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Analysis of physiochemical parameters and fungal population in various tissues of *Catla catla*

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ABSTRACT

Aquaculture is concerned with the propagation and rearing of aquatic organisms. Many people are turning to aquaculture to improve the food production and to contributes for economic development. The present investigation, water sample and infected fish (Catla Catla) were collected in cultural pond from saliyamangalam. Analysis of Physicochemical parameters in water sample and fungal populations were studied in skin, Gill fin and gut of Catla Catla by using fungal culture medium. From the water quality analysis it clearly indicates that, changes in temperature, low oxygen level, low alkalinity, high organic load, decreased level of nitrite. Fungal studies clearly indicate that there was no fungal growth in control plate the various in infected fish tissue sample inoculated plates were showed significant growth of fungal colonies, such as Achly Sp; Pencillium sp Aspergillus Sp, Exopila, Branchiomyces, Saprolegliasis, Icthyophonus, Fonsecaea, found in predominantly. From the present study it was concluded that fungal pathogens are most significant microbial agents affecting freshwater fishe (Catla Catla) and climatic change may play a grate role in modulating the occurerence of fungal fish diseases.

Key word: ***Catla Catla,*** Physiochemical parameters, fungal population, Fungal infection.

INTRODUCTION

Aquaculture play a vital rol in many countries by offering better Nutrition higher income. Foreign exchange and better employment opportunities. Aquatic ecosystems are affected by several health stressors that significantly deplete biodiversity. Through water is a renevable resource, reckless usage and improper management of water system may caus serious problems in availability and quality of water is usually determined by its physicochemical characteristics. It is a well established fact that domestic sewage and industrial effluent discharged into natural water result in deterioration of water quality and cultural eutropication (show et al, 1991) The other important source of water pollution include mass bathing, disposal of dead bodies, rural and urban waste matters, agricultural run-off and soild waste disposal (Tiwana 1992)

Fungal infaction is an important economic and limiting factor in intensive fish production microbial quality (Ogbonna, C.I.C, 1989) of formed fish is largely determined by the quality of water in which they were cultivated (sati, S.C 1991 Aquatic fungai) fungal diseases are more acute in cold water Aquaculture then in warm water culture and may be aggravated by the unfavourable conditions (that is crowding, malnutrition and unstable temperature) Therefore this study to estimate the level of physico-chemical parameters of pond water and analysis of fungai in different tisues of infected fish *(Catla Catla).*

MATERIALS AND MATHODS

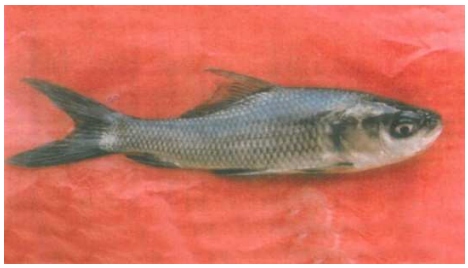
Water sample and infected fish *(Catla Catla)* were collected from village cultural pond of saliyamangalam. The cultural pond water sample were collected in clean sterile plastic containers, during this study. The sample were transported to the laboratory within 3 hours for analysis of physicochemical parameters and fungal quality. The physicochemical characters includes, the determination of temperature, PH, turbidity, Salinity, O2 content, CO2 content, iron, nitrite and phosphate by using the methods of (APHA 1998) (Saxena 1994) (Manivasakam 1987)

The standared techniques were followed for collection and fungal analysis of infected fish as described (Dudka et al, 1991) The various tissue of infected fish sample was inoculated inspread plated technique was employed to fungal population were determined using potato dextrose agar medium.

