

Infectious Dropsy of Hybrid Catfish Fingerlings from Nigeria

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Abstract: Dropsy was observed in hybrid catfish (a cross between *Clarias gariepinus* and (*Heteobranchus longifilis*) fingerlings from African Regional Aquaculture Centre (ARAC), Aluu, Nigeria. It is characterized by swelling of the body of the fish in the ventral region with yellowish watery fluid. *Aeromonas hydrophila* was recovered from the diseased and dead fish. Pathogenicity of *Aeromonas hydrophila* isolate was also determined. Clinical manifestation of the disease was observed in the hybrid catfish fingerlings 48 h post inoculation followed by death after 6 days. *A. hydrophila* was also re-isolated from the experimental fish. Prevention of further spread of the disease was achieved by sanitary measures, disinfection of facilities and environmental control.

Key words: Catfish, infectious dropsy, fingerlings, *Aeromonas hydrophila*

INTRODUCTION

Infections abdominal dropsy has been known for a long time (Amlacher, 1970) and has been reported as one of the disease of hybrid catfish fry (AAHRI, 1995). This infection owes its name to one of the predominant symptoms observed at the time, swelling of the body in the ventral region (Amlacher, 1970). It is caused by a Gram-negative rod, *Aeromonas hydrophila*. *Aeromonas Hydrophila*, a ubiquitous organism present in the aquatic environment causes disease in fish under stress (Snieszko and Axelrod, 1971; Paperna, 1980; AAHRI, 1995).

Many bacteria and parasites that are capable of causing serious diseases of fish are normal inhabitants of the aquatic environment (Warren, 1983). They are continuously present in most water habitats particularly in fish ponds and holding tanks which are rich in organic matter, epizootics seldom occur unless fish are exposed to adverse environmental conditions or kept overcrowded, undernourished or injured during handling (Paperna, 1980).

One of the primary objectives of fish culture is the production of quality fish that are vigorous and healthy (Griffiths and Warren, 1983) infections due, to *Aeromonas* can pose a threat to the development of the Aquaculture enterprise (Shome *et al.*, 2005). To achieve certain degree of success in aquaculture the quality of seed plays an important role (Das, 2000).

To date, infections dropsy has not been reported from ARAC. In view of the fact that there is a dearth of information on fish disease in Nigeria, this study was conducted to identify the infection agent of the disease and determine its pathogenicity.

MATERIALS AND METHODS

Dropsy-infected hybrid catfish fingerlings showing distended abdomen on the dorsal surface (Fig. 1) were collected from freshwater pond. The pond was stocked with only the hybrid catfish fry according to standard ratio. The level of water in the pond was lower than 2.0 m and the temperature ranged between 27 to 30°C. The disease symptoms were noticed in 10% of the total population of fingerlings. The disease occurred in September and 7% mortality was recorded.

Post mortem examination: Post mortem examination of the liver, kidney and fluid in the abdomen was carried out.

Isolation: Samples were obtained from the liver and the abdominal fluid and aseptically inoculated onto Trypticase Soy Agar (TSA) plate (Oxoid Ltd., Basingstoke, England and incubated at 24°C for 48 h).

Biochemical tests: The isolates were purified and characterized presumptively by colonial morphology, pigmentation, Gram-and spore staining and then stored in slant in the refrigerator for various biochemical tests. Other tests included Catalase, Oxidase, Voges-Proskauer, Indole Production, gelatin liquefaction, nitrate reduction and citrate utilization (Holt *et al.*, 1994) They were also tested for fermentation of maltose, glucose, lactose, sucrose and mannitol.

Pathogenicity: Pathogenicity was carried out following the method described by Shome *et al.* (2005). The Hybrid catfish fingerlings were maintained in water at a temperature between 25-27°C.



Fig. 1: Drosy-infected hybrid catfish fingerlings showing distended abdomen on the dorsal surface

RESULTS

Post mortem examination revealed distended intestines, greenish coloured liver and yellowish fluid in the abdomen.

Isolation: Characteristic colonies of *Aeromonas* were grayish white, smooth, round and opaque.

Biochemical tests: The isolate was catalase, oxidase and Voges-Proskauer positive, produced indole, liquefied gelatin, reduced nitrate to nitrite and utilized citrate. The isolate also fermented maltose, glucose, lactose, sucrose and mannitol.

DISCUSSION

The present investigation showed that the infections drosy observed in hybrid catfish fingerlings was caused by *Aeromonas hydrophila*. The organism was isolated from the diseased fish, dead fish and the inoculated hybrid catfish fingerlings. Hitherto, the outbreak has not been reported from the African Regional Aquaculture centre, Aluu, Nigeria. Of clinical relevance, however, is the detection of *A. hydrophila* in the present study since

this organisms are responsible for infections drosy in different species of fish worldwide but is typical of the cyprinids (Amlacher, 1970).

The low mortality (7%) observed could be due to the fact that the dead fish and infected fish were collected, counted and burnt. The tanks were also disinfected and the ponds treated with quicklime and were not used throughout the dry season. In most fish hatcheries in Nigeria, disease is not considered important unless it affects the survival of the fish. Nursing of fry and fingerlings is an important stage and adequate care is highly essential in order to prevent losses. Prevention of future occurrence was achieved by sanitary measures, disinfection of facilities, selective breeding and environmental control.

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