PRELIMINARY ASSESSMENT OF RAM'S HORN SNAIL (*GYRAULUS SP.*) AS LIVE FEED FOR COMMON CARP (*CYPRINUS CARPIO*)

Paramendra Duraisingam & [1,2]Hassan Hj. Mohd Daud
[1]*Department of Veterinary Clinical Studies*
[2]*Wildlife Research & Conservation Centre*
Faculty of Veterinary Medicine
Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia

Abstract

Gyraulus sp. or Ram's horn snail (Figure 1) is a freshwater, air breathing snail of the family Planorbidae. It has a characteristic flat spiral shape shell in the shape of a Ram's horn. Snails from this family are hermaphrodites. They can be found abundantly in freshwater bodies such as lakes and ponds in Malaysia. Their diet consists of mainly of algae and dead plant matter. Many larger organisms such as water birds, turtles and freshwater fishes consume these snails as part of their normal diet. Currently, no studies have been conducted on the viability of this snail species as fish feed. Thus this study was conducted firstly to determine the protein content of the Ram's horn snail and its effects on the growth rate of common carp, an omnivorous freshwater fish and as an alternative source of fresh live-feed for freshwater fish aquaculture industry. Concurrently, the study also screen for the presence of parasites, fungus and pathogenic bacteria that may be carried by the snail. Three groups of ten carps, *Cyprinus* carpio fish were allocated into individual tanks supplied with individual filteration and aeration systems. Two groups of carps were fed Ram's horn snail at 5% body weight while the control group was fed commercial fish pellets at 5% body weight thrice daily. The growth rate of the fish was scored by measuring the weekly increment in length and body weights. A sample of whole snail was also sent for crude protein proximate analysis. Concurrently, the microbial burden of the snail was screened using the standard aerobic plate count (SPC) method from the snail's intestines. The bacteria colonies attained were sub-cultured and the species identified by biochemical tests. Samples of the snail were screened for parasites and fungus using squash smears preparations. This study showed that fish fed with Ram's horn snail had a daily growth rate of 0.8 to 1% body weight per day, while fish fed with commercial fish food had a daily growth rate of 1.6% body weight (Figure 2). The normal daily growth rate of common carp according to the FAO is 1.6% body weight. Proximate analysis done on the whole snail revealed a crude protein content of 11.3%. Bacteriology results revealed a bacterial content of 2.2 CFU $\times 10^6$/g of intestinal tissues. *Aeromonas hydrophila* type II and *Pseudomonas oryzihabitans* were predominantly isolated from the snail's intestines. *A.hydrophila is an* opportunistic pathogen in fish that can cause 'motile aeromonas septicaemia' disease. However *A. hydrophila* and *P. oryzihabitans* are two of the most common bacteria in freshwater habitats throughout the world. Moreover, the experimental infective *dose* of *A. hydrophila, type II* was 1×10^6 CFU/mL. No parasite or fungus was detected in the snail's body squash smears. No mortality associated with the feeding was recorded. In conclusion, the Ram's horn snail is cheap to culture, easily available, well-accepted by fish, had reasonably good protein content and could be incorporated into the diet of

common carp (cyprinids) and other species of cultured food and ornamental fishes without detrimental effect.

Keywords: Ram's horn snail, crude protein level, common carp, growth rate

Figure 1. Ram's horn snail (Gyraulus sp)

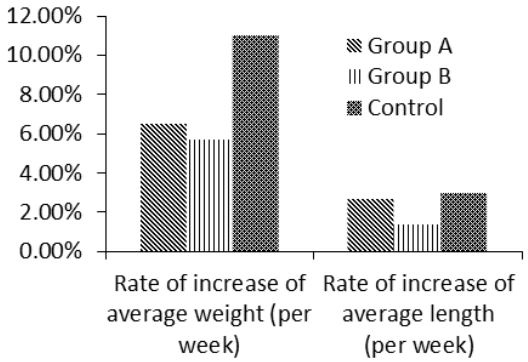

Figure 2. Growth rate of common carp fingerlings (average weight of 18.5 g) fed with Ram's Horn snail. Control group were fed with commercial fish pellets