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Dept. of Microbiology,
Fac. Vet. Med., Suez Canal Univ.

SOME STUDIES ON TAIL AND FIN ROT DISEASE AMONG CULTURED TILAPIA FISHES

(With 3 Tables and One Figure)

By

A. A. EL-ATTAR and M. MOUSTAFA*

* Dept. of Animal and Fish Med., Fac. of Vet. Med., Cairo Univ.

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دراسة على مرض تعفن الذيل والزعنفة في أسماك البلطي المستزرعه

عرفه العطار ، محمد مصطفى

تم تجميع (١٥٠) من أسماك البلطي المستزرعه مصابة بمرض تعفن الذيل والزعنفه وقد تم فحصها إكلنيكياً وبكتريولوجياً وكذلك عمل الصفة التشريحية وكانت نتيجة الفحص البكتريولوجي عزل بكتريا السودومونس فلورسنس والسودومونس أنجوليسبتكا كما تم إعادة عزل هذه العترات من البكتريا بعد العدوى في المعمل لأسماك البلطي السليمة عن طريق الحقن في الغشاء البريتوني في وجود نسبة عالية من المواد العضوية الأمر الذي أدى إلى ظهور أعراض إكلنيكية وإصابتها بالمرض - أن وجود نسبة عالية من المواد العضوية يساهم بدرجة كبيرة في حدوث مثل هذا المرض وقد تم إجراء أختبار حساسية للعترات المعزولة.

SUMMARY

A total of 150 cultured Nile tilapia (***Oreochromis niloticus***) fish were affected by the tail and fin rot disease were obtained. These fish were subjected to clinical, P.M. and bacteriological examination. The bacterial isolates were morophologically and biochemically related to ***Pseudomonas fluroscens & Pseudomonas anguilliseptica***. Reisolation of both arganisms were recovered after the experimental infection of healthy live ***O. niloticus*** by intraperitoneal route accompanied by high organic matter nearly revealing the some clinical signs and lesions. High organic matter is a major stress

factor for occurence of such dangerous disease. Besides, the antibiogram of the recovered isolates was attempted.

Keywords: Tilapa fishes-Tail and fin rot

INTRODUCTION

Microbial infection of freshwater fishes are very important and amongest of it, the bacterial diseases which are the most important ones of them. Bacterial diseases cause great losses in both production and industry of fish. Tail and fin rot disease in fish is incriminated in outbreaks of bacterial haemorrhagic septiceamia (Khan, 1981; Kabata, 1985, Austin and Austin, 1987, Fernandez et al., 1990 and Plumb, 1994). This study was designed to isolate and identify the causative agents of such disease in cultured Nile bolti, ***O. niloticus*** as well as clinical picture, gross lesions, pathogenicity and a trial for treatmemt.

MATERIAL and METHODS

Fish:

A total number of 150 Nile bolti, ***O. niloticus*** were obtained alive from fish Hatcharies at Abbasa, Sharkia Governarate, showing the typical signs and gross lesions of tail and fin rot disease according to the descriptions adopted by Egusa (1992).

Bacterial isolation :

Squash smear preperations were made from various organs of diseased fish and cultivated on different selective media {Cetrimed agar, Rimler - shotts agar (RS), MacConkey's agar and Brain heart Infusion agar (BHI)}. The plates were inocubated at 25°C for 24 hours. Suspected pure colonies were transferred into nutrient slants for further identification.

Identification of isolates :

This included examination of morphological characters, colonial and growth appearance and biochamical tests according to Lennette et al., (1980) and Krieg and Holt (1984).

Experimental Infection :

A total of 30 apparently healthy live ***O. niloticus*** fish were used for intraperitoneal (I/P) inoculation with previously isolated fish pathogens. The fish were divided into three equal groups each of which 10. They were kept in prepared glass aquaria with aerated chlorine free tap water. Water

temperature was thermostatically adjusted at 25C° ± 1. The aquaria were left without using filters to obtain high organic matter and pH. fishes were adapted for one week before inoculation. Intraperitoneal inoculation of the isolated pathogens was done according to Lucky (1977) group 1 with 0.5ml of 24 hours broth culture (total bacterial count $3X10^7$ / ml) of ***P. fluorscens*** in the first group and (group 2) 0.5ml. of 24 hours both culture (total bacterial count $2x10^8$/ml) of ***P. anguilliseptica*** while the third group was served as control and inoculated I/P 0.5ml of sterile broth. Reisolation of the same bacteria was attemped. Besides, recording the clinical signs, the P.M lesions as well as morbidity and mortality rates.

