Institute Project of ICAR-CIFA-reg

2 messages

Baidya Paul <bnpaulcifa@gmail.com> 13 July 2017 at 07:02
To: Koushik Ghosh <kghoshbu@gmail.com>

To
Dr. Koushik Ghosh
Assistant Professor (Stage –III)
Aquaculture Laboratory, Department of Zoology

(DST-FIST & UGC-SAP-DRS Sponsored)

The University of Burdwan

Golapbag, Burdwan – 713 104, West Ben

Dear Sir,

Your name has been proposed and accepted as a Co-PI in the Annual Institute Research Council Meeting held during 3-5th May, 2017 meeting at ICAR-CIFA, Bhubaneswar to execute the Institute funded project entitled " **Development of Larval diet for *Ompok bimaculatus*, a high- valued fish of regional importance".** I may therefore, request you to act as a Co-PI in the said project. Your consent in this collaborative effort and participation in the project will be highly appreciated.

Regards

Dr.Baidya Nath Paul
PI of the Project
Principal Scientist
Regional Research Centre
ICAR-Central Institute of Freshwater Aquaculture (www.cifa.in)
P.O.Rahara. Kolkata-700118
+91 33 25683023(Work)
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3 attachments

RPP of larval feed project.docx
47K

RPP signature pages.pdf
559K

proceedings of the 31st Annual IRC meeting of ICAR-CIFA (1).pdf
3445K

Koushik Ghosh <kghoshbu@gmail.com> 13 July 2017 at 08:35
To: Baidya Paul <bnpaulcifa@gmail.com>

Received.
Thanks & best regards,

Dr. Debidas Mondal

Joint Registrar

The University of Burdwan

Rajbati, Burdwan- 713104, W.B

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No.R-Ph.D./Regn. / sc/zoo/172 Dated: 04.08 , 2017

To:
Shri/Sm. Arijit Chakraborty
C/o Late DebKumar Chakraborty
385. Merry Park P.O. L.D.T. - Hooghly.
Pin - 712103

Sub: Grant of Registration as a candidate for Ph.D.degree in Zoology
with effect from 18.08.2015.

Sir/Madam,

I am to inform you that the Vice-Chancellor's in his orders dated 19.07.2017 permitted you to get yourself registered as a candidate for Ph.D. degree, mentioned above, the title of your thesis being, "ARTIFICIAL PROPAGATION AND NURSERY REARING OF INDIAN SHAD, TENUALOSA ILISHA IN FRESHWATER CULTURE SYSTEM"

Subject to fulfillment of the requirements set forth in the University Ordinances relating to Doctoral Degrees and such terms and conditions as may be laid down by the appropriate authorities of the University from time to time.

You will now be required to deposit the Ph.D. Registration fee of Rs. 2000/- along with part-time research fee of Rs. 4000/- (Total Rs. 6000/-) for enrolment of your name in the Register of candidates for Ph.D. degree, positively within a month from the date of issue of this letter, failing which your case will not be considered for Registration as a Ph.D. candidate.

In this connection you are requested to note that ---

a) You will be required to get yourself registered as a student of this University on migration after completing all the necessary formalities prescribed in this behalf, unless you are already a registered student of this University.

b) On enrolment, you will be required to deliver one seminar talk before submission of the thesis pertaining to the project of your research you have undertaken within the period of your research work and before submission of the thesis.

c) You will have to published at least one research paper related to your research work in a referred journal / peer reviewed journal / journal having ISSN or in a book having ISBN number before submission of the thesis and produce evidence for the same in the form of acceptance letter or the reprint at the time of submission of your thesis.

d) You have been permitted to do research work under Dr. Koushik Ghosh, Dept of Zoology, B.U. & Dr. D. N. Chattopadhyay, Principal Scientist, ICAR A-5 (Phase-III), Santalpara, Kalyani-741235 as your Supervisor / Joint Supervisors.

e) You will have to submit your thesis within six years from the date of your registration for Ph.D. degree mentioned above, but not earlier than 18.08.2017 in the prescribed manner along with the fee of Rs. 4000/- or as may be fixed by the Executive Council from time to time towards submission of thesis.

f) You will be required to undergo a preliminary test within one year of your enrolment, to be taken by the Supervisor(s) on subject(s) connected with the area of your research as well as on your linguistic equipment as may be prescribed by the Supervisor(s) . Further continuance of your research work will depend on satisfactory result at the test. In the event of unsatisfactory result, the appropriate authority of the University may allow you to appear at a second test within six months of such decision, but not before six months from the date of the first test. If the result of the second test is also found not to be satisfactory, the registration may be cancelled.