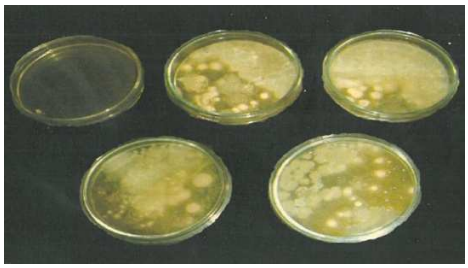
RESULTS AND DISCUSSION

The Physicochemical and fungal characteristics are given in Table 1 and 2 respectively. In the present study, the cultural pond water quality shows it clearly indicate that changes in temperature, O_2 level. Low allralinity, high organic load, decreased nitrite Source, low oxygen and carbondioxide create unsuitable condition in the environment where the fish lives (Table-1) microbial population were isolated from the infected tissues such as skin, gill, fins and gut of freshwater fish catla catla (fig – 1 & 2)

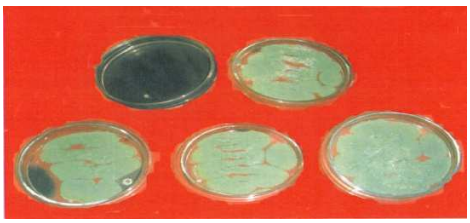
FIG 1 CULTURE METHODS OF VARIOUS TISSUE SAMPLES OF INFECTED FISH



CATLA CATLA



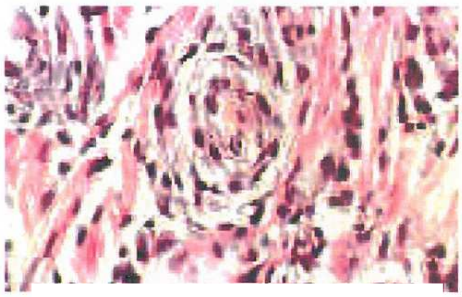
SPREAD PLATE OF FUNGAL CULTURE



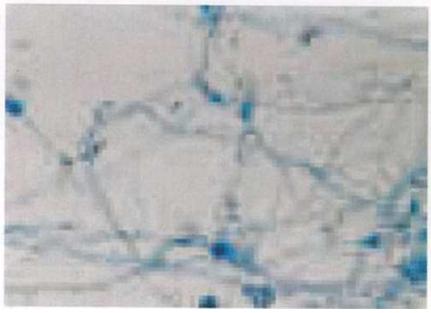
STREAK PLATES OF FUNGAL CULTURE

FIG 2 MICROSCOPICAL EXAMINATION OF FUNGAL CULTURE

ACHLYA SP

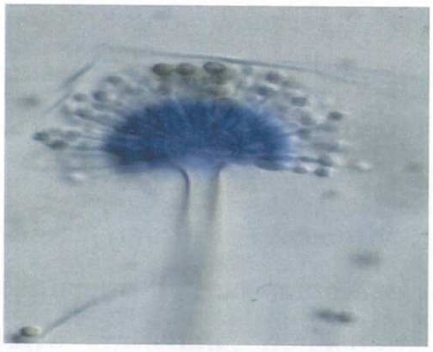


BRANCHIOMYCES

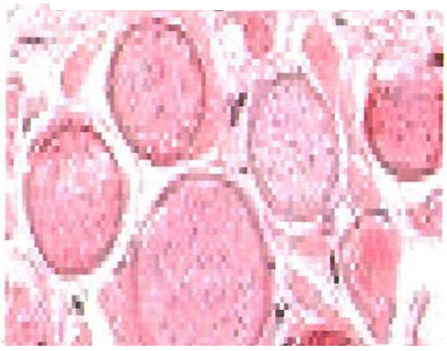


PENCILLIUM SP

SAPROLEGLIASIS

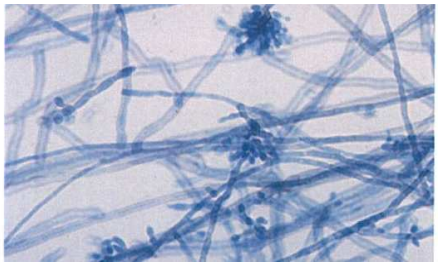


ASPERGILLUS SP



ICTHYOPHONUS

EXOPHIALA



FONSECAEA

TABLE -1 WATER QUALITY ANALYSIS OF SALIYAMANGALAM VILLAGE POND

Parameters	Observed Result
Ph	8.1
Temperature	33^0C
Turbidity	29.cm
Salinity	0.1625%
O_2 Content	2.5166 ml/l
CO_2 Content	7.01615 g/l
Iron	0.985 g/l
Nitriete	0.761 mg/l
Phosphate	32.1 mg/l

