

Resistance development in guppy, *Poecilia reticulata* fed with *Spirulina*, against a virulent strain of *Aeromonas hydrophila*

H.G. Danushka Savithri and M. Hettiarachchi*

Department of Zoology, University of Kelaniya, Kelaniya, Sri Lanka.

*Corresponding author (Email: manga@kln.ac.lk)

Ornamental fish industry is a vast and important industry which has the potential to contribute to the economic growth of any country. Fish that are healthy in nature often are susceptible to diseases under intensive and semi-intensive culture conditions; bacterial infections are recorded to be responsible for heavy losses of fish from the farm level to the hobbyist tank. The present study was carried out to investigate whether, *Spirulina platensis* cultured under laboratory conditions, when incorporated to the feed and fed to guppy, *Poecilia reticulata*, increases the resistance in recipient fish to a virulent strain of *Aeromonas hydrophila* that causes bacterial fin rot leading to systemic bacteraemia. Cultured *Spirulina* was filtered, dried and ground to form fine powder and stored in an air tight container. The most common bacterium from guppies with severe systemic bacteraemia was isolated and identified as a strain of *Aeromonas hydrophila* using standard tests. Feed A was prepared by adding 2% cultured *Spirulina* powder to a commercially available ornamental fish feed. The control feed (Feed B) was prepared by repelleting the powdered commercial feed without adding *Spirulina* powder.

Two groups of guppy fry with 5 replicates for each (20 fry in each replicate) were fed with the 2 types of feeds separately over a period of 70 days. Fish in each group were then challenged with the isolated, virulent strain of *A. hydrophila* by immersion technique; guppies fed with the two formulated feeds were taken from a small hand net separately and immersed in bacterial suspensions (6.37×10^6 CFU/ml) for 5 minutes; negative and positive controls were maintained. Challenged fish were observed for the development of symptoms of infection and mortality was recorded over a period of 2 weeks. At the end of 2 weeks, mean percentage survival in each group of guppy challenged with the isolated, virulent strain of *A. hydrophila* was compared to assess the development of resistance as a result of feeding *Spirulina* incorporated feed, using student t test. Mean percentages of survival recorded for the challenge test was 97.72% for guppies fed with cultured *Spirulina* which was significantly higher ($P < 0.05$) than that recorded for the control group (18.75%) indicating that the fish in the experimental group has developed greater resistance against the challenged bacterium. *Spirulina platensis*, when incorporated to the feed and offered to guppy fry could increase the resistance to infection of a virulent strain of *Aeromonas hydrophila* which is capable of causing fin rot leading to systemic bacteraemia and mortality in infected fish.