SAPROLEGNIASIS OF *BARBUS SHARPEYI* , GUNTHER (BUNNEI FISH) IN BASRAH / IRAQ

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ABSTRACT

Among 600 bunnei fishes transferred from Qurna marshes to fish ponds at Basrah University/Marine Science Center, 211 fishes were infected with saprolegniasis during the period from January to March, 2005 constituting a percentage of infection of 35.1% which was diagnosed by its clinical features and by direct examination with 10% KOH solution and by culture. The cultutred fungus was *Saprolegnia parasitica.*

INTRODUCTION:

Bunnei (*Barbus sharpeyi*) is a freshwater fish belong to the family *Cyprinidae*. It is a native species of Tigris and Euphrates water system. It is the most popular fish species in the southern marshes of Iraq (Khalaf,1961). Nowadays it's stock decline largely because of the marshes drying crime.

Relatively few genera and species of fungi are known to cause diseases in fishes. Epizootics or rare cases of fungal infection have been reported. Often these rare occurrences of fungal diseases are caused by facultative saprobes. Most epizootics of mycotic origin are facilitated by poor environmental condition, malnutrition or other primary diseases .(Post, 1987).

The three most common fungal diseases are known as Saprolegniasis , Branchiomycosis and Ichthyophonus diseases (Klinger *et al*, 1996). All freshwater and brackish water fishes and fish eggs are potentially susceptible to saprolegniasis (post, 1987).Saprolegniasis is a fungal disease of fish and fish eggs most commonly caused by member of the family *Saprolegniaceae* called "watermoulds".This name has been broadly accepted when the etiology is a species of *Saprolegnia, Achlyia* or *Dictyuchus*. Saprolegniasis has been called by other names.The term "fish fungus disease"or Just "fungus disease" is broadly used because of it's common occurrence. Saprolegniasis among fishes of a fish culture facility or in an aquarium may be confined to one fish, a few fishes or the entire population depending on the reason for the fungal invasion (Post, 1987).On fishes *Saprolegnia* invades epidermal tissues , generally beginning on the head or fins and can spread over the entire surface of the body and visible as white or grey patches of filamentous mycelium (Willoughby,1994;Bruno and wood,1999).

From Iraq, Khalaf *et al*. (1978) were the first who referred to fungal infection of *B. sharpeyi* caused by S*aprolgnia* sp. . This study was conducted to know the fungal pathogen on *B. sharpeyi* (bunnei fish) at two aquacultures of Marine Science Center / Univ. of Basrah.

MATERIALS & METHODS:

Fishes:600 bunnei fishes transferred from Qurna marshes (about 70 Km north Basrah province centre) to two aquacultures measuring 50 × 30 m with water level of about 80 cm at M.S.C / Basrah Univ.at Qarmat Ali during January – March , 2005. After some days , fungal infection start to appear on bunnei fishes. & many fishes were found dead in the lakes due to the heavy infestation of the fungus . Infected fishes, 211 (dead & live) were transferred to the laboratory, for direct examination and / or for culture.

DIRECT MICROSCOPY:

Scraping from the fungal growth on fishes skin , fins & gills were mounted in 10% KOH and in the lactophenol cotton blue , then examined (after 20 – 30 in case of KOH mounting) under the microscope to see the fungal structures .

CULTURE:

Fungal materials on the fish structures were cultured on Potato Dextrose Agar + chloramphenicol , incubated at 22 C for 4-5 days. Then a block of agar with fungal growth was cut and placed in petridishes containing sterilized water+ chloramphenicol (250 mg/litre) + few boiled sesume seeds. The incubated petridishes containing sesume seeds were examined after few days and the developing colonies were examined under the microscope. The isolated fungus were identified through the production of sexual and asexual spores, following the criteria described by Muhsin(1977); Ismail *et al.*(1979).

RESULTS:

DIRECT MICROSCOPY:

KOH mounting of scraping from the infected area from 211 infected fishes (Fig 1) revealed non-septate branching hyphae with zoosporangia.Fig.2 &3 .

Fig. 1: infected bunnei fish.

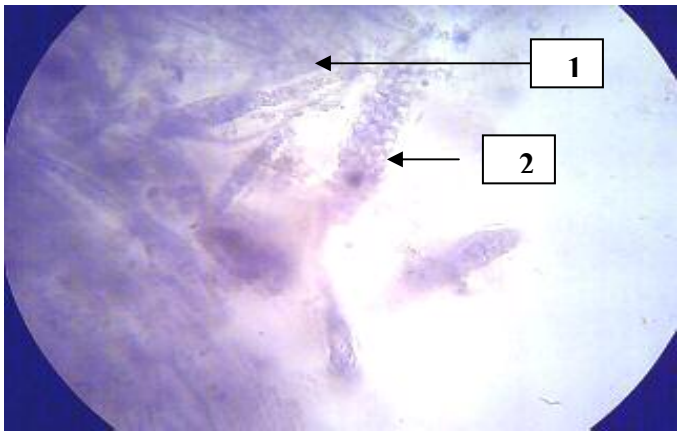

Fig. 2: fungal structures (**1**-hyphae & **2**- sporangia).

