

EFFECT OF GIR COW URINE IN GROWTH TO FRESHWATER FISH *CIRRHINUS MRIGALA* FINGERLINGS (HAMILTON)

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Abstract : Aquaculture is a highly profitable venture in India. Also, its availability of nutritive food for the growing population. Cows were considered wealth and were the backbone of the economy of ancient Indians. Cow urine is taken into account to be the foremost effective animal origin substance having intrinsic property of general health improvement. (Gir) Cow urine were used in this present study. The laboratory determinations of lethal concentrations (LC50) through a static bioassay test were performed. Fingerlings were treated with 0.1%, concentrations of Gir cow urine for a period of seven days. The control and treated groups were sacrificed on the 30th day post cow urine treatment and therefore the growth parameters were analysed, the results show significant effect of cow urine of the Indian major carp *Cirrhinus mrigala*. The maximum rate of growth of 0.00432 gm/day was observed within the *cirrhinus mrigala* fingerlings treated with 0.1% of Gir Cow Urine in comparison with control

Keywords: Cow urine, *Cirrhinus mrigala*, Growth parameters, Lethal concentration

1.Introduction

Sustainable aquaculture depends upon eco-friendly economically and socially viable culture systems. Organic load is a common problem in aquaculture ecosystem. The recycling of organic wastes for fish culture serves the dual purpose of cleaning the environment and providing economic benefits. The recycling of animal dung/wastes in fish ponds for natural fish production is important in integrated farming and to reduce expenditure on costly feeds and fertilizers which form more than 50% of the total input cost (Dhawan and Kaur 2002). Though pond fertilization with organic and inorganic fertilizers is a very cheap and effective method of increasing productivity, their excessive use deteriorates the water quality (Boyd 1992, Garg and Bhatnagar 1996) and depletes the dissolved oxygen to detrimental level (Singh et al 2004). Organic manuring is widely practiced in carp culture systems to ensure sustained supply of essential nutrients for augmenting natural pond productivity to obtain increased fish production at cheaper rates (Singh and Sharma 1999). In integrated farming technology animal manures particularly farmyard manure, poultry dropping, cow dung, biogas slurry ect., are suitable as substitutes for costly feed and fertilizers (Schroeder 1980; Dhawan and Toor 1989). It has been proved that growth rate depends on the type of manure used (Geen et.al., 1989).

Because manure collected from different animals differ in quality. However, cow urine has not been examined for their effect on growth promotion in aquaculture. Literature shows that cow urine has enormous enhancing properties on biological systems. Cow urine one among the ingredients in panchagavya is believed to possess therapeutic value. In India cow urine is employed by majority of rural population as Folklore remedy in most the states. Urine therapy was not only used in India, but for several Centuries in many parts of the Globe. As per Ayurvedic literatures, gomutra is beneficial in number of diseases particularly in gulma, kusta, ascitis, filaria, aburda (cancer), etc. Cow urine is additionally used along side herbs to treat various diseases like fever, epilepsy, anemia, abdominal pain, constipation, ect by the normal healers (Pathak, and Kumar, 2003 Krishnamurthi, Dutta, Devi and Chakrabarti, 2004) Immunomodulatory effect of cow urine were established scientifically (Chauhan, Singh and Singhal, 2001). Very recently, panchagavya has been suggested as a remedy for chikengunya (www.daijiworld.com). Cow's urine has been used in the preparations of soap, nasal powder, body powder, body cream, incense sticks, tooth powder ect. Have been prepared from the cow dung and recommended for medical use (www.hkrl.com/cowurine.html). Probably to feature sanctity to the whole gamut of those 'medications', it's been claimed that Indian pure breed cows have 'immunology power' from 90% to 98% while the cow of

mixed breed have less than 40% (www.goshala.com/articles/panchagavya.php). Hence the present study has been planned to study the effect of Gir cow urine on growth parameters.

2. MATERIALS AND METHODS

2.1 Fish and their maintenance

Fingerlings of *Cirrhinus mrigala* weighing (1 ± 0.2 g) and length (1.5 ± 0.2 cm) of both sexes were procured from, Azhiyar dam, Pollachi. Fishes were brought to the wet laboratory and acclimatized for one week prior to experimentation. Chlorine free water was used throughout the course of the experiment. Plastic aquaria were washed and then sundried to avoid fungal contamination. Water quality parameters such as pH, temperature, dissolved oxygen, and ammonia, are maintained within acceptable ranges. Healthy fishes were then transferred to Plastic aquaria (Vol 25 L). For each treatment three replicates were used and in each replicate 7 fingerlings were stocked. They were regularly fed with commercial feed. The fish were fed twice a day for an hour between 9.00 am to 10.00 am and 4.00 pm to 5.00 pm (Amit Jana et al 2014) and the medium was changed daily to remove faeces and food remnants.

