
Colour enhancement of ornamental black carp using dried squid-ink powder

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Black carps have a high demand due to their unique black colour. Local breeders, however, experience a dull brown-black colour in black carps, giving them a low market value. Aim of the present study was to increase the melanin pigments in black carp skin incorporating squid ink (*Loligo spp*) powder into fish diets. Diet A was prepared with commonly used fish feed ingredients (100%), whereas Diet B and Diet C had the same ingredients (99.9867% and 99.9733%, respectively) and made into 100% by adding dried squid-ink powder 0.0133% and 0.0267% respectively. Black carps (mean weight 0.25 g; mean length 22.20 mm) were stocked in glass tanks in triplicates per treatment and fed 10% of body weight with the respective diets for 50 days. At the end of the experiment, black colour of fish-skin was measured at 475 nm by using UV-Vis spectrophotometry, and by analysis of photographs using Image-J software. Image analysis and spectrophotometry data revealed significant differences ($p < 0.05$, ANOVA) in mean percentage pixel count per unit area for skin black colour ($52.39\% \pm 2.62$) and mean skin-melanin concentration ($3.159 \text{ mg/g} \pm 0.114$) for the Diet C. Respective values for the same analyses for the Diet A were $33.65\% \pm 5.23$, and $1.268 \text{ mg/g} \pm 0.071$, whereas those for the Diet B were $43.47\% \pm 4.38$ and $2.357 \text{ mg/g} \pm 0.325$. Mean survival was 58.3%, 66.7% and 38.9% respectively in fish fed with Diet A, Diet B and Diet C. The study reveals that adding a minute amount of squid ink in fish feed could significantly increase the black colour of black carps, but the survival rate is reduced when higher amount of melanin is added to the diets.

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