



International Journal of Intellectual Advancements and Research in Engineering Computations

Experimental study on ground water contamination by using physico-chemical characteristics of tender coconut water near small scale industries

Prof. R.Suresh¹, Prof. N.Kamalakaran², Prof .G.Sabarikadevi³, K.Radhakrishnan⁴, S.Srihariraj⁴, S.Suguna⁴, D.Thinakaran⁴

Associate Professor- Suguna College of Engineering, Coimbatore, Tamilnadu- 641014.

Assistant Professor- Suguna College of Engineering, Coimbatore, Tamilnadu- 641014.

Assistant Professor- Suguna College of Engineering, Coimbatore, Tamilnadu- 641014.

Student, Final Year Civil Department, Suguna College of Engineering.

ABSTRACT

Coconut water is one of the most important natural product. It is a nutritious and beneficial for health. The role of coconut water is health and medical applications. It is a unique solution of chemical composition sugar, vitamins, minerals, amino acids and phytolomones. The parameters like pH, Acidity, Magnesium, Sodium, Potassium and Chloride of tender coconut water of experimental areas. The samples are collected in our state (TAMILNADU). Some amount of allowable chemicals contain in the ground water. It may be increased in features which cause dangerous effects in ground water and coconut water.

But in our case we are going to found some acid contaminations in tender coconut water which causes dangerous effect to human body and also to found ground water pollution due to emissions of industrial waste water.

Keywords: Tender coconut water (TCW), pH, Acidity, Magnesium, Sodium, Potassium and Chloride, Ground water contamination.

Study Area: Tirupur, Coimbatore and Pollachi.

INTRODUCTION

Coconut water possesses medicinal properties. It is also used for drinking purposes. Ground water is polluted due to various phenomenons. Soil also polluted due to emission of industrial waste water, plants and trees. Action of chemicals on soil was studied by tender coconut water. Due to emission of industrial waste water was percolated in to the ground and action with the ground water and reaction may happen which cause addition of acidity in the ground water. This polluted water helps to growth of coconut tree which gives tender coconut, in this coconut water also some amount of acidity in nature this may vary depends on the areas (near small scale industries which emits polluted water). We found amount of acidity in the tender coconut is directly proportional to the chemical

contain in the ground water. It depends on ground water, pH, carbon dioxide concentration and redox potential of the soil. Therefore, the coconut water is such polluted by the ground water.

Coconut water or tender coconut water has been used as a refreshing drink, cooking oil, hair oil and traditional medicine. Coconut water is useful for the microbiological growth. The coconut water contains soluble sugars, potassium, proteins, salts, oil, nicotinic acid, pantothenic acid and vitamin [1-8].

The coconut water is also used in the organic synthesis research. The chemical composition of tender coconut water varies with the hydrological and geographic change. In continuation of our on-going research.

Author for correspondence:

Associate Professor- Suguna College of Engineering, Coimbatore, Tamilnadu- 641014.

EXPERIMENTAL

The tender coconut water samples collected from different places. The samples were collected during the month of January to March 2018. A sample for analysis was collected in sterilized bottles. The determination of pH was carried out by pH metre. The determination of phosphorous, copper and iron was carried out by spectrophotometer. The determination of acidity and magnesium was carried out titrimetrically by pH meter. The determination of potassium, sodium and chloride was carried out by flame photometer.

RESULT

The chemical contained in the tender coconut water from near small scale industrial areas (which

emits polluted water) was analyzed and shown in TABLE 1. The values of pH, potassium, acidity, magnesium, chloride and sodium were higher for tender coconut water collected from small scale industrial areas. While the tender coconut water collected from three regions had some amount of acid contain in the tender coconut water was found from pH meter, nephelometric turbidity meter, BOD and COD tests were conducted. The coconut plants were situated near factories and industries which carry municipal waste and industrial waste materials therefore it shows higher values for certain parameters. The higher amount of certain chemicals is mainly due to the selective absorption by plants. Chemical composition of tender coconut water (three regions).

Parameters	Samples								
	S1	S2	S3	S4	S5	S6	S7	S8	S9
pH	4.2	4.1	4.3	4.5	4.7	4.6	4.9	4.7	4.7
Acidity (mg%)	123.2	122.8	122.1	121.6	120.4	121.3	119.7	119.5	120.1
Magnesium (mg%)	13.4	12.9	12.2	11.9	12.1	11.8	10.1	10.7	10.8
Sodium (mg%)	46.2	48.5	49.3	44.9	43.8	44.5	43.3	42.8	42.2
Potassium (mg%)	276.4	274.6	275.4	272.3	273.4	274.1	267.7	270.3	271.2
Chloride (mg %)	101.8	105.4	102.6	100.2	100.7	101.1	99.4	99.5	99.1

CONCLUSION

The experimental analysis shows that many parameters in all samples of tender coconut water in three areas exceed the permissible limits of pH value for drinking water. The values are pH, acidity, magnesium, chloride, potassium and

sodium in all tender coconut water samples from the experimental area are below the permissible limits for drinking water. The pH values and acidity of all tender coconut water samples from the experimental area are below the permissible level of drinking water.

REFERENCES

- [1]. D.Campbell Falck, T.Thomas, T.M.Falck, N.Tutuo, K.Clem, Am.J.Emerg.Med., 18(1), 2002, 108 .
- [2]. Georg A. Petroianu, Melita Kosanovic, Ibrahim Saad Shehatta, Bahaa Mahgoub,
- [3]. Ayman Saleh and Wolfgang H Maleck, J. Trace Elements Exp. Medicine, 17(4), 2004, 273.
- [4]. Kannan Krishnan, Fundamental of Environmental Pollution, S. Chand and Co. Ltd, New Delhi 2012.
- [5]. V. P. Kudesia, Water Pollution, 1st Edition, Pragati Prakashan, Meerut 2010.
- [6]. S. Sharma, Asian J. Chem, 16, 2004, 309.
- [7]. L. Giridharan, T. Venugopal and M. Jayaprakash, Int. J. Chem. Sci, 5 (2), 2007, 728.
- [8]. Back ground document for development of WHO guidelines for drinking water quality, WHO. 2004.