Sensitivity test :

The antibiograms of the recovered pathogens were done using the disc diffusion method of Bauer et al (1966). The interpretation of zones of inhibition were estimated according to the limits given by Finegold and Martin (1982) and Bio-merieux (1984).

RESULTS

Clinical examination :

Diseased fish showed loss of balance, frayed and torn tail and fins, eye cloudness, scale detachment and skin discolouration with scattered haemorrhages allover the body surface fig. (1).

Postmortem examination :

Most of the internal organs were congested and enlarged and abdominal ascitis with reddish serious fluid.

Bacteriological examination :

The results of bacterial examination (morphological, microscopical and biochemical) were recorded in Table (1). The isolates were identified as ***P. fluorscens*** and ***P. anguilliseptica.***

Experimental infection :

The I/P infection fish showed nearly the same clinical signs observed in natural infection indicating the tail and fin rot disease. The infected bacteria were reisolated again from all freshly dead and clinically diseased fish (Table2)

Drug sensitivity :

The drug sensitivity test revealed that ***P. fluorscens*** was highly sensitive to oxytetracycline and chloramphenicol, while it was resistant to sulpha and penicillin. Regarding ***P. anguilliseptica*** it was highly sensitive to chloramphenicol.

DISCUSSION

From the clinical and postmorterm examination of cultured naturally infected ***O. niloticus*** fish, the present findings appeared nearly simulate the results given by Shotts and Bullock (1975), Casba et al. (1981) and Roberts (1989). According to the bacterial examination of such fish, the bacterial isolates were belonged to ***P. fluorescens*** and ***P. anguilliseptica*** which agree with the finding of Ahne et al. (1982) Post (1987) and Inglis et al., (1993). Concerning the I/P inoculation, the experimental fishes showed nearly similar clinical signs and lesions like those observed in natural infection with tail and fin rot disease. The high mortality rate (60 %) was attributed to the increase of waste products and organic matter which leads to high pH acting as predisposing factor for infection (Eissa et al., 1991) as well as toxic proteinase enzymes produced by ***P. fluorescens*** and ***P. anguilliseptica*** throughtout the fish body by the blood stream, this serving to destroy the body tissue, and attack the endothelial lining of the body vessels (Li and Flemming 1967). These results support the findings given by Eissa and Abd-Alla (1991) and Eissa et al., (1991). Regarding the drug sensitivty test, it was revealed that ***P. fluorscens*** strains were highly sensitive to oxytetracycline and chloramphencol while they were resistant to sulpha and penicillin. Such results are more or less agree with that reported by Fernandez et al., (1990) and Emad (1992). It was concluded that cultured ***O. niloticus*** fish must be checked for ***P. fluorscens*** and ***P. angiulliseptica*** infections before transportation from infected fish farm to another uninfected one.

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Fig.. 1: Showing generalized erythema & tail rot with scale loss in cultured *O. niloticus* fish

Table 1 : Cultural and biochemical reactions of isolated bacteria

Cultural characters	Stain	Biochemical reactions									
		Oxidase	Catalase	H2S	Nitrate	Citrate	Urease	Gelatine liquif.	Glucose	Sucrose	Maltose
* Circular, smooth, moist, convex colonies * Haemolytic in blood agar * Yellowish to green fluroscent * Motile * Grow at 25°C	Gram (-ve) short bacilli	+	+	-	-	+	+	+	+	V	V
	"	+	+	-	+/-	+	-	+	+/-	-	-

Table 2 : Experimental infection of *P. fluorscens* (group 1) and *P. anguilliseptica* (group 2) healthy *O. niloticus* fish.

Group	Number	Route of infection	pH	Temperature	Dose per fish	Morbidity rate	Mortality rate
1	10	I/P	10.5	25 ± 1°C	0.5 ml ($3x10^7$/ml)	40 %	60 %
2	10	I/P			0.5 ml ($2x10^8$/ml)	30 %	70 %
3	10	I/P			0.5 ml sterile broth	00.0%	00.0 %

Table 3 : Drug sensitivity test of isolated bacteria

	Reaction	
Drugs	*P. fluorscens*	*P. anguilliseptica*
Oxytetracycline	+++	+
Ampicillin	+	+
Streptomycin	++	+
Neomycin	+	-
Erythromycin	++	-
Sulpha	-	+
Pencillini	-	-
Chloramphenicol	+++	+++

\+ Low sensitive ++ moderate sensitive

\- Resistant +++ Highly sensitive