After satisfactory result at the test, you will have to get yourself in touch with your Supervisor(s) at least once in every two months in course of research work (applicable in the case of part-time researcher(s) and produce a certificate from the Supervisor(s) about your continuous research and satisfactory progress, from time to time.

g) All the requisite fees should be deposited in case at the University Cash Counter and the relevant copy of the Cash Receipt should be submitted to the ***Ph.D. Unit*** of the Registrar's Department.

h) In your case , ***four/five copies*** of the thesis along with a C***.D. in PDF format*** (containing the Synopsis and the Thesis) be submitted and one copy be retained by you as a reference copy.

i) At the time of submission of thesis, a certificate in the prescribed form furnished by your Supervisor(s) will have to be pasted on all the copies of the thesis.

j) **The registration granted under this letter will remain valid for six years from the date of registration.** In the event of failure of submission of the thesis within the stipulated period, re-registration may be sought for and the same may be granted after observing all the formalities required in this behalf and on the receipt of the prescribed fee(s).

k) The registration granted herein may be cancelled by the concerned authority/ body of the University in the event of failure of the candidate to fulfill any of the prescribed requirements at any stage.

l) Residential requirements should be fulfilled and maintained (applicable in the case of part-time researchers).

m) Progress, Attendance and Good Conduct Reports of the Supervisor(s) in respect of the candidate should be submitted regularly every three months during the research.

n) Application forms for University Registration/Restoration of University Registration Number and Inward Migration are available at the University Sales Counter.

o) You will be required to submit six typed copies of Synopsis/Abstract of the thesis (not exceeding ten pages) along with the certificate mentioned in Clause(l) above and a certificate of delivering Seminar talk(s) and the Clearance Certificate from the Librarian of the Central Library, Burdwan University at the time of submission of thesis.

Yours faithfully,

Sd/-

Jt.Registrar

No. R/Ph.D./Regn. /sc/zoo/172/11(4) Dated: 04.08.2017

Copy forwarded for information to:

1) The Head of the Department of Zoology B.U.

2) Supervisor(s) of the candidate: i) Dr. Koushik Ghosh, Dept. of Zoology B.U.

ii) Dr. D.N. Chattopadhyay, PI Scientist, ICAR Kalyani

3) The Secretary, Faculty Council for P.G. Studies in Science B.U.

4) The Finance Officer, B.U.

Jt. Registrar

Animal Nutrition and Feed Technology (2020) 20: 525-533
DOI: 10.5958/0974-181X.2020.00046.3

Short Communication

Protein Requirement of *Ompok bimaculatus* (Bloch, 1794) Larvae

B.N. Paul*, A. Das, R.N. Mandal, P. Singh, S. Adhikari, K. Ghosh[1], D. Chowdhury[1], P.P. Chakrabarti and S.S. Giri[2]

Regional Research Centre ICAR-Central Institute of Freshwater Aquaculture, Kolkata-700118, India

(Received: January 01, 2020)

ABSTRACT

Paul, B.N., Das, A., Mandal, R.N., Singh, P., Adhikari, S., Ghosh, K., Chowdhury, D., Chakrabarti, P.P. and Giri, S.S. 2020. Protein requirement of Ompok bimaculatus *(Bloch, 1794) larvae. Animal Nutrition and Feed Technology, 20: 525-533.*

A 22 d experiment was carried out to study the protein requirement of *Ompok bimaculatus* larvae (weight 0.11±0.01 g; length 20.49±0.70 mm). Three different formulated feeds were prepared with graded levels of crude protein i.e., with low (35% CP; LP), medium (40% CP; MP) and high (45% CP; HP) crude protein levels. The water quality parameters were optimum during the whole experimental duration. The survival rate was more than 70%. The fish grew to 0.34±0.06, 0.91±0.15 and 0.36±0.07 g, respectively in LP, MP and HP groups. The final weight was significantly ($P<0.01$) higher in MP having 40% CP in the diet. Both the net weight gain and specific growth rate were significantly ($P<0.05$) higher in MP having 40% CP in the diet as compared to LP and HP. The FCR was also significantly ($P<0.05$) lower in MP having 40% protein in the diet when compared with LP and HP. However, the protein efficiency ratio was similar ($P>0.05$) among the three treatment groups. Further, it was also revealed that the activities of enzymes in the digestive tract namely, α-amylase, lipase and pepsin were significantly ($P<0.05$) higher in MP diet having 40% crude protein. The present experiment, thus. revealed that 40% CP was sufficient for the optimum growth and survival of *O. bimaculatus* larvae.

Keywords: Amylase, Growth, Lipase, *Ompok*, Pepsin

INTRODUCTION

Ompok bimaculatus (Bloch, 1794) popularly known as the 'butter catfish' are found in lakes, rivers, canals, beels, swamps, floodplains and ponds, etc. and are distributed in India, Bangladesh, Borneo, Java, Sri Lanka, Myanmar, Pakistan, Thailand, Cambodia and Vietnam, etc. (Jayaram, 1977). It is a non-air breathing fish belonging

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PENSOFT.

