

# Physico- Chemical Analysis of Ground Water Samples of Selected Districts of Tamilnadu And Kerala

J. Dharmaraja, S. Vadivel, E. Ganeshkarthick

**ABSTRACT:** A systematic study has been carried out to explore the Physico-chemical characteristics of groundwater in six south India areas. Water sample from open wells in south india area district were collected and analyzed for PH, electrical conductivity, dissolved oxygen, total hardness, total alkalinity. Comparative studies of samples in six different district were conducted, it shows Ernakulum water have low hardness comparatively than Tamilnadu districts water. It was also analyzed that electrical conductivity, total dissolved solids, PH, alkalinity. From this, we concluded the Ernakulum water is best than the other districts of Tamilnadu.

**KEY WORDS:** Drinking Water, Ground Water, Physico-Chemical Parameters.

## INTRODUCTION

Ground Water plays significant role in the living organism that existing in this world water is essential for survival of all living organisms so water should be clean and fresh the quality of water is directly linked with human welfare the water should be free from pollution and other impurities in India. The people are depended only on ground water as a drinking and other purposes. The modern civilization and urbanisation frequently discharging industrial effluent, domestic sewage and solid waste dump. The cause of ground water gets pollute and create health problems<sup>1</sup>. As the water is very an important ecosystem. Any imbalance in term of amount it can be harm to the whole ecosystem<sup>2-7</sup>. hence there is always needed for concern over the protection and management of groundwater quality<sup>8</sup>.

## MATERIALS AND METHODS

Water samples were collected polyethylene bottles of two liters from different locations of tamilnadu and kerala. The samples were collected deep well and hand pump. It has ensure that the concentration of various parameters have change in their amount at present, it has analyse in laboratory the bottles were thoroughly washed with hydrochloric acid and also washed with tape water for rendered free of acid, it has thoroughly washed twice with distilled water, the bottles were rinsed with water samples and the bottles were filled by water samples. The sampled bottle has been sealed with paraffin wax, some sample which were turbid and containing suspended matter were filtered at the time of collection<sup>9</sup>. All the glassware, casserole and other pipettes were first cleaned with tap water thoroughly then finally with distilled water.

The pipettes and burettes were rinsed with solution before use. The chemicals and reagents were used for analyse for Anala-R grade. The pH meter, conductivity meter. The procedure for calculating different parameters were conduct in laboratory the samples collected from different districts of tamilnadu and kerala the result were tabled -1

## RESULT AND DISCUSSIONS

The values of pH was maximum permissible limit in all samples, it was ranging from 7.1 to 8.2. the electrical conductivity has been ranging from 980 to 1296  $\mu\text{m}/\text{cm}$ , but Madurai district water has out of maximum permissible limit. The values of total hardness was ranging from Madurai-308ppm, villuppram-234ppm, Nagapattinam-183ppm, Cuddalore (municipality water)-39ppm, and Kerala (Ernakulum)-30ppm. In this discussions Madurai district has maximum hardness (308ppm), and very small amount of hardness (Tamilnadu) present in Cuddalore because of this water already under purified by the municipality. Which accounts Kerala water Which having very least amount total hardness only 30ppm. The overall accounting of hardness is only 3.0%. the values of alkalinity was ranging from all samples of Tamilnadu has been with in maximum permissible limit. But Madurai has ranging Hydroxide alkalinity  $[\text{OH}^-]$ -250ppm, Carbonate alkalinity  $(\text{CO}_3^{2-})$ -325ppm. So that water having more hardness and alkalinity which have been find out in the through analysis of this parameters. And the values of dissolved oxygen It was found that in Tamilnadu there is no appreciable change in chemical properties the samples it is due to the fact that the sedimentation process is not done well in the town area Madurai, Villupuram and Nagapattinam. But in rural area more plants, trees and hills area having more flora density so that will make natural sedimentation process happen by the plants trees and soil (Already know soil having various stages of earth crust) if water flows across the different stages of earth crust while there will be stopped some impurities

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Author for Corresponding : J. Dharmaraja  
 Email ID : jagandharma@yahoo.co.in  
 Department of chemistry Arignar Anna Government Arts  
 College, Attur-636 121, Tamilnadu

dissolved solid and other organic and inorganic impurities the soil will be polluted by the sedimentation and filtration various pollutant such as industrial effluents, agriculture practice, urban area waste, solid waste, and bio- non degradable wastes through by the urban people. So that the sedimentation process is not properly happened due to the above aspects in Tamilnadu. The comparative study between the Tamilnadu and Kerela is carried out by the analysis of the chemical parameters the valuable result have been

obtained the hardness, alkalinity, dissolvedoxygen, pH and electrical conductivity values are compared with Kerala, above result of parameters have been very least because Kerala have most of the forest resources and the quality of the land. Also high the sedimentation of water by the natural process is frequently happened, compare to the Tamilnadu the Kerala water having less hardness, alkalinity, dissolved oxygen, electrical conductivity values.



