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Physio-chemical parameters of Upper Dudhana dam with the special references to fish Parasites

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Abstract
Physio-chemical parameters of water are important factor for fish health as well as fish production and due to these parameter effect on fish infection by parasite causes different disease to fish. According to Asifa Wali *et al*., 2016 found that the helminth parasites *Pomphorhynchus kashmirensis* and *Bothriocephalus acheilognathi* parasite, 136 (30.63%), 144(32.43%) infect to fishes at different physicochemical parameter that is temp 16.38 C°, DO 6.01 ± 0.40, PH 7.91 ± 0.22 and CO2 4.67 ± 1.12. and also found that the infection fish by30.63 % with two intestinal cestodes parasite *Bothriocephalus acheilognathi* Yamaguti 1934 at water quality condition.
Results revealed that physico-chemical parameter of water showed that the positive correlation with fish parasite and their prevalence, intensity and abundance and it is help for further studies on fish parasite occurrence in upper Dudhana Dam fresh water and effect of physico-chemical parameter.

Keyword: physico-chemicals parameter, upper dudhana dam water sample & review on fish parasite etc

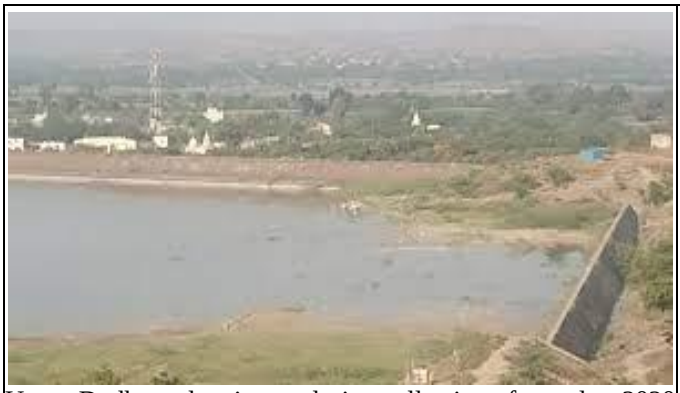
Introduction
Upper Dudhana dam is situated near village Somthana of Badnapur tahsil in district Jalna, Maharashtra, India on the river Dudhana. The dam is located at 19°55' 11.8" N to 75° 41' 39.9" E. This is an earthen dam and has a height of about 18m and 2.46 km in length, wherein the width is approximately 2 km. Somthana is a Village in Badnapur Taluka in Jalna District of Maharashtra State, India. It belongs to Marathwada region. It belongs to Aurangabad Division. It is located 23 KM towards west from District headquarters Jalna. 6 KM from Badnapur. 368 KM from State capital Mumbai Walha (3 KM), Nikalak (3 KM), Malewadi (4 KM), Kandari Bk. (4 KM), Ramkheda Padali (5 KM) are the nearby Villages to Somthana. Somthana is surrounded by Jalna Taluka towards East, Phulambri Taluka towards west, Aurangabad Taluka towards west, Bhokardan Taluka towards North.

They are important It sustains life plants and animals at the Earth. Water is an important for human consumption as well as irrigation, agriculture, in fishing and industrial uses. Water is the most important natural resources in the word without its life can't exist. water quality is very essential for survival and growth of fish (Bhatnagar A *et al*, 2013 and Sonila Kane *et al*.,2015) [14, 6].
Water quality relate to Physio-chemicals parameters is the physical, chemical and biological content of the water and it is influencing the aquatic environment are P^H, salinity, temperature, dissolved oxygen, nutrient, heavy metal contamination and TDS. These parameters are the limiting factors for the survival of aquatic organisms.
Biswas and Pramanik in 2016 reported that Water quality parameters such as water pH, temperature, dissolved oxygen content, alkalinity, salinity, carbon dioxide and free carbon and parasitological factors such as prevalence, mean intensity, mean abundance of parasite indicate a distinct relationships between water quality and parasitic infection or fish susceptibility to parasitic infection.
According to Lafferty and Kuris, 1999, Altered water quality may also improve conditions for parasites if their host's density increases.
Bayoumy *et al*., 2015, stated that Water quality and seasons are the most important factors affecting the prevalence of parasite and Singh and Mishra, 2013, The seasonal variation of water characteristics, predominantly temperature, is considered too strongly affect fish physiology and immunology and also affects all life-cycle stages of parasites. Also, Gaffar in 2007 observed that the effect of temperature on the fishes is an important factor for infestation rate of parasites and Modu *et al* in 2016, investigate the influence of monogenean irritation coupled with water quality condition of the pond.
Therefore, necessary to investigate the Physico-chemicals parameters of Somthana dam water for further studies on fish parasite and diseases and their correlation with physio-chemicals parameter of water.

Materials and Methods
Physico-chemical Parameters of Water
Water sample were collected from Upper Dudhana dam in sterilized sampling bottle and analyzed different physico-chemicals parameter as per previously method used by authors are as following.

Determination of physico-chemical parameters of Upper Dudhana dam
The temperature of water measured immediately on site of water body by using glass thermometer. PH of water sample also measured on site with help of Digital PH meter and then in laboratory with help of Deluxe P^H meter-101 Model, Conductivity were measured by conductivity meter EQ 660B µp Based model, (Agbazue *et al.*, 2015). Turbidity of

the water samples were measured using a turbidity meter, Alkalinity of determined by Titration Method (U.E. Chaudhari 2014 and B. Venkateshwara Rao, 2011), TDS (mg/L) measured by TDS meter (Agbazue et al, 2015), and hardness and chloride were determined by titration method and also remaining parameter measured and determined according to APHA, 2012 , NEERI, Govt.of India and Ashwini *et al*.2015 and also Piper, 1947 and Sayed *et al*,2018 used methodology for determination of physico-chemicals parameter of water sample.



