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# A Comparative study of physicochemical analysis of water from different location of Pimpalgaon Kale Dist. Buldhana

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**Abstract**

Water is important gift given by natures to humans and it is essential to all living being for their survival. The present study was carried out on physicochemical parameters of well water in different location of Pimpalgaon kale in rainy season. Laboratory tests were performed physico-chemical parameters such as pH, Colour, Turbidity, Odour, total hardness, Chloride, Fluorides, Calcium, magnesium, Alkalinity, TDS etc were analysed. It is necessary to generate awareness related the source and quality of drinking water to avoid any health issues. The quality of ground water depends on some factors like biological hydrological, physical and chemicals. It is need to do necessary analysis before using the water from any resource for any purpose. The present results revealed higher amount of TDS matter, pH more than 7 and chlorides in more amount indicate that, water is not suitable for drinking purpose without purification.

**Keywords :** Physicochemical analysis, water, well, TDS

## Introduction

Water is absolutely essential for living life, playing a vital role in numerous biological and environmental processes.Water is supporting everything from the cells to the ecosystems. It is used for drinking, washing, cooking, cleaning, and personal hygiene. It helps the body flush out toxins and waste products through sweat and urine, helping to maintain body functions and prevent dehydration. For the survival of all living organism water is essential. Along 80% of earth surface is covered by water (Kendre *et al.,* 2015). Water is the basic need of life. It is the unique gift given by God to humans. It is limited and vulnerable resource. The availability and distribution of fresh water in river systems is necessary to the devolve for civilization. As the development, use of water got increased up to the indefinite level (Jeyagowri *et al,* 2022). The Biological parameters need to be checked in the water samples for analysing the overall quality of water. (Agrawal *et al*.,2023). Day by day human population are increased also industrialization, uses of fertilizers in agriculture purpose and man-made activity

are rapidly increased. the natural aquatic resources are causing heavy pollution in aquatic environment leading to water quality. It is now essential that the quality of drinking water should be checked at regular time interwal. Using of contaminated water, human population suffers from number of diseases and health issues (Manjare *et al.,*2010). The quality of ground water generally depends on chemical constituents and their concentration, which are mostly derived from the geological data of the particular area. Industrial waste and the municipal solid waste have leading cause of pollution of surface as well as ground water. In many parts of the country due to the presence of heavy metal in excess the water is rendered non-potable (Gupta, *et al.,* 2009).

Physicochemical parameters is important part in analysis of water. The quality of water is important factor for mankind since it is directly affected to with human health (Sharma *et al.,*2018). In the water body Temperature, turbidity, nutrients, hardness, alkalinity and dissolved oxygen are play important role for the growth of living organisms. Water quality indicates the relation of all hydrological, biological physical and chemical properties of the water body. There are a number of reported cases of typhoid, diarrhoea and other water borne diseases arising from the drinking of contaminated water (Qureshimatva *et al.,* 2015). According to (Kale *et al.,* 2018) due to rapid urbanization and pollution the ground water quality is get deteriorated day by day. So it is essential to analyse the ground water quality for various physico-chemical parameters to check its suitability for drinking purpose and secondary use. The physico-chemical analysis of Pus Dam water suggest that the water is not harmful to drinking and irrigation purpose (Kawle,2022) Generally water of borewell used for drinking and other domestic purposes. The use of fertilizers and pesticides, manure, lime, septic tank, refuse dump, etc are polluted the water (Dave *et a*l.,2010).

Most of the people are totally depended on ground water for drinking and other domesticate purposes. The modern civilization and urbanisation frequently discharging industrial effluent, domestic sewage and solid waste dump (Dharmaraja *et al.,* 2012) Water plays an important role of human life. It is necessary for industry and living thing resistance. (Arangale K. B. *et al* 2018) Terrestrial, arial & aquatic life are mostly used habitaed water. The disturbance in this biological system may affect health of all living being like animals & birds & aquatic life (Devangee Shukla *et al.,* 2013). It is observed that all the selected physico-chemical parameters indicates seasonal variation and also fluctuated by different anthropogenic activities, also some of them are dependent to each other and changed with different parameters, (Ghatule *et al*., 2017).

**Study Area**

The present study was carried out in small village Pimapalgaon kale. Pimaplgaon kale is located in Jalgaon Jamod tahasil District Buldhana. The geographical coordinates within the confine of 21.00533 (Latitude) and 76.45411 (Longitude). The village is situated near Satpuda mountains. Purna river is nearest and big river. The environment of the village is hot in summer, cold in winter and less of rain in rainy session. Khandvi, Palshi Vaidy, Asalgaon, Dadulgaon ,Kuuha. Adol are the nearby villages to Pimpalgaon Kale. The work of this village peoples is based on farming and agricultural, most of the peoples are farmer and worker.

