

EFFECT OF NATURAL CAROTENOID PRESENT IN MARIGOLD ON GROWTH PERFORMANCE AND PIGMENTATION OF KOI CARP (*CYPRINUS CARPIO* LINNAEUS, 1758) FINGERLINGS

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ABSTRACT : A 60 days experiment was conducted to evaluate the effect of marigold (*Tagetes erecta*) leaf meal as natural carotenoid for koi carp (*Cyprinus carpio* L.) fingerlings. Fishes with an average weight of 2.0 g were fed one of the six diets prepared for this study as follows: Diet 1 (T₀) without marigold, Diet 2 (T₁) – Basal diet + 11 %, Diet 3 (T₂) – Basal diet + 13 %, Diet 4 (T₃) – Basal diet + 15 %, Diet 5 (T₄) – Basal diet + 17 %, Diet 6 (T₅) – Basal diet + 19 % marigold flower leaf meal, respectively. The experimental koi carp were fed at the rate of 3% body weight. Significant difference at (p<0.05). In growth parameters highest in as weight gain (3.600 ± 0.057 g) in T₃, percent weight gain (35.465 ± 0.468) in T₃, specific growth rate (0.506 ± 0.005) in T₃, gross conversion efficiency (0.158 ± 0.001) T₃, length gain (0.78 cm) in T₃ and the lowest value of feed conversion ratio was reported (6.308 ± 0.061) in T₃ as maximum feed utilization. At the end of research period the maximum coloration was recorded in T₄ with L, A & B value {(17.470 ± 0.060), (1.820 ± 0.081), (5.010 ± 0.121)} respectively and lowest L, A & B value. The findings of current research indicate that dietary use of graded marigold flower meal at the rate of 15gm/100gm diet has a beneficial impact on growth performance and 17g/100g of diet can enhance the coloration of koi carp fingerling.

Key words : Carotenoid, growth, koi carp, *Cyprinus carpio* L., marigold flower leaf meal.

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INTRODUCTION

Ornamental fish farming as is an emerging sector and very high potential in aquaculture as for economic growth development and provides high income and job opportunities to the people across the country and world. Ornamental fish are mostly kept for small-scale aquariums. As a result, skin colour is a significant criterion for choosing them, as are body shapes, behavioral patterns, and other ecological variations (Chapman, 2000). The ornamental fish industry has the potential to contribute to economic growth in developing countries, especially in the tropics (Yanar *et al*, 2008). Because of their beautiful skin coloration and aesthetic appeal, these are of prime importance. Colors in ornamental fish are one of the most important quality indicators for expressing consumer value. The koi carp (*Cyprinus carpio* Linnaeus, 1758) is a brightly colored Asian and European fish. They are a decorative variant of the common carp (*Cyprinus carpio*

carpio), produced through selective breeding from the Asian subspecies *Cyprinus carpio haematopterus*. They are one of the world's most common ornamental fish, with some colour variations fetching thousands of dollars. Koi carp in the wild retain their colour, but not the types that fetch high prices in other countries. Koi carps are one of the most common ornamental fish, with a wide range of colors and patterns (Gomelsky *et al*, 2003).

Carotenoids are responsible for the stunning range of red-to-yellow colors, we see in flower and fruits, as well as many processes that are essential for normal plant growth and development. Pigments are often essential for animals. Since animals such as fish, crustaceans, and mammals are unable to biosynthesize carotenoids, they must consume the pigments in their diet and metabolize them for use as essential nutritional components. So, the present study was conducted to evaluate the effect of