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Effect of Oxytetracycline, Renamycin, Cotrimoxazole and Potash in Controlling Diseases of *Pungasius sutchi*

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Abstract: Oxytetracycline, renamycin, cotrimoxazole and potash were applied in farmers pond of some selected sites of greater Mymensingh district where 4-20% mortality of *Pungasius sutchi* having different clinical symptoms was observed. The symptoms observed were chronic mortality, tail and fin infection, raising fin base with hemorrhage, tail and fin rot, operculum erosion, gill necrosis, both upper and lower jaw infection, mouth erosion, protruded hemorrhaged anus, small cutaneous lesions, swollen eye with infection, hemorrhage in stomach, gastro-intestinal tract, boil on body and Dactylogyrus in gill. Application of oxytetracycline, renamycin, cotrimoxazole and potash resulted in 20-45%, 20-45%, 40-45% and 10-20% recovery, respectively.

Key words: Oxytetracycline, renamycin, cotrimoxazole, potash, disease control, *Pungasius sutchi*

Introduction

Pungas (*Pungasius sutchi*) is one of the demanded fish for farmers in Bangladesh for its fast growing and being convenient to culture at high density. Mass culture of pungas to get higher production is threatened by various types of diseases. It's rearing at higher density demands management practices and husbandry techniques. Moreover, fish farmers have no proper knowledge of fish health management in the country. Farmed carps and catfish are suffering from various diseases viz., ulcer types of disease including EUS, various types of lesion, tail and fin rot, bacterial gill rot, fungal and parasitic diseases in a number of fish farms of Bangladesh. *Aeromonas*, *Columnaris*, *Edwardsiella* and *Vibrio* are commonly identified bacteria, associated with various diseases of pungas. Fingerlings of pungas in the Freshwater Station of Bangladesh Fisheries Research Institute were found to suffer from bacterial diseases, caused by some members of Enterobacteriaceae (BFRI, 1998). Rashid *et al.* (1999) has isolated *Edwardsiella tarda* from pungas in Bangladesh. In most cases farmers use different chemicals as an irregular practice of chemotherapy. The research based information on appropriate dose of the right chemicals and drugs need to be studied. Various methods can be used for the successful treatment of diseased fish. Ahmad *et al.* (1992) showed that the response to tetracycline treatment of the epidermis injury of catfish (*Clarias macrocephalus*) was effective. Rahman *et al.* (1999) found that the best result was obtained by a successive bath in 1-2% NaCl and subsequent oral treatment with commercial oxytetracycline at a dose of 75 mg/kg body wt. of fish was the best. Present research works were planned to perform trials of chemotherapy to control the diseases of pungas around Mymensingh region.

Materials and Methods

A total of 70 farmer's ponds were studied in 5 Thanas of greater Mymensingh district during the period 2000-2001. Investigation of the incidence of disease and mortality of fish was considered in the study. Disease symptom, mortality rates and mortality pattern were recorded during the study period.

Trials for chemotherapy in farmer's pond

Evaluation of oxytetracycline: The size of the pond was 18dcl, 20 dcl., 25dcl and 32dcl with stocking density of 50/dcl, 70/dcl, 75/dcl and 80/dcl, respectively.

The fishes that were used in the study ponds had following clinical symptoms:

- i) More mucus secretion
- ii) Tail and fin rot,
- iii) Red spot on the head and opercula
- iv) Gills were damaged
- v) Necrotic lesion on the outer edge and
- vi) Eroded lesion

Mean size of the fish was 12gm and 13cm. The fish were fed with oxytetracycline for 7 days at the rate of 50mg/kg body weight of

fish (Hambali and Rukyani, 1992).

Evaluation of renamycin: The size of the pond was 12dcl, 20dcl, 21dcl and 30dcl with stocking density of 50/dcl, 60/dcl, 75/dcl and 85/dcl, respectively.

The fishes that were used in the study ponds had following clinical symptoms:

- i) Small lesion of 3-5 mm diameter appeared on the body
- ii) In acute cases, the muscle necrosis initiated very rapidly and has foul smell
- iii) Red spot on the head, opercula
- iv) Anal swelling,
- v) Exophthalmia
- vi) Loss of control over half of the body
- vii) Kidney and liver enlarged
- viii) Mass mortality

Mean size of the fish was 12gm and 13 cm. The fish were fed with renamycin for 7 days at the rate of 50mg/kg body weight (Hambali and Rukyani, 1992).