2.2 Growth Parameters

The experiments were continued for 30 days. Live weight of the experimental fishes were also recorded on 10th, 20th and 30th days. Based on this data the growth parameters like Growth, Growth rate, % of an increase in body weight, survival were calculated.

2.3 Determination of 24-h LC₁₀₀ and 96-h LC₅₀

Static toxicity tests were run to determine lethal and sub lethal concentrations (24-h LC₁₀₀ and 96-h LC₅₀) of Gir cow urine in tap water to the following concentrations: 20%, 10%, 5%, 4%, 2%, 1%, 0.1%, 0.01%, 0.001% concentration. A control group was maintained separately without urine treatment. Each treatment had 3 replicates. The test containers were examined and counted every 3 days. Once the test individuals began to reproduce, the neonates were discarded. All laboratory conditions were maintained constant. Deaths and abnormal behavior fish *C.mrigala* were recorded every 2 h for the 1st day, then every day for other 3 days. The value of 24 h-LC₁₀₀ and the 96-h LC₅₀ were estimated. The growth for *C.mrigala* effect of Gir cow urine was estimated for 30 days of exposure to the mentioned concentrations.

3. Result and Discussion

The knowledge on the influence of any chemical in the environment over the growth and food utilization efficiency is essential for aquaculture practices or water bodies with environmental conditions. Various chemicals like pesticides (Arunachalam *et al.*, 1980 and Ramakrishna *et al.*, 1991) and heavy metals like lead (Jhal, 1991; Janadhana *et al.*, 1998) estrogen (Satoh and Nimura 1991; Jayaprakash and Sambu, 1991; Basavaraja *et al.*, 1997). Promote the growth rate of aquatic organisms.

Nutrients in the water are indispensable for the growth and production of fauna and flora inhabiting in the aquatic habitat. The continuous use of nutrients in water leads to depletion of nutrients in water. Hence nutrients are added to aquatic ecosystems. This will support the plankton population and other fish feed organisms. Manuring has many effects on the aquatic organisms. Sing and Sharma (1999) reported that manuring promote the growth of *L.rohita* in addition to the different effects it had in the environment. Similar results were recorded in the growth and production of prawn (Sarkar *et.al* 1988).

The result of the present study also reveals that the growth of the *C.mrigala* reared in cow urine manured water showed better growth characteristics than the control. It reveals that the cow urine has a direct relationship with growth and production of fishes. After 30 days the cow urine had significant influence on various growth parameters like fish growth, growth rate and % increase in body weight. The final weight of *C.mrigala* reared in different Cow urine treatment. This indicates that the influence of cow urine on growth of *C.mrigal* is significant. Organic manuring is widely practiced in carp culture systems to ensure sustained supply of essential nutrients for augmenting natural pond productivity to obtain increased fish production at cheaper rates (Sing and Sharma 1999). The result of the present study also reveals that the cow urine enhances survival of *C.Mrigala* among the different treatments and the results reveals the application of Gir cow urine is more beneficial to get more survival, to get more growth rate and environmental safety.

The mortality rate of fish vary in accordance with the concentration of cow urine are at the low concentration of 0.1%, 0.01%, 0.001% there are no dead fish. The accumulation of contaminants in organisms differ depending on the concentration of pollutants in the water/environment, temperature, state of the test animals and physiological activity. Therefore, at these concentrations, the fish can tolerate the levels of given pesticides, thus the fish survived. At a concentration of 20%, 10%, 5%, 4%, 2%, 1%, death of the fish is start happening and the highest mortality at all the concentrations of up to 100% mortality

occurred. A decrease in the survival test fish caused by the inability of the adaptation of fish to cow urine given in the media (Padmapriya and devi 2006). As a result, the fish are not able to neutralize effect that urea contained in the test medium.

The results show that the Gir cow urine has maximum effect on the growth parameters. This shows that the Indian indigenous cow breeds are superior over the exotic breeds. The urine is an indicator of animal’s health condition and it reflects at the quality of the animal. Hence it can be stressed based on the present investigations that the indigenous breeds should be used for aquaculture practices to get more yield is an ecosafe manner.

