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**EFFECTS OF NATURAL CAROTENOIDS ON THE BODY COLORATION OF BLUE GOURAMI FISH (*Trichogaster trichopterus*)**

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Roll No. 0119/09

Registration No. 727

Session: 2019-2020

**A thesis submitted in the partial fulfillment of the requirements for the degree of Master of Science in Fisheries Resource Management**

**Department of Fisheries Resource Management**

**Faculty of Fisheries**

**Chattogram Veterinary and Animal Sciences University**

**Chattogram-4225, Bangladesh**

**June 2020**

**AUTHORIZATION**

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**(Mohammad Abu Naeem)**

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**This is to certify that we have examined the above Master’s thesis and have found that is complete and satisfactory in all respects, and that all revisions required by the thesis examination committee have been made**

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The Author

**Mohammad Abu Naeem**

 **ABSTRACT**

The effect of natural carotenoidon body coloration and growth of *Trichogaster trichopterus* was investigated for a period of 120 days. China Rose Flower (*Hibiscus rosa-Sinensis*), Marigold Flower (*Tagetes erecta*), and Carrot (*Daucus carota*), were used as a natural carotenoid source for colour enhancement and substituted to fish meal at 15% ratio in the three different diets as (T1, T2, T3) treatment and T0 as control treatment. *Trichogaster trichopterus* (mean carotenoid 0.113 ± 0.008 mg/100kg, mean weight 4.062 ± 0.506 gm) were randomly distributed into circular plastic tank at 8 fish/tank in triplicate treatments and were fed twice daily (5% Body weight) for 06 weeks. Average initial carotenoid contents absorption in four treatments were 0.1109 mg/100kg, 0.1035 mg/100kg, 0.123 mg/100kg, and 0.1158 mg/100kg in treatments T0, T1, T2 and T3 respectively. At the end of the 120 days experimental period carotenoid concentration in control(T0) averaged 0.122±0.0115 mg /100kg , China rose(T1) 0.129±0.016 mg /100kg, Marigold(T2) 0.166±0.029 mg /100kg and Carrot(T3) 0.148± 0.022 mg /100kg. The average initial weights in four treatments were 4.413gm, 4.213gm, 4.310gm and 3.313gm in T0, T1, T2, and T3 respectively. At the end of the 120 days experimental period, average final weight of the fishes of four treatments were 5.455±0.821gm, 4.504± 0.219 gm, 4.764±0.727 gm and 3.776±0.418gm T0, T1, T2 and T3 respectively. In case of carotenoid gain higher result was found in T2 (0.1669mg/100kg±0.0298) followed by T0, T1 and T3 and inweight gain higher result was found in T0 (5.455±0.821gm) followed by T1, T2 and T3. The result showed that the fishes provided with ‘Treatment-T0 (4.094±0.250cm)’ feed have higher growth in terms of length gain when comparing with other treatments. Results on the survival rate (%) of *Trichogaster trichopterus* fed on feeds containing different levels of natural carotenoid content higher result was in T0, T2 followed by T1 and T3.  The result concluded that China Rose Flower, Marigold Flower, and Carrot has positive impact on the body coloration development of blue gourami fish (*Trichogaster trichopterus*) and its not badly effects on the growth and survivality. From this study it could be concluded that the natural colour enhancer feeds can be prepared at a lower cost using the cheaply available sources.

**Key words:** *Trichogaster trichopterus,* carotrnoid*,* colour enhancement.

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 **ABBREVIATIONS**

|  |  |
| --- | --- |
| ANOVA | Analysis of Variance |
| cm | Centimeter |
| DoF | Department of Fisheries |
| MT | Metric Ton |
| FY | Fiscal Year |
| FRSS | Fisheries Resource Survey System |
| GDP | Gross Domestic Product |
| *et al.* | Associates |
| gm | Gram |
| Mg | Milligram |
| i.e. | That is |
| kg | Kilogram |
| S.D. | Standard deviation |
| SPSS | Statistical package for social science |
| °C | Degree Celsius |
| FAO | Food and Agriculture Organization |
| % | Percent |
| wt | Weight |
| w | Week |