Incidence of amyloodiniosis in snubnose pompano juveniles and its effective control in marine hatchery

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Abstract

Amyloodiniosis infection in snubnose pompano was reported in marine fish hatcheries of ICAR-CMFRI during preparation for certain feeding experiments in this fish that is of aquaculture importance. The control and elimination of *Amyloodinium* sp. from the hatchery system is a herculean but vital task and several methods were carried out following the infection.These were evaluated for their usefulness and are reported below.

***Keywords**: Snubnose pompano, Amyloodinium ocellatum, amyloodiniosis, control measures*

Five hundred juveniles of Snubnose pompano (*Trachinotus blochii*) with a weight range of 0.5-1.0 g were brought from Marine finfish hatchery of ICAR-Mandapam Regional Centre of CMFRI for fish nutrition experiments. The juveniles were stocked in 10 rectangular FRP tanks of one ton capacity each at the rate of 50 numbers m^{-3}. In order to ameliorate the handling stress the fishes were given 10 ppm KMnO4 dip treatment for 2 minutes before stocking. The fishes were initially stocked in sea water of 25 ppt salinity and gradually acclimatized to 15 ppt salinity for acclimation period of 30 days. In the acclimation tanks, water exchange was done at 100% on daily basis and the fishes were fed to apparent satiation with a diet developed for snubnose pompano containing 40% crude protein and 6% crude fat. After acclimatization period, 150 fishes were stocked in 5 re-circulatory tanks each of 1 ton capacity and connected to a biofilter assembly. During the course of the rearing period the fishes were heavily infested with the dinoflagellate, *Amyloodinium ocellatum.*

The infected fishes frequently rubbed its body on the walls and bottom of the tank. In the initial stage of infestation, fishes consumed the feed normally but showed negative growth in terms of muscle accretion and hence, became emaciated (Fig. 1). As the infestation advanced, the fishes avoided routine feeding, became lethargic and congregated near air stones incessantly. Eventually, 40% mortality was observed within 5 to 6 days of advanced infestation.

The infected fishes were dissected and the gill samples were collected. The gills of the fishes were pale in colour with copious amount of mucus. The gill samples were stained with haematoxylin and examined under stereomicroscope that showed the presence of heavy infestation of trophont stage of *A. ocellatum.* As the trophonts were predominantly attached in the gill filaments (Fig. 2) by anchor like roots and covers the gill filaments, it significantly reduces the uptake of oxygen through gills. This stage of *A. ocellatum* infection is known

as *amyloodiniosis* or marine velvet disease. The parasitic trophont matures about 80-100 μ in size.

The control and elimination of *Amyloodinium* sp. from the hatchery system is a herculean task as the trophonts detaches from the gills and forms encysts (tomont stage) which settles at the bottom of the tank and divides internally to form an infective stages (dinospores) that actively swim in the water column in search of new hosts. There is no specific aquaculture drug presently available for its effective control. A combination of drugs/ chemicals may protect the fish to some extent. The infestation can be curbed to a certain extent by multidrug administration and proper water treatment (Ozonization, UV sterilization, freshwater dip, adequate water exchange and reducing the salinity of water (up to 5 g L^{-1}).

The infected fishes were primarily treated with formalin at the rate of 15 ppm as bath treatment for 3 consecutive days which was found to be effective during the course of infection with 100 % water exchange every day. As a secondary treatment, chloroquine phosphate (Lariago 250 mg tablets; Ipca Laboratories Pvt. Ltd.) was given at the rate of 10 ppm as a bath treatment along with formalin bath treatment for 3 consecutive days and this was effective against *amyloodiniosis*. Copper sulphate at the rate of 0.2 ppm is reported for treating *Amyloodinium* sp. in marine ornamental fishes. Therefore, in the present study some fishes were treated with copper sulphate at the rate of 0.2 ppm but it was not as effective as other drugs in snubnose pompano. Use of copper sulphate is also not advisable in food fish due to its ichthyotoxic / algicidal nature and accidentally if the level goes beyond 0.2 ppm may cause mass mortality of fishes. Besides other methods, freshwater dip treatment is an effective option during the initial stages of infestation. The fish with initial stages of infestation responded to the treatment but advanced stage of infested fish succumbed to acute mortality. Further in the bio-filter connected re-circulatory tanks, the fishes were heavily infested than in the rearing tanks without biofilter due to the reason that the bio-filter retains the encysted tomonts that later proliferate into dinospores. Hence, installation of ozonizers and UV sterilizers for intake seawater treatment along with periodical cleaning of rearing tanks with liquid bleach may keep away the *amyloodiniosis* infections from the marine fish hatchery.

Fig. 1. *Amyloodinium* sp. infected juveniles of *Trachinotus blochii* showing emaciated body

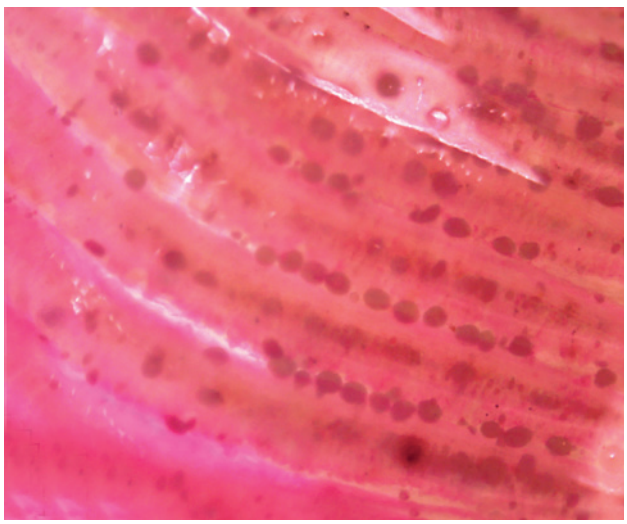

Fig. 2. Gills with trophont stage of *A. ocellatum* stained with Haematoxylin and magnified at 5X under stereomicroscope