The results shows that the growth potentialing effect of gir cow urine is maintained throughout the study period are an increasing manner which is also an additional supporting fact to prove its efficiency. The specific growth rate of Gir cow urine treated fish increased from on the 30th day. This shows the sustaining effect of cow urine on growth as growth rate determination the quality of the product.

Hence based on the present investigation it has been concluded that cow urine at 0.1% concentration is most effective through direct administration in culture water route and the indigenous breed are best source for cow urine in a great practices to get maximum benefits.

Table 1.Mortality of *Cirrhinus mrigala* on Preliminary Test

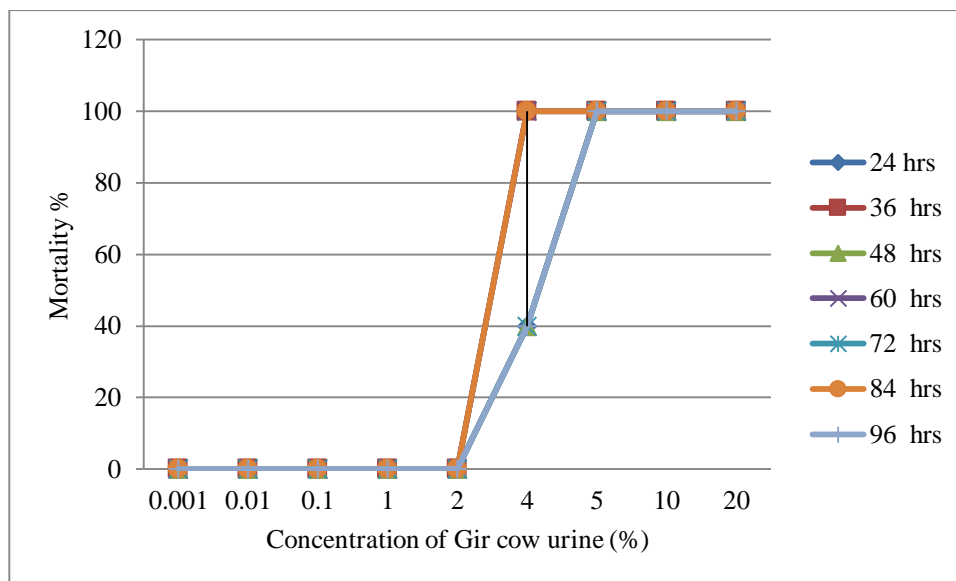
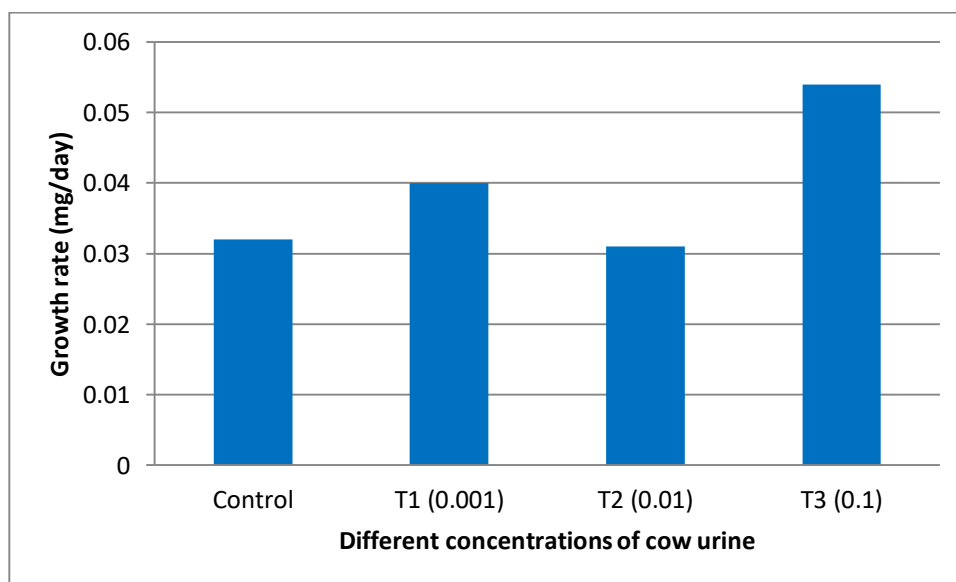


Table 2 Growth rate of *Cirrhinus mrigala*



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