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A Study on the Effect of Commercial Probiotics on Physico-Chemical Parameters of Ornamental fish (*Puntius conchonius)* culture water.

K. Parvathi[1*], S. Jayaprakash[1], P. Jeyakumar[1], C.Kalaimani[1], P. Sivakumar[2], S.Kalaimani[3] and T.Venkatachalam[3]

[1]Department of Zoology, Erode Arts and Science College (Autonomous), Erode, India.

[2]The Erode College of Pharmacy and Research Institute, Erode, India.

[3]Department of Zoology, GTN College, Dindigul, India.

[3]Department of Zoology, Gobi Arts and Science College, Gobichettipalayam, India.

*Corresponding Author E-mail: *parsieac95@gmail.com*

Abstract

The physico-chemical parameter of water plays an important role in aquaculture. The water temperature and pH is basically a vital factor due to its effects on chemical and biological reactions in aquatic system. The present study aims to find out the physico-chemical parameters to ornamental fish culture. Water quality such as temperature, pH and ammonia were studied at 15 and 30 days intervals by collecting water samples in between 8 am to 9 am. No more changes in temperature and pH and decreased ammonia level was observed in the present study.

Keywords: *Puntius conchonius*, commercial probiotics, pH, temperature and ammonia.

Introduction

Ornamental fish keeping is one of the most popular hobbies in the world today (Mandal and Barman, 2014). The main aspect that determines the trade and prosperity of the ornamental fish industry is the health of the ornamental fishes, which, in turn, is directly dependent on their rearing water quality, food offered and physico-chemical conditions. The indiscriminate use of antibiotics and chemotherapeutants for improving the health and rearing water quality in fish has led to the development of drug-resistant strains of pathogenic microorganisms

(Amabile-Cuevas *et al*., 1995). Probiotics are bio-friendly agents can be introduced into the cultured environment to promote the growth of cultured organism and animal health by inhibiting the growth of pathogenic bacteria in the same habitat (Parvathi *et al*., 2013). The use of a feed probiotic for improved health and reproductive performance has been well documented in ornamental fish (Dhert *et al*., 1992; Irianto *et al*. 2003; Ghosh *et al*., 2007a) but research on the effect of commercial probiotics on the growth of ornamental fish and the water quality are lacking. Hence, the present study aims to find out the influence of commercial probiotics Lact-Act on physico chemical parameters of ornamental fish *Puntius conchonius* culture water.

Materials and Methods

Collection of Experimental Animals

The ornamental fish Rosy Barb *(Puntius conchonius,* 5.00 gm weight and 5.4 cm length) were purchased from Sirago fish farm, Nerinjipet, Mettur, Erode District, Tamil Nadu and acclimatized in laboratory conditions in a plastic tubs (23^0 C/74^0 F, pH 7.0) with continuous aeration for two weeks prior to the commencement of an experiment. Stocked fish were fed with supplementary diet *ad libitum*. After acclimatization, the initial weight and length of the fish were recorded. Plastic tubs with the capacity of 15 litres were purchased and one tub was kept as control (C) and another was kept as Experiment (E). Fifteen fish were introduced into each tub. The control fish were fed only with supplementary diet (without probiotics) and fish in an experimental tub were fed with supplementary diet and 0.2g commercial feed probiotic in morning at 6 am to 7 am. Physico-chemical parameters such as temperature, pH and ammonia were estimated on 15^{th} day and 30^{th} day by the standard methods of APHA (2005).

Statistical Analysis

The data were subjected to Statistical analysis (SPSS) and data were expressed as mean ± SEM. Statistical significant of the differences were assessed by using student t-test and significance was established at $P<0.05$ level.

Results and Discussion

Water is an important constituent of the aquatic environment because it is considered as a medicine for various chemical reactions. Different physico-chemical properties of water make it as the best solvent adapted to fish and other aquatic organisms (Ratan Kumar Saha,

2010). Water temperature is basically an important factor due to its effects on chemical and biological reactions in aquatic system. Temperature can change the feeding, breeding respiration, movement and distribution of aquatic organisms. As fish are cold blood animal (poikilothermic), the water temperature affects their metabolism, digestion, growth, survival, maturity and reproduction. In the present study, water temperature and pH were maintained same with very slight changes in both control and experimental water (Tab.1&2 and Fig.1&2). This may be due to incorporated probiotics doesn't alter water temperature and pH (Ghosh *et al.*, 2008).

Table: 1 Effect of commercial probiotics Lact-Act on water temperature after different exposure period.