Evaluation of cotrimoxazole: The size of the pond was 15dcl, 19 dcl, 24dcl and 36dcl with stocking density of 60/dcl, 65/dcl, 75/dcl and 85/dcl, respectively.

The fishes that were used in the study ponds had following clinical symptoms:

- i) First symptom was inappetence and disorganized swimming
- ii) Fins eroded
- iii) Boil on body surface
- iv) Hyperemia in the internal organs and hemorrhage in the enteric body cavity
- v) The affected fish became pale due to anemia

Mean size of the fish was 12gm and 13 cm. The fish were fed with cotrimoxazole for 7 days at the rate of 100mg/kg body weight (Gopal *et al.*, 1992).

Evaluation of potassium permanganate: The size of the pond was 15dcl, 19dcl, 24dcl and 36dcl with stocking density of 60/dcl, 65/dcl, 75/dcl and 80/dcl, respectively.

The fishes that were used in the study ponds had following clinical symptoms:

- i) The affected fish lost mucus and became pale
- ii) Tail and fin rot,
- iii) Red spot on head, opercula, upper and lower jaw

Mean size of the fish was 12gm and 13 cm. Potash was applied at the rate of 1.00ppm was applied in the pond. The second dose at the same rate was applied after six days of first application.

Results and Discussion

The diseased fishes of different ponds showed clinical symptoms of chronic mortality, tail and fin infection, raising fin base with hemorrhage, tail and fin rot, operculum erosion, gill necrosis, both the upper and lower jaw infection, mouth erosion, protruded hemorrhaged anus, small cutaneous lesions, swollen eye with

Banu and Aktar: Control of *P. sutchi* diseases

Table 1: Effect of Oxytetracycline in controlling diseases of *Pungasius sutchi*

Locations	Clinical symptoms	% Fish infected	% Mortality before treatment	% Recovery
Khagdohor, Mymensingh	Chronic mortality, Tail and fin erosion, raising fin base with hemorrhage	30.2	20.0	40.0
Malandah, Jamalpur	Chronic mortality, Tail and fin rot	25.0	10.0	42.0
Jamalpur Sadar	Chronic mortality, Tail and fin rot	20.0	10.0	40.0
Randia, Bhaluka	Chronic mortality, Tail and fin rot	30.0	10.0	45.0
Boilor, Trisal	Tail and fin rot	20.0	15.0	40.0
Dhanikhola, Trisal	Chronic mortality, fin rot, operculum reddish in colour, gill rot	20.0	10.0	30.0
Salimpur, Trisal	Infection in operculum and jaw	25.0	10.2	35.0
Akua, Mymensingh	Infection in mouth and operculum, eye protruding	20.0	8.0	40.0
Narayanpur, Mymensingh	Swollen eye, tumour on body, Dactylogyrus in gill	25.0	10.0	20.0
Al-Falah, Trisal	Chronic mortality without external symptom	30.0	12.0	20.0

Data represents the mean of three farmer's pond.

Table 2: Effect of Renamycin in controlling diseases of *Pungasius sutchi*

Locations	Clinical symptoms	% Fish infected	% Mortality before treatment	% Recovery
Boilor, Trisal	Tail rot	35.0	20.0	40.0
Dapunia, Mymensingh	Tail rot	30.0	10.0	45.0
Raimoni, Trisal	Infection in mouth region	25.0	12.0	40.0
BDR camp, Mymensingh	Infection in mouth region	30.0	15.0	40.0
Majhihati, Mymensingh	Infection in mouth region	25.0	10.0	20.0
Dhanikhola, Trisal	Protruding eye, gill necrosis	20.0	15.0	25.0
Al Falah, Trisal	Hemorrhage, red spot and infection in fin base	30.0	10.0	25.0
Kuliarchar, Kishorganj	Swollen body	20.0	5.0	20.0
Voradoba, Trisal	No external symptom but chronic mortality	20.0	4.0	50.0