**Materials and Methods**

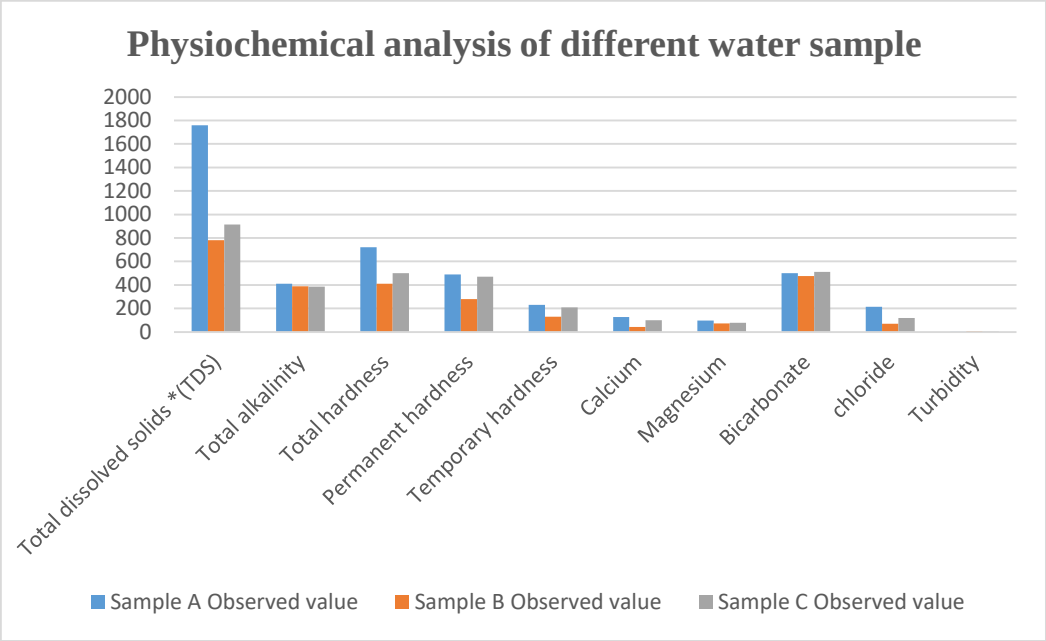
Well water comes from aquifers, which are underground layers of sediment rocks that hold groundwater. This water originates from rainfall and surface water that filters down through the earth. Well water can be a good

source of drinking water it contaminants bacteria, nitrates, pesticides, and many heavy metals. If contaminants are found in well water then appropriate treatment methods are necessary like as filtration or disinfection and many more parameter.

Water sample were collected during morning time from different wells from different location and taken in clean bottles for further observations. pH was recorded at the time of Sample Collection, by using digital pocket pH Meter. The Water samples were immediately transfer in to Laboratory for the estimation of various Physico-chemical parameters such as colour, transparency, odour, water temperature. Water sample for analysis of physiochemical parameter are taken separately by applying different methods

**Results and Discussion**

| Sr.no. | Parameter | Sample A Observed value | Sample B Observed value | Sample C Observed value | Unit |
|---|---|---|---|---|---|
| 1 | PH | 7.01 | 7.88 | 7.10 | - |
| 2 | Total dissolved solids *(TDS) | 1760 | 780 | 915 | Mg/l |
| 3 | Total alkalinity | 410 | 390 | 385 | Mg/l |
| 4 | Total hardness | 720 | 410 | 500 | Mg/l |
| 5 | Permanent hardness | 490 | 280 | 470 | Mg/l |
| 6 | Temporary hardness | 230 | 130 | 210 | Mg/l |
| 7 | Calcium | 128 | 44 | 99 | Mg/l |
| 8 | Magnesium | 98 | 73 | 79 | Mg/l |
| 9 | Carbonate | Nil | nil | Nil | Mg/l |
| 10 | Bicarbonate | 500 | 476 | 512 | Mg/l |
| 11 | chloride | 213 | 70 | 120 | Mg/l |
| 12 | Turbidity | 2.5 | 6.3 | 5.8 | NTU |
| 13 | Colour | <5 | <5 | <5 | Hazen |
| 14 | Odour | Agreeable | Agreeable | Agreeable | - |
| 15 | Total coliform | Nil | Nil | Nil | /100Ml |
| 16 | Escherichia coli | absent | absent | absent | /100Ml |




In this present investigation the variation of three different water sample was collected. Total dissolved solids (TDS) were recorded highest in sample A as 1760 mg/l, minimum value was recorded 780 mg/l in sample C, whereas moderate in sample B 915mg/l respectively. Concentration of Magnesium and calcium was more in sample A. Physical parameter like odour was agreeable. The colour of water sample was hazen. Permanent hardness of sample A, sample B, and sample C were 490 mg/l,280 mg/lit,470 mg/l respectively. Total alkalinity of these sample was different. In sample A Total hardness of water 720 mg/l was found. Chloride concentration was observed high in sample A.as compared to other samples. Total coliform was nil in all samples. *Escherichia coli* was not found in selected water samples. In turbidity also found the variation sample to sample.

## Conclusion

In the present study physiochemical analysis of three different well water sample were carried out. Results revealed that, the water samples of selected wells are rich in TDS, Total hardness, pH, chlorides, magnesium and other tested elements. It is concluded from the results that water sample of selected wells of Pimpalgaon kale is not found suitable for drinking purpose without purification.

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