EXPOSURE PERIOD (Days)	TEMPERATURE (^{0}C)	
	Control	**Experiment**
15	33.6 ± 0.50	33.7 ± 0.50
30	34.7 ± 0.50	34.8 ± 0.50

Values are in mean ±SEM

Fig.1. Changes in water temperature after 15 and 30 days of treatment with commercial Probiotics Lact-Act.

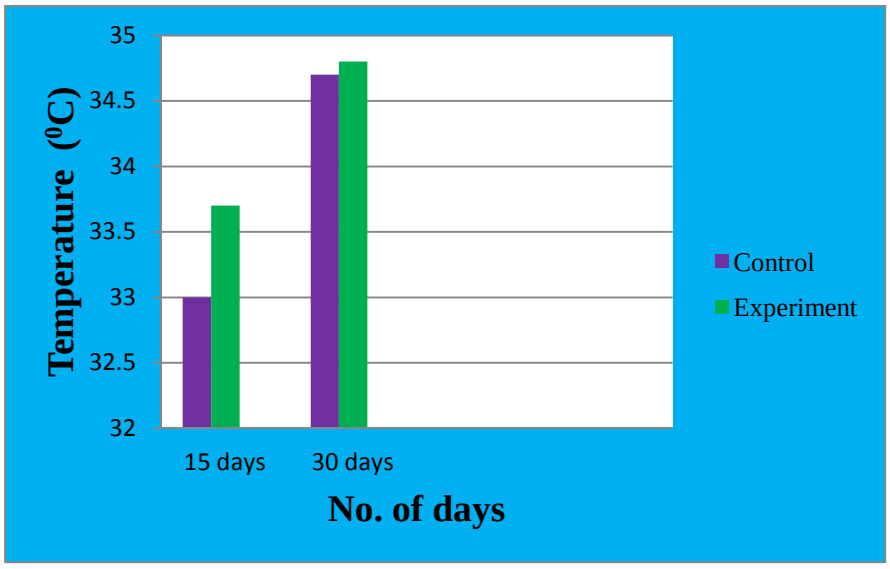


Table: 2 Effect of commercial probiotics Lact-Act on water pH after different exposure period.

EXPOSURE PERIOD (Days)	pH	
	Control	**Experiment**
15	7 ± 0.57	7 ± 0.50
30	7 ± 0.36	7 ± 0.50

Values are in mean ±SEM

Fig.2. Changes in water pH after 15 and 30 days of treatment with commercial Probiotic Lact-Act.

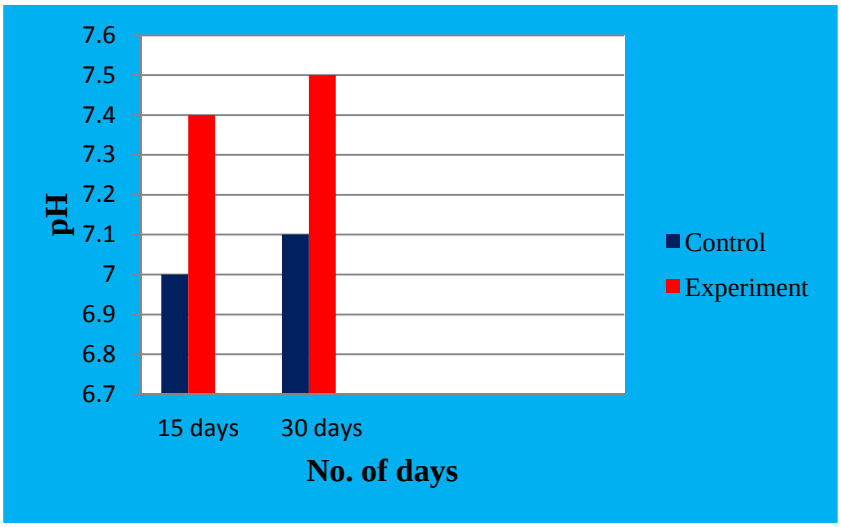
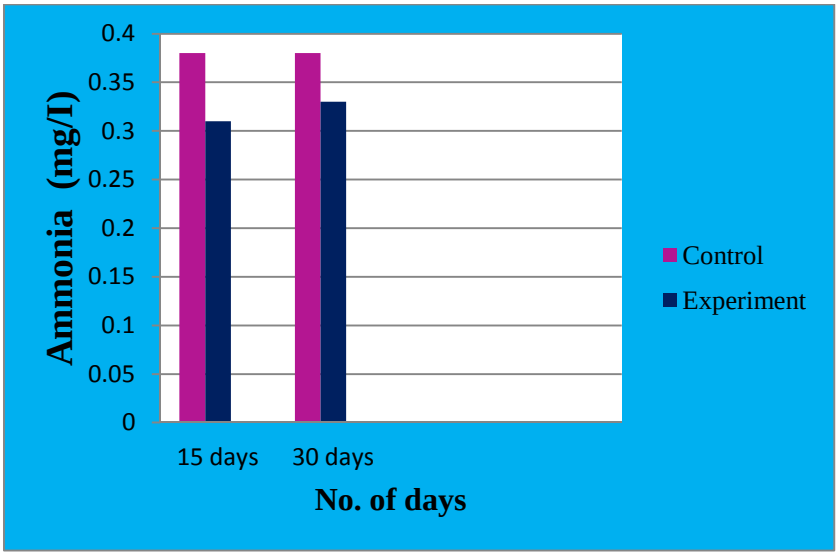


