Color Enhancement in the Ornamental Dwarf Cichlid *Microgeophagus ramirezi* by Addition of Plant Carotenoids to the Fish Diet

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Abstract

The present research examined the effects of adding carotenoids from oleoresin paprika to fish feeds for ornamental dwarf cichlid, *Microgeophagus ramirezi*. The growth rate, survival, carotenoid accumulation level, and color intensity were evaluated. Post larvae and near-adult (three months old) fish were tested to determine when carotenoids are better assimilated. The addition of carotenoids had no effect on the growth rate or survival in either life stage, however, they had a clear effect on color enhancement. After 45 days, near-adult fish that consumed carotenoid-supplemented diets at 60, 120, or 240 mg/kg had significantly higher levels of carotenoids (72.19±4.55, 84.81±5.29, and 86.55±4.50 µg/g dry matter, respectively) than control fish (33.69±1.06 µg/g), with no significant differences between treatments. After 75 days, post larvae that consumed 240 mg/kg carotenoids accumulated significantly more carotenoids in their body (59.34±3.93 µg/g dry matter) than fish that consumed only 60 mg/kg carotenoids (40.53±2.37 µg/g dry matter) or no supplemental carotenoids (29.18 µg/g dry matter). Visual examination revealed a strong correlation between level of pigment accumulation and color appearance in the fish. Results indicate that addition of 60 mg oleoresin paprika per kg diet is sufficient to obtain good coloration in *M. ramirezi*.

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