TABLE– 2 QUALITATIVE ANALYSIS OF MICROBIAL POPULATION IN INFECTED FISH *CATLA CATLA*

Identification of micro organism	Skin Sample	Fin Sample	Cill Sample	Gut Sample
Achly Sp	+	+	+	-
Penicillium SP	+	+	+	-
Aspergillus SP	+	+	+	-
Exopila SP	+	+	+	-
Branchiomyces	+	+	+	
Saprolegliasis	-	+	+	+
Icthyophonus	-	-	+	+
Fonsecaea	+	-	-	+

Table -2 it clearly indicate that there was no fungal colony in control plate having potato dextrose Agar medium (PDA) where as petriplates which were inoculated with diluted tissue sample showed significant development of fungal colony. Further subculture of individual fungal colony was made in streak plate method which also showed significant development of fungai. *Achlya SP*, *penicillium SP*, *Aspergillus SP*, *Exopiala*, *Branchiomyces*, *Saprolegliasis*, *Icthyophonus* and Fonsecaea have been isolated from the infected fish sample skin, fin, gill, and gut sample so the poor water quality conditions for this resion and they are a potential problem of village cultural pond.

PH is an important factor that determines the suitability of water for various purposes including toxicity to animals and plants. The clarity of Natural body of water is an important determined of its conditions and productivity. Turbidity in water is caused by suspended and colloidal matter such as clay, silt, finely divided organic and inorganic matter, plankton and other microscopic organism. Temperature of water may not be important in pure water because of the wide range of temperatures tolerance in aquatic life, but in polluted water, temperature can have profound effects on dissolved oxygen (DO) and biological oxygen demand (BOD). The fluctuation in river water temperature usually depends on the season, geographic location, sampling time and temperature of effluents entering the stream (Ahipathy 2006) Phosphate and nitrite determinations are important in assessing the potential biological productivity of surface waters. Increasing concentration of phosphorus and nitrogen compounds in the lakes and reservoirs to eutrophication.

Biological oxygen demand is a measure of the oxygen in the water that required by the aerobic organisms. The biodegradation of organic material exerts oxygen tension in the water and indicates the biochemical oxygen demand (Abida 2008) The fungal genera such as *Achlya SP*, *Penicillium SP*, *Aspergellus SP*, *Exopila*, *Branchiomyces*, *Saprolegliasis*, were predominantly infected fish and may be due to domastic soild waste and seawage from various human activities. The fungal population was found to be higher density in the infected fish. Hence the data show that the infected fish is considered to be unfit for eating purposes. So the poor water quality conditions is a potential problem of cultural pond.

REFERENCES

[1] Show B.P Sahu, A and Panigrathi, A.K, **1991**, *pollute.Res., 10,* 139 – 149
[2] Tiwana A.J, **1992** water resource manament quality and quality aspects. Proc. Int Con, Rural works and sanitation in developing countries, IWWA, Nagpur, India PP6 -17
[3] Ogborna C.I.C **1989** *Miseria J.Aguat Sci*, 4:59-62
[4] Sati, S.C **1991** *India Micoses*, 34 (9-10) 437 – 441

[5] APHA **1998** Standared methods for the examination of water and wate water 20th edition. American public health Association, American Water works association, water environment federation Washington DC.
[6] Saxena M.M. **1994** Environmental analysis – water soil and air Agro Botanical Publishers (India) 2nd Edition 4-86; 121 – 125.
[7] Manivasakam, N,**1982** Industrial Effluents. Origin, Characteristics, effects, analysis and treatment. 4th edition, sakthi publications, Coimbatore, 267-333
[8] Dudka, I.A. Isaeva, N.M. and Nagornaya, S.S. **1991**, *Mikol, fitopatol*, 25 (2) 166 – 176
[9] Ahipath, M.V. and puttaiah, E.T., **2006** *Environmental Geology* 49; 1217 – 1222
[10] Abida M.V.and Harikrishna, **2008**, *E.Journal of chemistry* 5(2) 377 - 378