ACTA ICHTHYOLOGICA ET PISCATORIA

Effect of dietary lipid levels on growth, body composition, and enzyme activities of larvae of butter catfish, *Ompok bimaculatus* (Actinopterygii: Siluriformes: Siluridae)

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http://zoobank.org/1881259A-9866-43D2-8793-201B9B8F00CA

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Academic editor: Jolanta Kiełpińska ♦ **Received** 14 October 2020 ♦ **Accepted** 6 March 2021 ♦ **Published** 13 September 2021

Citation: Paul BN, Chowdhury D, Das A, Mandal RN, Singh P, Adhikari S, Chakrabarti PP, Giri SS, Ghosh K (2021) Effect of dietary lipid levels on growth, body composition, and enzyme activities of larvae of butter catfish, *Ompok bimaculatus* (Actinopterygii: Siluriformes: Siluridae). Acta Ichthyologica et Piscatoria 51(3): 289–298. https://doi.org/10.3897/aiep.51.67079

Abstract

The Indian butter catfish, *Ompok bimaculatus* (Bloch, 1794), is a high-value catfish that has gained immense consumer preference in South-East Asia. However, information on the nutritional requirements of this species is scanty. Hence, an experiment was conducted to evaluate the effects of varying dietary lipid levels on growth, body composition, and activities of digestive and metabolic enzymes in larvae. Three isonitrogenous (40% crude protein) diets were formulated by supplementing fish and vegetable oil (1:1) at 4.5% (D1), 7% (D2), and 9.5% (D3) levels (containing crude lipid 5.7%, 8.0%, and 10.45%, respectively in diets D1–D3) to a fish meal- and oilcake-based formulated diet. Experimental diets were fed to butter catfish larvae (0.15 ± 0.01 g) in triplicate groups for a period of 42 days. Proximate compositions of the experimental diets, as well as fish carcass, were analyzed using standard procedures (AOAC 2005). Digestive and metabolic enzyme activities were analyzed at the completion of the experiment by standard methodology. Butter catfish larvae fed the diet D2 (8% crude lipid) resulted in the best performance in terms of weight gain (final weight 1.40 ± 0.07 g), net weight gain (1.31 ± 0.06 g), specific growth rate (5.50 ± 0.05% · day^{-1}), and protein efficiency ratio (2.39 ± 0.17). The highest lipid deposition (2.90 ± 0.12%) in the carcass was also recorded in fish reared on diet D2. The final weight, net weight

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ORIGINAL ARTICLE

WILEY Aquaculture Research

Larval rearing of hilsa shad, *Tenualosa ilisha* (Hamilton 1822)

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Funding information
National Agricultural Science Fund, ICAR, Grant/Award Number: NFBSFARA/WQ-3021

Abstract

Hilsa, *Tenualosa ilisha* has received much attention for culture due to decline of the natural population. Lack of knowledge on larval rearing is the bottleneck for its culture. This study was aimed at developing larval rearing protocols for hilsa shad. Hilsa larvae (4 days old, 4.76 ± 0.06 mm/0.49 ± 0.01 mg) were stocked in fibreglass-reinforced plastic tanks (1.7 m^3 water volume) at 300, 600 and 1,200 nos/m^3 in triplicates in three experimental systems viz., E-I (circular, 0.567 m water depth), E-II (circular, 0.962 m water depth) and E-III (rectangular, 0.567 m water depth) and reared for 46 days. The larvae were supplied with *Chlorella vulgaris*, *Brachionus calyciflorus*, mixed phytoplankton and mixed zooplankton during 4–50, 6–25, 8–50 and 26–50 days of their age respectively. In each system, higher ($p < 0.05$) fry survival at 300 nos/m^3 than in higher densities indicates density dependent stress. Circular tanks showed higher survival (13.3%–61.31%) than in rectangular tanks (6.88%–27.26%) in each stocking density, indicating the importance of tank shape for rearing. Water depth affected fry survival in circular tanks (E-I and E-II) at 300 nos/m^3; at 0.962 m depth, survival was higher (61.31%, $p < 0.05$) than that of 0.567 m depth (49.93%). Good fry survival was achieved through feeding the larvae initially with *Chlorella* followed by co-feeding with *Brachionus*, mixed phytoplankton and zooplankton and rearing in circular tanks at 300 nos/m^3 densities at 1 m depth. This first-ever larval rearing protocol is useful for mass production of fry to support hilsa aquaculture in future.

KEYWORDS
fry survival, stocking density, tank design, zooplankton culture

1 | INTRODUCTION

Hilsa shad, *Tenualosa ilisha* is a high value food fish with rich in *n*-3 polyunsaturated fatty acids, eicosapentaenoic acid and docosahexaenoic acid (Mohanty et al., 2012). The species is widely distributed in Bay of Bengal, Indian Ocean, Persian Gulf and Arabian Sea and is also found in coastal areas, estuaries and freshwater rivers of India, Bangladesh, Pakistan, Indonesia, Sumatra, Myanmar, Malaysia, Kuwait, Qatar, Oman, Thailand, Saudi Arabia, United Arab Emirates, Iraq, Iran, Sri Lanka and Vietnam, where it contributes to the most important commercial fishery (Freyhof, 2014). In India, the fish migrate from Bay of Bengal to the Hooghly river for breeding (Jones & Menon, 1951). Recently, the availability of hilsa has been drastically declining with a consequent increase in demand and price, which often reaches $ 22 per kg (US) depending on the size and freshness. Therefore, the urgent need is culture of the species in confined water systems. The main bottlenecks for hilsa culture are insufficient fry for stocking, lack of knowledge on larval rearing and fry production and lack of ability to consistently produce a steady