Upper Dudhana dam image during collection of samples ,2020

During collection Upper Dudhana dam water sample jalna, 2020

Fig 1

Results

Table 1

Sr. No.	Physico-chemical Parameter		
		Upper Dudhana dam	**River**
1	Temperature (C°)	21.3	20.4
2	pH	7.8	7.1
3	Turbidity (NTU)	151	148
4	Conductivity (EC) (dS/m)	0.24	0.22
5	TDS (mg/L)	227	213
6	CO_2	5.1	4.9
7	Total hardness(mg/L)	114.4	103.2
8	Dissolved Oxygen (mg/L)	09.6	08.6
9	Chemical oxygen Demand (COD) (mg/L)	5.13	5.01
10	Biological Oxygen Demand (BOD) at 5^{th} day (mg/L)	8.80	7.67
11	Total ammonia (NH3) (mg/L)	1.13	1.02
12	NO_2 (mg/L)	0.19	0.12
13	NO_3(mg/L)	0.10	0.08
14	Total alkalinity (mg/L)	97.1	94.45
15	Chlorides (mg/L)	46.21	41.02
16	Sulphates (mg/L)	12.39	10.19
17	Calcium (mg/L)	32.12	31.65
18	Magnesium (mg/L)	2.01	1.91
19	Sodium (mg/L)	32.05	29.35
20	Lead (Pb) (mg/L)	0.019	0.012
21	Cadmium (Cd)(mg/L)	0.12	0.091
22	Iron (Fe)	0.16	0.13

Note:-All results in three replicates and taken average value of results

Temperature and pH

Present water sample of Upper Dudhana dam and river water sample observed 21.3 and 20.4 respectively. Temperature is the most important effective factor for aquatic animal, most cestodes also develop more rapidly at elevated temperatures (Beaker and Brunson, 1967; Kuperman, Shulman, 1974 and Glenn L. Hoffman, 1976), and all require invertebrate hosts such as oligochaetes orcopepods whose presence or absence depends on the availability of a suitable environment and pH was observed that 7.8 and 7.1 of both water sample.

Turbidity and electric conductivity:

The result showed that the turbidity and conductivity of water sample value are 151, 148 (NTU) and 0.24, 0.22 (dS/m) respectively. The TDS of both water sample are 227

and 213 (mg/l) and also total hardness of both water sample are 114.4 and 103.2 (mg/l).

D.O. and COD

Dissolved oxygen and chemical oxygen demand of both that is Upper Dudhana dam and river water were determined and results showed 09.6 & 08.6 mg/ml of collected sample. The COD of sample 5.13 5.01 mg/l. According to chapman *et al*., 2000 and Bayoumy *et al*., 2008 the dissolved oxygen conc. in the fish pond ranges between 5.8-7.8 mg/l at temperature ranges between 23.1-26.4 C° which is within the safety value freshwater fish and also, according to Cox, 2003 low value DO disturb aquatic life.

Total hardness and BOD^{5th}

Total hardness and BOD^{5th} of both water sample were 114.4 &103.2 mg/l hardness and BOD^{5th} 8.80 & 7.67 mg/l of actual collected sample and determined within time without disturbed quality of water sample in sampling bottling. According to CPCB & BIS-IS 10500-2012 standard value of BOD ranges between 2-3 mg/l.

Total Ammonium, Nitrate content, total alkalinity and heavy metal-non-metal:

Total ammonium and nitrate content of water sample found that 1.13, 1.02 of total ammonium and 0.19, 0.12 mg/l of nitrate and also total alkalinity of both water sample determined and result found that 97.1 & 94.45 mg/l. According to Floyd-F *et al*., 2009 the suitable level ammonium in water for fishes is 0.05 mg/L but present results revealed that level of ammonium was high so its condition affect the health of fishes.

Chloride, sulphate, calcium, magnesium, sodium, lead, cadmium and iron were determined by titration method and atomic photo spectrometer and results showed that the total content in mg/l water sample was 46.21, 12.39, 32.12, 2.01, 32.05, 0.019, 0.12 and 0.16 of dam water sample respectively and also purna river eater sample was 41.02, 10.19, 31.65, 1.91, 29.35, 0.012, 0.091 and 0.13 mg/l respectively.

Discussion and Conclusion

Physio-chemical parameters of water are important factor for fish health as well as fish production and due to these parameter effect on fish infection by parasite causes different disease to fish. According to Asifa Wali *et al*., 2016 found that the helminth parasites *Pomphorhynchus kashmirensis* and *Bothriocephalus acheilognathi* parasite, 136 (30.63%), 144(32.43%) infect to fishes at different physicochemical parameter that is temp 16.38 C°, DO 6.01 ± 0.40, P^H 7.91 ± 0.22 and CO_2 4.67 ± 1.12. and also found that the infection fish by30.63 % with two intestinal cestodes parasite *Bothriocephalus acheilognathi* Yamaguti 1934 at water quality condition.

Also, Chubb, 1980, Ernst *et al*., 2005 and U.R. Zargar *et al*.,2011 found that water temperature important role in the progression of helminth parasites and temperature increase the growth period of parasite and shortens the generation time and U.R. Zargar *et al*., 2011.also concluded in his Article results, helminth parasite composition in the fish was affected by the lakes' environmental stress.

So, this review on fish parasite infection at physico-chemicals parameter and results revealed that physico-chemical parameter of water showed that the positive correlation with fish parasite and their prevalence, intensity and abundance and it is help for further studies on fish parasite occurrence in Upper Dudhana dam fresh water and their effect of physico-chemical parameter.

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