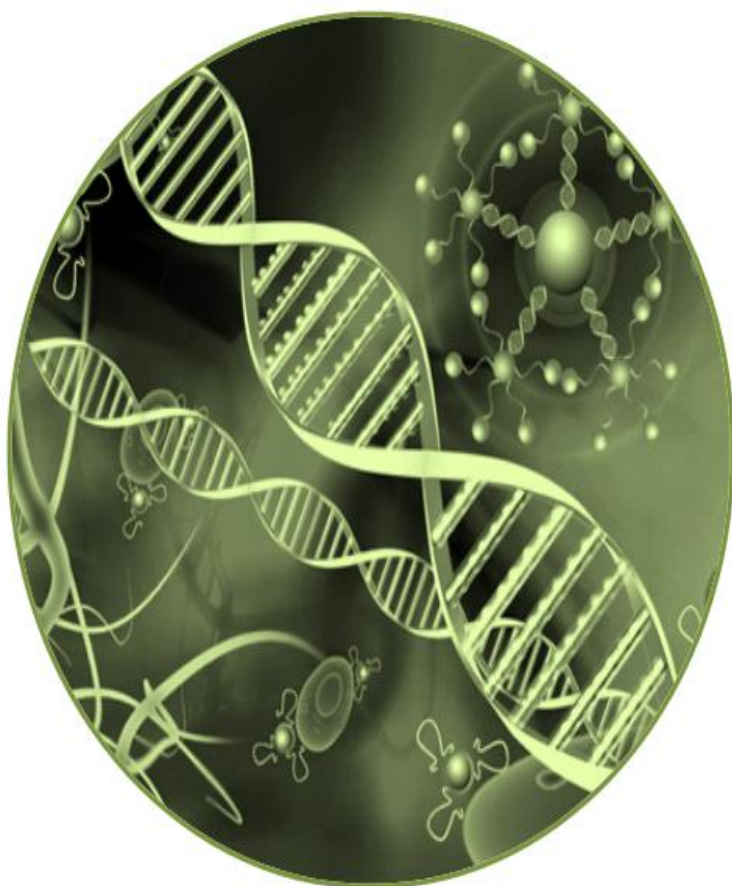


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COMPARISION OF PHYSICO-CHEMICAL PARAMETERS OF DRINKING WATER QUALITY IN VARANGAON REGION WITH INDIAN STANDARD IS;10500 DIST. JALGAON IN MAHARASHTRA (SUMMER SEASON).

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**COMPARISON OF PHYSICO-CHEMICAL PARAMETERS OF DRINKING WATER
QUALITY IN VARANGAON REGION WITH INDIAN STANDARD IS;10500 DIST.
JALGAON IN MAHARASHTRA (SUMMER SEASON)**

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ABSTRACT

This In the physico-chemical analysis various quality parameters were measured such as colour, odour, taste, temperature, pH, electrical conductivity, total dissolved solids, total hardness, and total alkalinity for drinking water .and compared with (IS:10500). Also compared monthly variation in parameters of drinking water in Varangaon region.

KEYWORDS:- Physico-chemical parameters,Tapi river water quality.

1. INTRODUCTION

Varangaon is a most important Nagarpalika in Jalgaon district of Maharashtra state in India. It is located 5 Km East of Thermal power station Deepnagar. The ordnance factory which manufactures gun powder and similar military products for the Indian Armed forces is located in Varangaon. Varangaon Nagarpalika having population near about 45,000. Coordinates $21^{\circ}1'12''N$ latitude and $75^{\circ}54'36''E$ longitude. Small river Bhogavati flows through the town, although it is mostly dry for eight months of the year. Bhogavati later joins the Tapi river. The Hatnur dam which is located 11 Km. north on the river Tapi. Provides water to the Varangaon. The river Bhogavati divides town into two parts, on north old village and on south near highway new town.

Tapi river originates in Betul district from a place called Multai. The Sanskrit name of Multai is Multapi and the term means the origin of Tapi Mata or the Tapi river. Tapi River is considered to be daughter of Lord Surya. The elevation of the origin of Tapi river above the sea is about 2000 ft. The area is essentially a high land tract, divided naturally into three distinct portions differing their superficial aspects. The character of their soil and their geological formation is

similar throughout the upper source of the river [5]. The Northern part of the district forms an irregular plain of the sand stone formation. The area is well-wooded tract, in many places stretching out in charming glades like an English park. It is one of the major rivers of peninsular India with length of around 724 km. Basin area 65.145 km^2 and source is Satpuda range

Study Area:- The Varangaon region lies between $21^{\circ}1'12''N$ latitude and $75^{\circ}54'36''E$ longitude. Sampling stations S1 (Shri Ram Nagar), S2 (ASC College), S3 (PHC), S4 (Bus Stand).

Sample Collection:- Samples were collected in plastic container (2-lit.) To avoid predictable changes in characteristics at 8 am to 10 am in the month of March 2016-May 2016 as per standard procedure (APHA-1998) [1,3].

Materials And Methods:- The collected samples were analyzed for different physico-chemical parameters such as, Taste, Temperature, colour, odour, pH, Electrical Conductivity (EC), Total Dissolved Solids (TDS), Total Hardness (TH) and Total Alkalinity (TA) etc. as per the standard methods (APHA-1998) and the result were compared with the Indian standard

(IS:10500) for drinking water[1,3].