Data represents the mean of three farmer's pond

Table 3: Effect of Cotrimoxazole in controlling diseases of *Pungasius sutchi*

Locations	Clinical symptoms	% Fish infected	% Mortality before treatment	% Recovery
Raimoni, Trisal	Tail and fin rot	20.0	5.0	45.0
Dhanikhola, Trisal	Tail and fin rot	25.0	10.0	40.0
Boilor, Trisal	Fin and jaw infected	30.0	5.0	40.0

Data represents the mean of three farmer's pond

Table 4: Effect of Potassium permanganate in controlling diseases of *Pungasius sutchi*

Locations	Clinical symptoms	% Fish infected	% Mortality before treatment	% Recovery
Dhanokhola, Trisal	Chronic mortality, tail and fin rot	20.0	15.0	20.0
Al-Falah, Trisal	Chronic mortality, tail and fin rot	25.0	15.0	20.0
Churkhai, Mymensingh	Infection in mouth region	20.0	10.0	15.0
Bhaluka	Infection in operculum and mouth region with cotton like fungus	25.0	10.0	20.0
Dhanikhola, Trisal	Infection in eye	20.0	5.0	10.0
Boilor, Trisal	Chronic mortality but no external symptoms	30.0	15.0	10.0
Andonipur, Mymensingh	Ventral region reddish with infection	10.0	5.0	10.0

Data represents the mean of three farmer's pond

infection, hemorrhage in the stomach, gastro-intestinal tract, boil on body and *Dactylogyrus* in gills. Oxytetracycline was used to treat the farmers ponds where 20-30.2% fish infection was recorded and 8-20.0% mortality was observed. Oxytetracycline treatment resulted in 20-45.0% recovery of diseased fish (Table 1). Maximum recovery (45.0%) was obtained in case of treating diseased fish having tail and fin rot in ponds of Randia, Bhaluka followed by fish of Melandah, Jamalpur. Oxytetracycline showed relatively fair performance in case of treating fish having swollen eye, boil on the body and chronic mortality without disease symptoms. Snieszko (1964) and Ferguson (1977) have used oxytetracycline successfully for controlling infection of fish by *Flexibacter columnaris*. They have applied 50-100mg oxytetracycline/kg body weight of fish/day for 10 days. Rahman and Chowdhury (1999) have also used oxytetracycline *in vitro* for controlling diseases of catfish (*Clarias gariepinus*). They obtained 31.25% recovery by using oxytetracycline as oral treatment. Renamycin has been used for treating nine ponds, where 20-30% fish was found infected with 4-20% mortality (Table 2). Renamycin resulted in maximum of 50% recovery, recorded in case of fish having no external disease symptoms but chronic mortality in ponds of Voradoba, Trisal. Renamycin also showed good effect in case of fish having tail rot and infection in mouth

region. Cotrimoxazole has been employed for treating pond water of three locations where 20-30% infected fish and 5-10% mortality were recorded (Table 3). Cotrimoxazole resulted 40-45% recovery where fishes having tail and fin rot, fin and jaw infection. In a trial of chemotherapy, Rahman and Chowdhury (1999) have applied four different types of chemotherapeutants including cotrimoxazole for controlling diseases of African catfish (*Clarias gariepinus*). Use of Potassium permanganate for treating diseased fish in ponds of farmers of seven locations resulted also in improving the diseased condition of fish. Potassium permanganate was applied in ponds where 10-30% fish infection and 5-15% mortality was recorded (Table 4). Maximum (20%) recovery by using KMnO_4 was obtained in case of fish having tail and fin rot as well as in case of fish having infection in operculum. Potassium permanganate has also been used by Anderson (1992) as chemotherapeutants in fish and shellfish culture in Australia. He treated fish for prevention of marine columnaris disease and fin and tail rot in juvenile seabass. In present study, fishes of the treated ponds were not cured 100%, but a promising result in terms of recovery has been achieved. This type of research work is the first to farmer's level in Bangladesh. The indiscriminate use may cause mortality and morphological deformities in the host, development of resistant strains of bacteria and public health

Banu and Aktar: Control of *P. sutchi* diseases

hazards. However, the finding of the present study will help the farmers as well as the researchers in this discipline.

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