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***STUDIES ON STAPHYLOCOCCUS EPIDERMIDIS
FROM TILAPIA NILOTICA IN UPPER EGYPT
(With Two Tables)***

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(Received at 20/4/1989)

دراسة عن عزل وتصنيف الميكروب العنقودي استافيلوكوكس ابيديرميدس من السمك
البلطى في جنوب مصر

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تم جمع عدد ٣٠ سمكة من أسماك البلطى الموجود في الترع الإبراهيمية في محافظة أسيوط
وتم زراعة وعزل وتصنيف ٩ عترات من الميكروب Staph.epidermidis من الخياشيم والكبد
والكلية والأمعاء لهذه الأسماك إلى جانب ذلك استخدمت عشرة أنواع مختلفة من المضادات
الحيوية وذلك للحد من الإصابة بالمرض الناتج عن هذا الميكروب في المياه المصرية .

SUMMARY

A total of 30 living *Tilapia nilotica* were bacteriologically examined. The obtained results revealed the presence of 9 isolates which were in their morphological cultural and biochemical behaviour closely related to *Staphylococcus epidermidis*. These isolates were detected from gills, kidney, liver and intestine.

Ten types of antibiotics were used for determination the sensitivity of these isolates to the antibiotics and chemotherapeutic agents.

INTRODUCTION

Ninety-two percent of Gram-positive cocci detected in Fish were identified as *staphylococcus* spp. *Micrococcus* and *streptococcus* spp. (GUNN, et al. 1981) *staphylococcus* and *streptococcus* have been recognized to be pathogenic for fresh water and marine fish (AUSTIN and AUSTIN, 1987).

The *staphylococcus* is one of the most important organisms encountered on examination of fish even though less common than other bacteria. There has been one report from Japan outbreaks of disease in cultured yellowtail (*Seriola quinqueradiata*) and red seabream (*Chrysophrys major*) during 1976 and 1977, from which *Staphylococcus epidermidis* was recovered (KUSUDA and SUGIYAMA, 1981). Six isolates were recovered and had the characteristic s of *Staph. epidermidis* (COWAN, 1974).

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The description of the disease is hardly exhaustive, but typical signs apparently included exophthalmia, congestion and ulcerations on the tail (KUSUDA and SUGIYAMA, 1981).

The objective of the study reported here was to determine the Staphylococcus epidermidis in Tilapia nilotica in upper Egypt and the sensitivity of these strains to different types of antibiotics and chemotherapeutic agents.

MATERIAL and METHODS

30 samples of living freshwater fish, Tilapia nilotica were caught from El-Ebrahimia canal at Assiut town. The fish were transferred with minimum of delay to laboratory in large sterile jars filled with the river water and as soon as possible for:

1- Bacteriological examination:

Specimens of fish were obtained from gills, liver, kidney and intestines. All specimens were aseptically taken in small pieces and immersed in tubes containing the proper media. Nutrient broth was used as enrichment media. Mannitol salt agar was used for detection of mannitol fermenter. The mannitol fermenting pure cultures were examined for haemolysis on blood agar. The isolates were tested for coagulase activity. Nutrient agar and cytophaga agar, medium were subcultured from the incubated broth and incubated at 22°C for 24 hours.

The stains of staphylococcus spp. isolated from the specimens were identified using the classical method, the morphological features, colonial and growth appearance of each pure isolate as well as biochemical reactions (BAUER, et al. 1973; CRUICKSHANK, et al. 1975 and BAILY and SCOTT, 1978). The following biochemical reactions were performed.

Motility

Oxidase

Liquefaction of gelatine

Methyl red (MR)

Indole production test

H₂S production test

Citrate test

II. Sensitivity to antibiotics:

Nine isolates from staphylococcus spp. were tested for their susceptibility to different antibiotics using the following discs:

Colistin	Cl	10	ug
Kanamycin	K	30	ug
Doxycycline	D	30	ug
Neomycin	N	30	ug
Oxytetracycline	T	30	ug
Chloremphenicol	C	30	ug

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Nitrofurantoin	FM	300	ug
Erythromycin	E	15	ug
Tetracycline	TE	30	ug
Triamethoprim-sulfa methaxazole	SXT		

RESULTS

A total of nine bacterial isolates were recovered from the 30 examined fish. From these 2 strains were detected from the gills, 3 from the liver, 3 from the kidney and 1 from the intestine. All of these isolates were non motile, Gram-positive, fermentative, spherical cells which formed white, white yellow to orange colonies on the agar plates media the cells occurred singly, in pairs, and in irregular clusters.

The Biochemical reaction of the isolated micro-organisms have been included in table number 1. The mean results of the antibiotics susceptibility of the nine tested Staphylococcus epidermidis strains revealed from Tilapia nilotica fish were shown in table number II.

DISCUSSION

The results of current work conducted to study the presence of Staph. epidermidis in Tilapia nilotica fish in upper Egypt.

The results of bacteriological examination of gills, liver, kidney and intestine revealed 9 isolates of Staph. epidermidis which have been reported previously by many authors from different species of fish (CONROY, 1966; KUSADU and SUGIYAMA, 1981; GUNN, et al. 1982 and TERESA, et al. 1985).

The morphological and biochemical characters of the isolated organisms closely related to Staphylococcus epidermidis which described by (KATHRYN, et al. 1973; COWAN, 1974 and SCHLIEFER and KLOOS, 1975).

The results of the antibiotics susceptibility of the 9 tested isolates proved that the five isolates (1,3,4,5,7) were highly sensitive to the most common types of antibiotics which used in this study, while the isolates (6,8) were moderately sensitive to variety of antibiotics, but isolate number (2) was resistant to the antibiotics. These changes in sensitivity of the isolates to antibiotics may be originated from the different sources of the isolated bacterial strain. These indicated that Doxycycline, Oxytetracycline, Kanamycin, Chloramphenicol, Erythromycin, and Tetracycline could be used either separately or as combination in control and treatment of the diseases caused by Staph. epidermidis and this is in a good agreement with those of (SIOMITSU, et al. 1980; KITAO, 1987 a, and NAKAMURA, 1982). Who used oxytetracycline, Erythromycin and Doxycycline in treatment of Gram-Positive Cocci.

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Table (1)
Biochemical properties of *Staph. epidermidis*
isolated from *Tilapia nilotica*

Test	Result
Gram stain	+
Coagulase	-
Catalase	++
Oxidase	-
Gelatin	+
Methylred	+
Indol	-
H ₂ S	-
Citrat	-
Mannitol	-
Haemolysis	-

+ = positive reaction

- = negative reaction

Table (2)
Antibiotics susceptibility of *Staph. epidermidis* isolates

Type of antibiotics	Isolate number								
	1	2	3	4	5	6	7	8	9
Colistine	e	e	e	e	R	R	E	R	R
Kanamycine	E	E	E	E	R	e	R	E	e
Doxycycline	E	R	E	E	E	R	E	e	e
Neomycin	E	E	E	E	R	e	E	E	e
Cxytetracycline	E	R	E	E	E	e	e	E	E
Chlorempenicol	E	R	E	E	E	e	E	e	E
Nitrofurantoin	E	R	E	E	E	E	E	e	R
Erythromycine	R	R	E	E	E	e	E	e	e
Tetracycline	E	R	e	E	E	e	E	R	E
Triamethoprim	R	R	e	E	E	E	E	e	E
Sulfamethaxazole	R	R	e	E	E	E	E	e	E

E : Highly sensitive

e : Moderate sensitive

R : Resistant