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To study drinking water quality supplied by the grampanchayat in Daund taluka

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Abstract

It has been studied whether the water quality from few of the villages in Daund taluka is suitable for drinking. Nine samples were collected from different villages, the tap water sample supplied by grampanchayat. Each sample was studied for physio-chemical parameters. In physio-chemical analysis, according to WHO (World Health Organization) standards of water quality various quality parameters were measured for example PH, Temperature, Specific conductivity, Total dissolved solid. The PH of all water samples were found almost neutral to slightly basic. The PH, TDS, temp & conductivity, changed from sample to sample. All parameters were within the permissible limit.

Keywords: Grampanchayat (GP), water samples, physical parameters, TDS, conductivity

Introduction

Water is used primarily for drinking, agriculture, factory purposes from the wells. Water chemistry is doing scientific studies of water from various sides. Many villages in Daund taluka are facing water quality problems from river side areas. Consequently number of cases of water borne diseases has been arise which causes Health hazards. The quality of water is of vital concern for the mankind since it is directly linked with human welfare. Hence evaluated tap water quality in Daund taluka region supplied by GP for determining its suitability for drinking purpose. There are lot of parameter for drinking water quality parameter described by WHO, Indian standard IS 12500:2012, Environmental Protection Agency (EPA), Environmental Quality standards (EQA) ([http //www.who.int/water_sanitation_health/dwq/gdwq2004web.pdf](http://www.who.int/water_sanitation_health/dwq/gdwq2004web.pdf)). The World Health Organization (WHO) is the part of the United Nations (UN) and it focuses on international public health. The WHO writes the guidelines for Drinking Water Quality to make sure that people are drinking safe water around the world (www.ijceronline.com/papers/vol5-issue10/F0510035039.pdf, https://www.who.int/water_sanitation_health/dwq/gdwq0506.pdf)

Materials and Methods

Collection of samples

The tap water samples were collected from nine different villages of Daund taluka. The water sample was collected in the plastic bottles in duplicates and were immediately brought to the laboratory for further estimation of physico-chemical parameters.

Procedure: Analysis of parameters are as follows

PH

The PH value is the hydrogen ion concentration which ranges from zero to fourteen. The PH value lower than seven is termed as acidic, the PH value more than seven is termed as basic and PH value equal to seven is termed as neutral. The PH value was measured by the PH meter. The limit of PH for the drinking water is 6.5 to 8.5 (Namita *et al.* 2017) ^[2].

Temperature (T)

Temperature is important because of its influence on water chemistry. At higher temperature the rate of reaction increases. Temperature exerts a major influence on biological activity and growth. The increase in water temperature decreases the dissolved oxygen concentration than the cold water (Water quality criteria, 1963).

Electrical Conductivity (EC)

The electrical conductivity is done to check the ability of water to conduct the electric current. This is done to check the purity of water which is very useful (Sajitha V. *et al.* 2016) ^[3]. Electrical conductivity is measured by electrical conductivity meter.

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Total dissolved Solids (TDS)

The purity of water and quality is directly associated to the total dissolve solids. Different types of mineral present in water are denoted by TDS. The TDS is measured by TDS

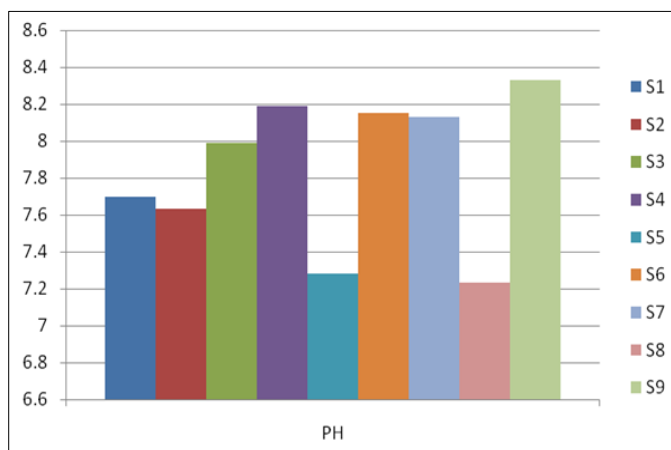
meter. Acceptable limits is 300mg/l to 1000mg/l (Devendra Dohare *et al.* 2014, Sajitha V. *et al.* 2016) [4, 3].

