity, total dissolved solids, pH, hardness, alkalinity and phosphate contents in the pounds water are above the upper threshold of the W.H.O guidelines. This present situation may drastically affect the aquatic and terrestrial organism growth in the water repository and significant pollutants emerge from domestic sections pose an additional threat to the water quality in the near future. To sustain the ecology and aquatic life in the pounds, certain measures and planning must be taken by the civic body to combat the pollution rate in the pounds

Recommendations

The following recommendations were made:

1) The agencies concerned, among others, should strengthen their legislation against indiscriminate and improper waste disposal along waterways.
2) Hand dug wells and boreholes should be drilled some meters far away from any source of contaminations or pollution.

3) Government should sanction any industry that failed to adhere to environmental regulatory policies.
4) Also, government and non-governmental organization should educate the communities on proper disposal of wastes.
5) Phytoremediation should be use for the removal of pollutants from water and soil especially heavy metals.
6) There is need for regular water quality monitoring which should include trace metal levels, nutrients and microbiological analysis.

REFERENCES

1. Narwade ML, Eur. J. Exp. Bio.2011, 1 (1), 97.
2. Kamble PN, Gaikwad VB, Kuchekar SR, Der Chemica Sinica. 2011, 2(4), 229.
3. Mehta KV, J.Chem. Pharm. Res. 2010, 2(4), 663.
4. Majolagbe AO, Adv. Appl. Sci. Res. 2011, 2 (1), 289.
5. Venkatesan P, E. Journal of Chemistry. 2010, 7(2), 473.
6. Singh A. Malik S, Bhattachary M, Der Chemica Sinica. 2011, 2(6), 269.
7. Maruthi YA, Hossain K, Goswami A, Der Chemica Sinica. 2012, 3(5), 1071.
8. Ramesh M, Valuth KE, Der Chemica Sinica. 2012, 3(5), 1272.
9. Shah DG, Patel PS, Der Chemica Sinica. 2011, 2(5), 8. Kiran G. Chaudhari Der Chemica Sinica, 2013, 4(6): 29-31
10. Patel S, Quadri S H, Der Chemica Sinica. 2011. 2(5), 194.
11. Chauhan NB, Thakor FJ, Asian J Exp Biol Sci. 2012, 3(3), 582.
12. Sen I, Shandil A, Shrivastava V S, Adv. Appl. Sci. Res. 2011, 2 (2), 161.
13. Yadav SS, R Kumar R, Adv. Appl. Sci. Res. 2011, 2 (2), 197.
14. Sunitha V, Reddy BM, Reddy M R, Adv. Appl. Sci. Res. 2012, 3(5), 3382.
15. Haloi N, Sharma HP, Archives of Applied Science Research. 2011, 3 (6), 107.
16. Makwana SA, Patel CG, Patel TJ, Archives of Applied Science Research. 2012, 4 (1), 461.
17. Hasna RP, Salam AM, Kamaraj M, Balaji. SR. Annals of Biological Research. 2012, 3 (7), 3533.
18. Kalra NR, Kumar R, Yadav SS, Singh RT. Der Pharmacia Lettre, 2012, 4 (2), 515.
19. Rajappa B, Manjappa S, Puttaiah ET, Nagarajappa DP, Advances in Applied Science Research, 2011, 2 (5), 143.

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