Table-3. Effect of commercial probiotics Lact-Act on ammonia level after different exposure period.

EXPOSURE PERIOD (Days)	AMMONIA (mg/l)	
	Control	**Experiment**
15	0.38 ± 0.05	0.31 ± 0.03
30	0.38 ± 0.01	0.33 ± 0.01

Values are in mean ±SEM

Fig.3. Changes in Ammonia after 15 and 30 days of treatment with commercial Probiotic Lact-Act.



The ammonia level were decreased in experimental water over the control water (Tab.3 and Fig.3). This decreased ammonia level may be due to the presence heterotrophic gram positive bacteria which plays an effective role in using organic matter as their main source of carbon and converting it into carbon di oxide (Stanier *et al.*, 1963).

Reference

Amabile-Cuevas CF, Cardenas-Garcia M, Ludgar M. Antibiotic resistance. *Am Sci* 83 (1995): 320-329.

Boyd, C. E. Water quality in ponds for aquaculture. Alabama Agricultural Experimental station. Auburm Univ., Alabama. (1990): pp 482.

Dhert, P., Lavens, P. and Sorgeloos, P. Stress evaluation: a tool for quality control of hatchery-produced shrimp and fish fry. *Aquaculture Europe*. (1992) 17: 6-10.

Ghosh , S., A. Siha and C.Sahu. Effect of probiotic on reproductive performance in female livebearing ornamental fish. *Aquacult. Res*. 38 (2007): 518-526.

Irianto, A. and Austin, B. Use of dead probiotic cells to control furunculosis in rainbow trout, Onchorhynchusmykiss (Walbaum). *J. Fish Dis*., 26 (2003): 59-62.

Moriarty, D.J.W. Control of luminous *Vibrio* species in penaeid aquaculture ponds. Aquaculture. 164 (1998): 351-358.

Parvathi K, Sivakumar P, Vinoth M. Influence of Selected Probiotics on Some Physico-Chemical Parameters of Water Bonfring. (2013): 394-396.

Prabhu NM, Nazar AR, Rajagopal S, Khan SA. Use of probiotics in water quality management during shrimp culture. *J. Aqua. Trop*. 14 (1999): 227-236.

Queiroz JF, Boyd CE. Effects of a bacterial inoculum in channel catfish ponds. *J. World Aquaculture Society*. 29.1 (1998): 67-73.

Ravi V, Khan SA, Rajagopal S. Influence of probiotics on growth of Indian white prawn Penaeusindicus. *J. SciInd Res*. 57 (1998): 752-756.

Sagar C.Mandal, Debtanu Barman. Identification of the Most Potential Indigenous Ornamental Fishes of South Tripura District in India for Commercial Production. *Int.J.Aquacult*. 4.7 (2014).

Sivakumar P, Rajan MR, Ramachandran P. Effects of probiotics on growth performance of common carp *Cyprinuscarpio*varcommunis. *Int. J. Pharm. Bio. Sci*. 5.1: (2014): 835-839.

Sivakumar T, Sankar R, MasilamaniSelvam M, ThirumalaiArasu V. Role of probiotic bacteria on *Cyprinuscarpio*. *J. Basic and Applied Biology*. 3.3&4 (2009): 66-71.

Vannuccini S. Overview of Fish Production, Utilization, Consumption and Trade. FAO, Fishery Information, Data and Statistics Unit. Food and Agriculture Organiza-tion of the United Nations, Rome, Italy. (2004) (www.fao.org).