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**POTENTIALS OF PLANT POLYPHENOL FOR BETTER PERFORMANCE OF**

**FARMED TILAPIA (*Oreochromis niloticus*)**

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Roll No.: 0117/01

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**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**

**Chittagong Veterinary and Animal Sciences University**

**Chittagong-4225, Bangladesh**

**JUNE 2018**

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**Shahida Arfine Shimul**

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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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**LIST OF ABBREVIATIONS**

|  |  |
| --- | --- |
| MT | Metric Ton |
| MMT | Million Metric ton |
| DoF | Department of Fisheries |
| ADB | Asian Development Bank |
| g | Gram |
| mg | Milligram |
| mcg | Microgram |
| Kcal | Kilocalorie |
| BFRI | Bangladesh Fisheries Research Institute |
| NFI | National Fisheries Institute |
| Ha | Hectare |
| FAO | Food and Agriculture Organization |
| PUFA | Poly Unsaturated Fatty Acid |
| YAP | Young Apple Polyphenols |
| GCF | Grass carp Fillets |
| FCR | Feed Conversion Ratio |
| CF | Condition Factor |
| SGR | Specific Growth Rate |
| CRD | Completely Randomized Design |

**ABSTRACT**

Aquaculture is a thriving industry leading the contribution of country’s total fish requirement. Recently significant attempt have been done to uplift and improve the production of fish by rearing high value fish in ponds. This experiment introduces a new natural bioactive additive from sugarcane plants (*Saccharum officinarium*) named as Polyphenol which have the potential to replace some of the functions of feed additives because it is high in antioxidants, rich in minerals, nutrients, essential amino acids and also has anti-inflammatory and anti-bacterial properties. The experiment was conducted in cages where Tilapia (*Oreochromis niloticus)* were stocked in 16 cages at 80 fish per cage and subjected to four treatments with each treatment replicated in four times. Polyphenol, which is the test ingredient, was added at 0% (T0) (regarded as control or without Polyphenol), 0.2% (T1), 0.4% (T2), and 0.6% (T3) in the four diets respectively. After stocking of fish, sampling was done in regular interval of one week to check the growth performance of fish and also adjust the feeding rate. During stocking of fish, the average weight and length of fish was 2.24 g and 3.21 cm. Final sampling showed that the average weight of each treatment such as T0, T1, T2 and T3 were 86.64±7g, 93.3± 7.4 g, 108.71±14 g and 89.78±10.8 g respectively. It indicates that, the average weight was increased at T2 (0.4%) treated feed. And the average length of fish was increased which fed with T2 (0.4%) [(18.25±.29)] treated fish than the T0 (17.34±.25), T1 (18±.41) and T3 (18.13±.25) treated fish. Among the four treatments, T2 (0.4%) showed better growth [(108.71±14) g] than the control [(86.64±7) g] (p<0.05). T2 has lower FCR value (1.59) than the control (2). Diet containing 0.4% polyphenol showed increased final body weight, weight gain than the diet containing without polyphenol (p<0.05). Fish fed with 0.4% and 0.6% polyphenol resulted in increased length and length gain than the diet containing without polyphenol (p<0.05). Due to this reason, Polyphenols can be considered as feed additives in the nutrition of aquaculture species.

Key words: Aquaculture, Tilapia, Polyphenol, Growth performance