ORL-F&HN-11

Effect of Ginger *Zingiber officinale* Rhizome Extract on Growth Performance, Survival and Gut Flora of Common Carp *Cyprinus carpio*

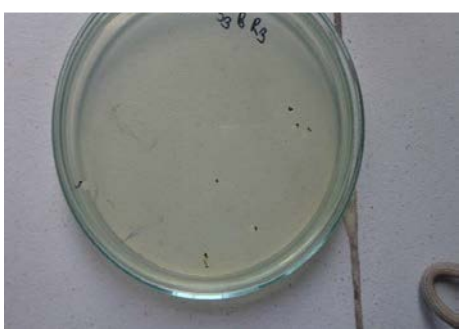
Ramesh Raj Bhandari* and Kanti Shrestha

Agriculture and Forestry University
Chitwan, Nepal
bhandari.manramesh001@gmail.com

Phytogenics, or plant-based additives, are pivotal for growth enhancement and disease resistance in cultured fish diets. A 63-days feeding trial was carried out in hapas (1m×1m×1.2m) within a grow tank (5m×5m×1.5m) at the Department of Aquaculture, Agriculture hatchery complex. The study aimed to assess growth performance, survival, and gut flora of *Cyprinus carpio* fed with varying levels of *Zingiber officinale* rhizome extract. An initial cohort comprising 450 juveniles (fry) of *C. carpio*, averaging 2.55±0.03g in weight and 4.9±0.68cm in length, were fed with diets containing 27.15% crude protein, included four concentrations of *Z. officinale* rhizome extract (1%, 2%, 3%, and 4%), along with a control group (0%); feeding three times a day for a total of 60 days, with each meal amounting to 5% of their body weight.

Fish group receiving the diet containing 3% Ginger rhizome extract, showed the highest values for growth performance parameters ($p<0.05$), including average harvesting weight (10.33±1.32 g/fish), total harvesting weight (247.82±31.60g/hapa), daily weight gain (0.13±0.01g/fish/day), specific growth rate (2.33±0.18%/day) in comparison with control group. The mean initial total bacterial count of fries was observed (1.38×10^9cfu/ml) and notable variances ($p<0.05$) were observed among groups fed with varying level of Ginger. The least total bacterial count was recorded in group fed 3% ginger rhizome extract on observation at 20 days ($1.75\times10^8\pm2.64\times10^6$ cfu/ml), 40 days ($1.9\times10^7\pm4.23\times10^6$ cfu/ml), and 60 days ($1.62\times10^6\pm3.60\times10^4$ cfu/ml). Similarly, the effects of varying level of ginger rhizome extract on the water quality parameters were not significantly different ($p>0.05$). The study concluded that supplementing the diet of cultured *C. carpio* with 3% *Z. officinale* rhizome extract effectively fosters growth and reduces the bacterial load in the gut of fish.

Figure 1: Heterotrophic aerobic plate count



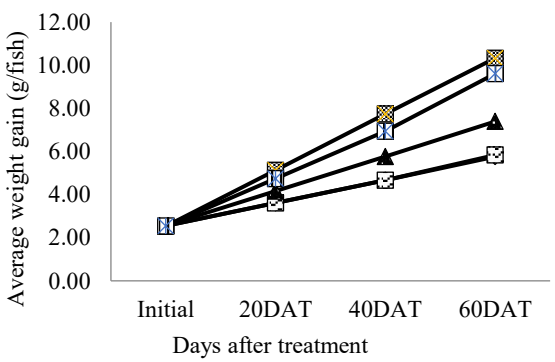


Figure 2: Average weight gain of fish at different days