The need for the new industrial economises approach to deal with the current demand emerging problems become very crucial these problems are industrial and

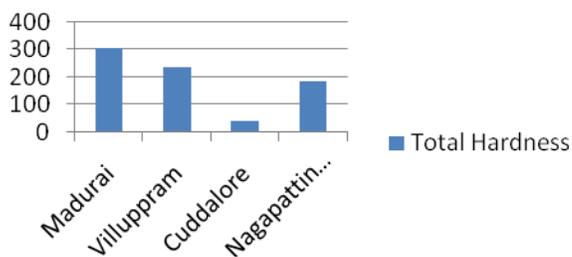
addressed by the various agencies and researches in different states the values seeking proper remediation on the crucial problems on ground water reading

**The values of physico-chemical parameters of the Tamilnadu districts and Kerala district.**

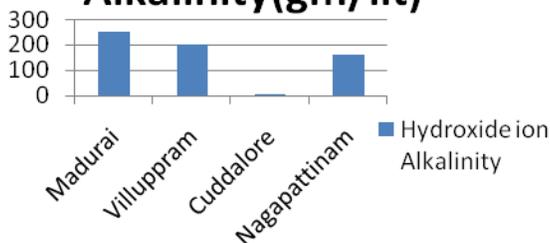
Parameters	TAMILNADU				KERALA
	Madurai	Villuppram	Cuddalore	Nagapattinam	Ernakulam
T H	308	234	39	183	30
OH <sup>-</sup> ion Alkalinity	250	200	5.0	160	10
CO <sub>3</sub> <sup>2-</sup> ion Alkalinity	325	250	15	180	25
D O	9.0	8.5	8.3	8.0	8
pH	8.2	8.2	7.1	7.8	6.8
E.C	1296	1290	980	1080	800

The flow chart of the range of various parameters of ground water samples of selected districts of Tamilnadu .

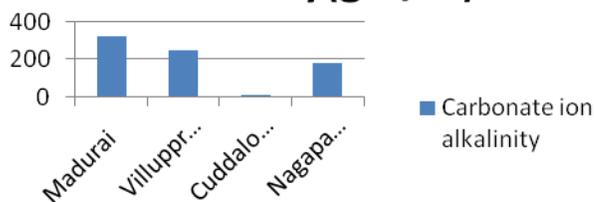
**Total Hardness(g/lit)**



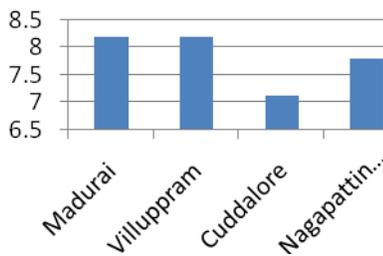
**Hydroxide ion Alkalinity(gm/lit)**



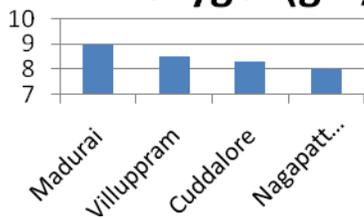
**Corbanate ion Alkalinity(gm/lit)**



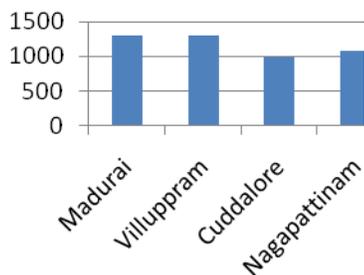
**pH**



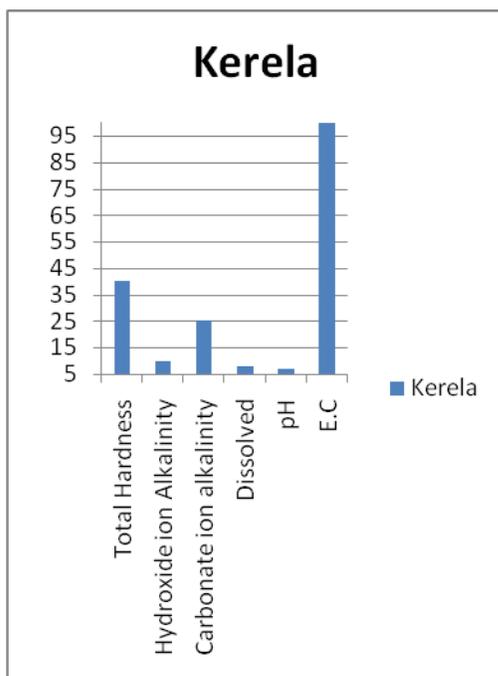
**Disolved oxygen(gm/lit)**



**E.C(µm/cm)**



The flow chart of the range of various parameters of ground water samples of selected district of Kerala.



### Conclusion

The study has been examined to the various districts of Tamilnadu and Kerela ground water. The samples conform that the pH of the ground water is been with in limit of the Tamilnadu. And the water sample having almost same conducting property of electrical values which are within limits of maximum permissible. But the Kerela water having lesser E.C. The value of total hardness more than 200 in all the district average is 24.2% but Kerela state have total harness from 40ppm values of average account of 4.0%

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