Results And Discussion:-In the presents study physico-chemical parameter of drinking water in Varangaon region from four samples were studied for the period of three month is presented in table no.1 to 10. Colour, odour and taste are not objectionable in this region. In the present study the minimum average temperature is observed 25.3°C in the month of March and higher average temperature 31.3°C is observed in month of May-2016[8]. Higher temperature of water is due to the higher temperature of environment in summer season. In Maharashtra 46.6°C temp. is noted in 21-May 2016[2]. The pH value of is important indicator of water quality. It determines the suitability of various purposes [3]. The desirable pH range for drinking water is 7.0 to 8.5. pH in conjunction with total salinity, total alkalinity and temperature is used to determine whether a water is corrosive in nature having scale forming tendencies[3,4]. In the present study minimum pH 6.9 is observed in month of March and 7.2 is observed in month of May is due to the increasing temperature of the surface of the earth. Electrical conductivity is a measure of waters capacity to convey electrical current [14]. In the present study minimum EC is 296

µs/cm. is observed in the month of March and 330 µs/cm. is observed in May-2016. Conductivity of water varies directly with the temperature and is proportional to its dissolved minerals matter content. EC is important guide to check the purity of water [13]. The term total solids include both dissolved solids and suspended solids in the water [5, 6]. In the present study minimum value of TDS is 174.5 mg/l. and maximum value of 266.5 mg/l. is observed [7]. In the study low value is observed in the month of March and higher value of TDS is observed in month of May is due to the concentration of water in the summer season[8]. According to Indian standard IS:10500 TDS <500 mg/l. is desirable for drinking water[3]. Total hardness is an important parameter in decreasing the toxic effect of poisonous element [11, 12]. The hardness was found to be in the range of 137 to 152 mg/l. It is within a desirable limit. As the hardness increases in the polluted water by the deposition of calcium and magnesium salts [10]. Total alkalinity content in the samples ranges between 122.5 to 137.5 mg/l. which is also in the desirable limit of drinking water [6].

Conclusions:- Most of the parameters in the region were found to be under desirable limit for drinking water.

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Table:1-Physico-chemical characteristics of drinking water samples in Varangaon region in month of March-2016

Samples/ Parameters	Temp.	pH	EC	TDS	TH	TA
S1	25	6.9	298	170	135	120
S2	26	7.0	295	172	138	125
S3	25	6.9	296	175	135	123
S4	25.5	6.8	295	181	141	122
Average	25.3	6.9	296	174.5	137.3	122

Table:2-Physico-chemical characteristics of drinking water samples in Varangaon region in month of April -2016

Samples/ Parameters	Temp.	pH	EC	TDS	TH	TA
S1	27	6.9	299	190	140	129
S2	27	7.0	298	192	145	132
S3	26.9	7.0	305	200	149	139
S4	27.1	7.1	309	194	138	133
Average	27	7.0	302	194	143	133.3

Table:3-Physico-chemical characteristics of drinking water samples in Varangaon region in month of May-2016

Samples/ Parameters	Temp.	pH	EC	TDS	TH	TA
S1	31	7.2	325	265	150	135
S2	32	7.1	332	265	152	135
S3	32	7.2	330	266	158	141
S4	31.5	7.2	335	270	149	139
Average	31.6	7.2	330	266.5	152.3	137

Table: 4-Monthly variation in temperature.(°c) in the Varangaon region

Sr.No.	Month/Parameters	S1	S2	S3	S4
1	March	25	26	26	25.5
2	April	27	27	26.9	27.1
3	May	31	32	32	31.5

Table: 5-Monthly variation in pH in the Varangaon region

Sr.No.	Month/Parameters	S1	S2	S3	S4
1	March	6.9	7.0	6.9	6.8
2	April	6.9	7.0	7.1	7.0
3	May	7.2	7.1	7.2	7.2

Table: 6-Monthly variation in Electrical Conductivity in the Varangaon region

Sr.No.	Month/Parameters	S1	S2	S3	S4
1	March	298	295	296	295
2	April	299	298	305	309
3	May	325	332	330	335

Table: 7-Monthly variation in TDS in the Varangaon region

Sr.No.	Month/Parameters	S1	S2	S3	S4
1	March	170	172	175	181
2	April	190	192	200	194
3	May	265	265	266	270

Table: 8-Monthly variation in Total Hardness in the Varangaon region

Sr.No.	Month/Parameters	S1	S2	S3	S4
1	March	135	138	135	141
2	April	140	145	143	143
3	May	150	152	158	149

Table: 9-Monthly variation in Total Alkalinity in the Varangaon region

Sr.No.	Month/Parameters	S1	S2	S3	S4
1	March	120	125	123	122
2	April	129	132	139	133
3	May	135	135	141	139

Table: 10-Summery analysed parameters with Indian Standard(IS:10500)level for drinking water

Sr.No.	Parameters	Minimum	Maximum	IS:10500(Desirable limits)
1	Colour	-	-	5 Hazen units max.
2	Odour	-	-	Unobjectionable
3	Taste	-	-	Agreeable
4	Temp.(⁰ c)	25.3	31.6	-
5	pH	6.9	7.2	6.5-to-8.5
6	EC	296	330	-
7	TDS	174.5	266.5	500
8	TH	137.25	125.25	300
9	TA	122.5	137.5	200

Temp.(⁰c) , EC (μ s/cm),and another are in mg/L.