EFEECT OF DIFFERENT MICROALGAE ON GROWTH, SURVIVAL, WATER QUALITY AND NUTRITIONAL COMPOSITION ON JUVENILE TILAPIA (*Oreochromis niloticus*)

Jinat Afruj

Roll No.: 0119/05

Registration No.: 695

Session: 2019-2020

A thesis submitted in the partial fulfillment of the requirements for the degree of Master of Science in Aquaculture

Department of Aquaculture

Faculty of Fisheries

Chattogram Veterinary and Animal Sciences University

Chattogram-4225, Bangladesh

JUNE 2020

Authorization

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June, 2020

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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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(Joyshri Sarker)	**Mohammad Redwanur Rahman**
Supervisor	**Co-supervisor**

(Joyshri Sarker)

Chairman of the Examination Committee

Department of Aquaculture

Faculty of Fisheries

Chattogram Veterinary and Animal Sciences University

Khulshi, Chattogram-4225, Bangladesh

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The Author

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List of Abbreviation

Acronym	Definition
ANOVA	Analysis of Variance
CF	Control Feed
cm	Centimeter
DHA	Docosahexaenoic Acid
et al.	Associates
EPA	Eicosapentanoic Acid
g	Gram
h	Hour
L	Liter
Mg	Milligram
MT	Metric ton
MUFA	Mono Unsaturated Fatty Acids
mg/L	Milligram/Liter
SE	Standard Error
SGR	Specific Growth Rate

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Abstract

In the present study, two selected marine microalgae were combined to produce a high-performing feed for Nile tilapia (*Oreochromis niloticus*)—the world's second largest group of cultivated fish. In this study, a feeding trial was conducted with fry of Nile Tilapia Oreochromis niloticus in which two types of microalgae such as *Tetraselmis chuii* and *Nannochloropsis* sp. were used for replacement of fish meal protein. Seven experimental diet containing two microalgae were formulated to replace 0%, 25%, 50% and 75% of fish meal where each assigned to three replicate tanks, and each tank was stocked with 30 fry of Nile Tilapia from their first feeding for 22 days indoor feeding trial. The results of this study showed that two experimental diet T50% and N75% were performed significantly ($P < 0.05$) to obtain high weight gain / better growth than the formulated feed with 100% fish meal. Survival rate was found significantly ($P < 0.05$) higher in all treatments than control. SGR and water quality were also significantly ($P < 0.05$) higher than the formulated diets. In addition, the protein, lipid and carbohydrate content in Nile Tilapia fry reared in tanks with T50% and N75% were higher than for fry grown in control tanks. Therefore, this study suggests that Nile Tilapia fry reared in tanks can gain nutrition from the selected microalgae. Moreover, the presence of microalgae in the tanks has also been shown to maintain low level of TAN and nitrite in the culture system. Thus, microalgae used as feed supplement practice in hatcheries can be considered as a viable technology. Hence, selected marine microalgae could be used as feed supplement in enhancing the growth and survival of Nile Tilapia fry.

Keywords: Nile Tilapia, microalgae, survival rate, growth, nutritional composition