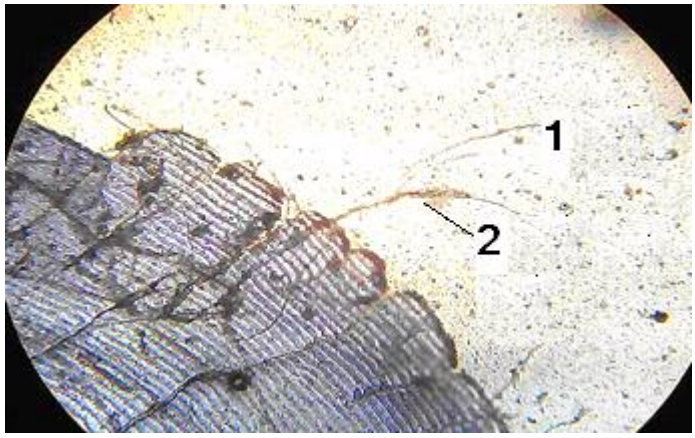

Fig. 3: fish scale with fungal **1**- hyphae & **2**- sporangium.

CULTURE:

of 60 specimens cultured, 57 isolates of *Saprolegnia parasitica* were diagnosed by its characteristic zoosporangia, gemmae, and eccentric oospores and antheridia.

DISCUSSION:

Fungal infections are uncommon when water quality is good. Uneaten food and a general decline in water condition will promote fungi and lead to higher rates of infection (Adelade aq.,1997). Generally considered a secondary pathogen, ***Saprolegnia***, can also act as a primary pathogen (Whister, 1996; Neish, 1997). ***Saprolegnia*** generally invades fish that have been stressed or otherwise have a weakened immune system(Bruno and Wood, 1994). Neish (1997) suggests that immunosupression provides a mechanism that causes the transformation of normally non-pathogenic organisms, including ***Saprolegnia***, to become pathogenic. Malnutrition among cultured fishes has been continues to be a primary cause of saprolegniasis. Presence of toxic substances in the food or water or damage to skin , fins and gills from external parasite may leads to secondary invasion by the ***Saprolegnia***. Physical injuries are targets for the invasion of the *Saprolegnia*. Physical stress such as reduced water temperature, high or low pH or high salinity may be responsible for secondary invasion by the ***saprolegnia***(Post, 1987). Poor water quality (for example, water with low circulation,low dissolved oxygen, or high ammonia and high organic loads,

including the presence of dead eggs, are often associated with ***Saprolegnia*** infections, (Kinger *et al*., 1996).

If untreated, Saprolegniasis leads to death by heamodilution,i.e., osmoregulatory failure (Hatai and Hoshiai, 1994). Time to death by saprolegniasis is dependent on the initial site of infection, type of tissue destroyed, growth rate of the fungus , and the ability of the individual fish to withstand the stress of a fungus invasion(Neish,1997).

Saprolegnia has a fairly wide range of temperature tolerance, from 3 C to 33 C, which appears to reflect the thermal preferences of the host (Pickering and Willoughby, 1982). However, sudden changes in temperature can make fish vulnerable to saprolegniasis (Bruno and Wood, 1999; Willoughby.1994) due to the increased physiological stress.

In Iraq, Herzog(1969) was the first who referred to saprolegniasis when he study the fungal infection of khashnei fish (***Mugil abu***), and Khalaf *et al.*(1978) were the first who referred to the fungal infection of bunnei fishes (***Barbus sharpeyi***) caused by ***Saprolegnia*** sp in Baghdad. In this study, which is the first in Basrah, about 35.1%(211/ 600)of the total bunnei fishes were infected with ***saprolegniasis***, which were first noticed by its slow movement and with fluffy tufts of cotton-like materials – colored white to shades of gray or brown on skin, fins, and sometimes on gills and on eyes (Fig.1).Culture results showed that the isolated fungus was ***S. parasitica***. This high percentage of infection may be due to the poor water quality of the aquacultures (standing water), and the low temperature of water (11 C to 18 C) at the day time of January and February, moreover the traumas happened to the fishes during the process of transportation from Qurna marshes(about 70 kms from Basrah centre) to Basrah University at Garmat Ali is another promoting factor.

In Japan, Hatai and Hoshiai (1994) indicate that in Miyagi Prefecture, there is an annual mortality rate of 50% in coho salmon (***Oncorhynchus kisutch*** Walbaum) due to ***S. parasitica*** Coker. Fifty percent per year losses have also been reported in elver (***Anguilla anguilla***) culture in Japan , and in southeastern United States, major financial loses occur in channel catfish farming due to a condition called "winter kill" a condition occurs during winter months when the colder weather suppresses the catfish immune system rendering them susceptible to saprolegniasis. Some catfish farmers have reported losses of up to 50% , an economic loss of $ 40 million (Bruno and Wood, 1994).

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مرض السابرولجنياسز في سمكة البني في البصرة / العراق

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الخلاصة

من مجموع 600 سمكة بني نقلت من اهوار القرنة إلى أحواض الأسماك في مركز علوم البحار– جامعة البصرة، وجد إن 211 سمكة قد أصيبت بمرض السابرولجنياسز خلال الفترة من كانون الثاني مكونة نسبة إصابة 35.1 % والتي تم تشخيصها من خلال الصفات السريرية للمرض وبواسطة الفحص المجهري المباشر باستخدام محلول 10 % هيدروكسيد البوتاسيوم (10%KOH) أو مع الزرع. إن الفطر المسبب للمرض هو *Saprolegnia parasitica*.