

## A STUDY ON THE DEVELOPMENTAL CYCLE OF *DACTYLOGYRUS INTERMEDIUS* IN GOLD-FISH (*CARASSIUS AURATUS*)

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*Dactylogyrus intermedius* (gill fluke) is a monogenean trematode known to cause heavy morbidity and mortality in gold-fish (particularly in young fry) in many commercial aquariums in Sri Lanka. Information on the clinical presentation of the disease and the life cycle pattern of *D. intermedius* infection in gold-fish under local conditions are scarce. Therefore, with a view of proposing measures to control this infection in Sri Lankan aquariums, the above mentioned aspects were studied.

Four hundred gold-fish fry (age; 3-4 weeks), which were naturally infected with *D. intermedius*, was obtained from an aquarium in Colombo. After observing the clinical features, 50 randomly selected fry were sacrificed and gross lesions in the gills were noted. Ten infected fry were kept in a tank for 48 hours to determine the mean spawning rate. The rest of the infected fry were used to obtain eggs for life-cycle studies.

Freshly spawned eggs (n=250) were incubated in de-chlorinated water at room temperature (26-29 °C) and the eggs were examined twice daily for larval development. In a subsequent experiment, two groups (A and B) of uninfected gold-fish fry (n=10/group) were kept in separate tanks and on Day 0 of the experiment freshly spawned eggs (250 eggs/tank) were added to each tank. On Day 7 of the experiment, fish from group A was removed from the tank and kept individually in 10 petri dishes and examined twice daily for the presence of freshly spawned eggs. Group B was transferred to a new tank on Day 7 of the experiment; thereafter one fish was sacrificed on every other day and skin scrapings and gills were examined for developmental stages.

The common clinical signs observed in infected gold-fish fry varied but the salient features were widely opened operculum, rapid breathing, and crowding near the surface with gaping mouths. At necropsy, varying numbers of *D. intermedius* (range; 4-52) were found to be attached to the gills which were pale in colour with a heavy blanket of mucus. The mean spawning rate was 11 eggs/fluke/day and the operculated eggs (dimensions; 40-47.5 x 72.5-80 µm) sunk to the bottom of the tank after spawning. The larval development within the eggs was evident by 24 to 48 hours post incubation. Free swimming ciliated oncomiracidium (110 - 115 x 40 -45 µm) emerged from the eggs by 2.5 to 6 days post incubation and the percentage of hatching was 85-90 %. Immature flukes were present on the skin and gills, whereas the mature flukes (112.5-137.5 x 312.5-337.5 µm) were attached either on the primary or secondary lamellae of the gills. The duration taken to complete the life cycle (eggs to eggs) at 26-29 °C was found to be 12-15 days.

It is suggested that physical removal of eggs from the tank by bi-weekly siphoning off the sediment and coupled with a chemical treatment in the form of continuous immersion for a minimum period of 15 days would control this infection by disrupting the life cycle.