Result

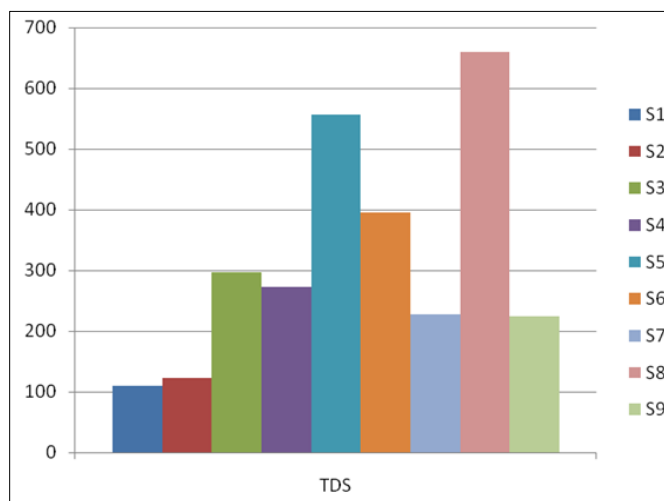
Table 1: Physical parameters of water samples, in Daund Taluka

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8	Sample 9
PH	7.7	7.63	7.99	8.19	7.28	8.15	8.13	7.23	8.33
Temperature (°C)	29	28	28	29	28	29	29	28	28
Conductivity	179	191	562	562	306	819	407	986	451
TDS	110	123	296	273	556	395	228	660	225

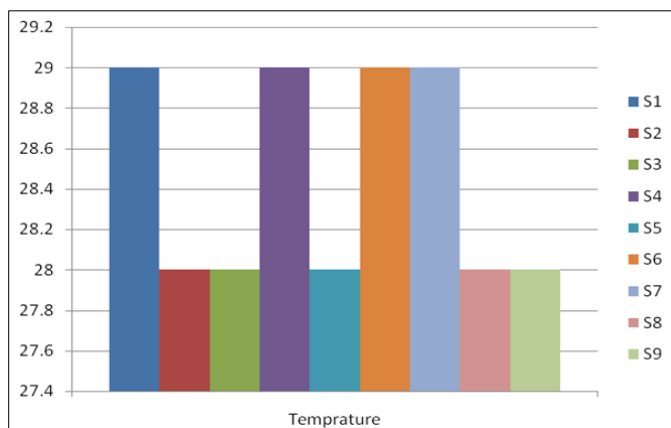
Sample 1: Pargaon, Sample 2: Khutbav, Sample 3: Galandwadi, Sample 4: Nathachiwadi, Sample 5: Delwadi, Sample 6: Pimpalgaon, Sample 7: Ekerywadi, Sample 8: Rahu, Sample 9: Undwadi.



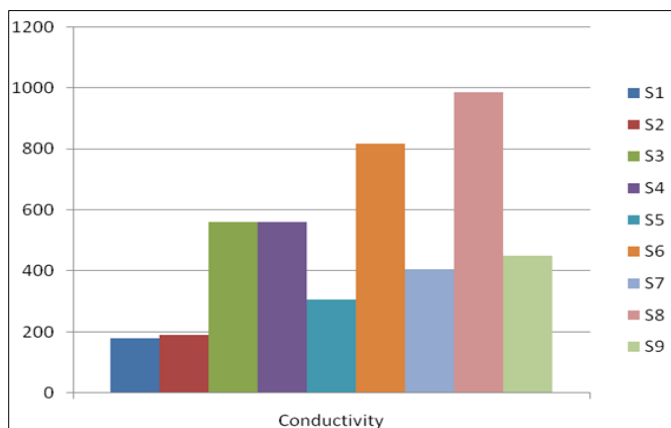
Bio-stastical representation PH variation



Bio-stastical representation TDS variation



Bio-stastical representation Temperature



Bio-stastical representation Conductivity

Discussion

PH value is in the range of 7.23 to 8.33. The PH range except S5 and S8 all other was slightly basic and S5 and S8 was Neutral.

Temperature ranges from 28-29°C of all the samples which is acceptable for the drinking water. The sweetness of the drinking water depends directly on the temperature. The dissolve oxygen depends on the range of temperature.

The conductivity of the samples ranges from 179-986uS. The tap water quality EC ranges from 50 -800uS which is almost similar to the sample. Only one sample that is S8 has the high conductivity which is not much pure as compare to the other samples.

TDS values during the observation were in the range of 100 to 700 mg/liter. The TDS range of S1, S2, S3, S4, S7 and S9 was in the range of 100 to 300 mg/liter so it is acceptable for drinking purpose. S5, S6 & S8 has TDS range above 300 and below 900 mg/liter, generally not acceptable for drinking; however, you can use RO water purifiers to reduce TDS level below 500 mg/liter.

Sample 8 has the highest TDS as compare to the other samples and the conductivity is also high that means the sample 8 is not suitable for the drinking purpose.

Conclusion

It is very essential and important to test the water before it is use for drinking purpose. Water must be tested with different physico-chemical parameters. Selection of parameters for testing of water is solely depend upon for what purpose we going to use that water and what extent we need its quality and purity. So before using water, investigation qualitative analysis of some physico-chemical parameters of water we should check first. This may be considered as reference for

the society to get cautious about the impending deterioration of the environment and health. Based on above analysis selected area has good quality of water.

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