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Research paper

Rearing of larva of *Clarias batrachus* using homemade food

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Abstract: Using *Clarias batrachus* larvae that were 5 days old and had an initial total length of 7.0 mm and a weight of 3.1 mg, an experiment lasting 21 days was conducted with live as well as counterfeit feed in an indoor incubation facility. The brooders of *C. batrachus* (Av. wt of female 170 g; Av. wt of male 128 g) were secured from outside lakes and loaded in a lake close to the examination site, 2-months before producing. The fishes were effectively initiated reared utilizing WOVA-FH @ 1.0-2.0 ml/kg body weight (bw) to females and 0.5-1.0 ml/kg bw to males. For the study, three artificial diets with three replications of each were used. Among such, diet 6.52% fish meal (CP 60%), 89.96% powdered milk (CP 27%), and 6.52% boiled egg yolk (CP 40%) were used to create Diet A. Diet B employing 18.73% FM (CP 60%), and 18.73% Baker yeast (CP 44.75%), 18.73% boiled egg yolk (CP 40%) and 48.80% Wheat flour (CP 18%) and 34.44 % fish meal (CP 60%), 34.44% Baker yeast (CP 44.75%) and 31.12% Whole egg (CP 12.6%) were used to create Diet C. Diat A,B and C contain 30%, 35% and 40% Crude Protein level respectively followed by Pearson Square Method.. The highest rate of growth was seen in the larvae fed diet C. The study's findings demonstrated that larvae of *C. batrachus* could be successfully raised on a diet composed of 31.12% whole eggs, 34.44% yeast, and 34.44% fish meal. The nature of incubation facility water was recorded for temperature 29° C, pH 7.2, DO 7.1 mgL-1 and complete alkalinity 132 mgL-1 separately.

Keywords: *C. batrachus*, Yolk, Egg, Milk powder, Plankton, Homemade feed.

Introduction:

During the months of July and August each year, *C. batrachus* has a very brief and unique spawning period (Thakur, 1987). It is a very well-liked fish that commands a premium market price since patients frequently recommend it as part of their diets due to its good taste and simple digestion. *C. batrachus*, sometimes referred to as "magur" in West Bengal, can be found in all types of freshwater habitats, including rivers, canals, beels, swamps, and ponds. Within the first year of life, it matures and spawns in both open and enclosed waters.

The fish's larval stage is said to be the most delicate time in its life. Without some success in larval rearing, the development of a viable and acceptable induced spawning technique cannot meet the need for stockable-sized fry.

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The catfish, *C. batrachus*, is a common occurrence. Although a number of researchers, notably Rahmatullah et al. (1983) and Mollah (1987 and 1987), have reported on the efficacy of its induced breeding, it appears that little research has been done to address the issues with its larvae rearing. However, it is well known that live foods, such as tubificid worms and/or zooplankton like Daphnia/Moina, promote excellent growth and larval survival. However, the year-round availability of these live foods is questionable, and the technology for their regulated manufacture has not yet been proven beyond a reasonable doubt. It was deemed necessary to research an alternative method of feeding the larvae prepared meals as a result. In this perspective, it is important to note the most recent publications by Alam and Mollah (1988 and 1989), Madhury and Mollah (1990), and Saha et al. (1998). Sanaullah et al. (1986) reported on the creation of high-quality fish feed for *C. batrachus* fingerlings using local raw ingredients. Alam and Mollah (1988) completed some basic research on the creation of artificial feed for C. batrachus larvae. A proper artificial diet must still be created in order to guarantee the larvae's improved growth and increased survival rates. A completely acceptable larval diet hasn't yet been created, though. As a result, an experiment was carried out to determine the best food for successfully growing *C. batrachus* larvae.

In light of the aforementioned information, an experiment was carried out to obtain a preliminary understanding of the effects of live feed, mixed feed, and only artificial feed on the growth and survival of *C. batrachus* larvae in order to guide future research on gradually weaning them from live to artificial feed.

Materials and Methods:

Fry's origin

WOVA-FH synthetic hormone @ 1.0-2.0 ml/kg bodyweight of females and @ 0.5-1.0 ml/kg bodyweight of males were utilized to stimulate breeding in order to create the *C. batrachus* larvae that were employed in the investigation. For this experiment, three female and four male *C. batrachus* broods were used. Following 30 hours of fertilization, the egg will hatch. The larvae were fed pulverized whole chicken eggs along with semi boiled water once the yolk sac had fully absorbed. When the entire powdered egg was combined with semi-boiled water and given to the larvae wistfully, the result was fine particles. Larvae that were 5 days old and had an average total length of 7.0 mm and a weight of 3.1 mg were used to begin the experiment.

Plan of investigation

Five 2'x1.5'x1' thermocol tray with 20 litres of water each were used for the experiment. 100 larvae were placed in each tray at a rate of 5 larvae per litre of water. Three treatment groups with three replicates each were created from the trays. Diets A, B, and C were provided to the larvae of the treatments A, B, and C, respectively. Water was delivered to the trays continuously through a perforated plastic tube that was attached to the tap. The tray's outlet was used to drain any extra water.

Figure 1. Thermocol tray for larval rearing

Fish meal, yeast, powdered milk, cooked chicken egg yolk, whole egg, wheat flour were used to make the larval meals. Fish meal was made using deboned *Channa*

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striatus 'lata shutki', which was bought from a local store. Dietary materials were measured out according to need and thoroughly combined. The needed amount of water was then added to the mixture to turn it into a paste. With a few minor modifications, the AOAC (1965) procedures were used to estimate the approximate compositions of dietary items and the test meal. Table 1 lists the formulation of the test diets and their approximate makeup. According to Hastings (1979), the energy content (Kcal/g) of the diets was estimated. According to Jauncey and Ross (1982), the vitamin and mineral premixes were made.

Table1. Crude Protein percentage in Diet A, B and C using Pearson square method.

Ingredients	**Diets**		
	A	**B**	**C**
Fish meal	6.52	18.73	34.44
Baker's yeats		18.73	34.44
Powder milk	86.96		
Boiled chicken egg yolk	6.52	18.73	
Whole egg (Albumin+yolk)			31.12
Wheat flour		48.80	
Vitamin premix	2.0	1.5	1.5
Mineral premix	2.0	1.5	1.5
Crude protein	**30.00 %**	**35.00 %**	**40.00 %**

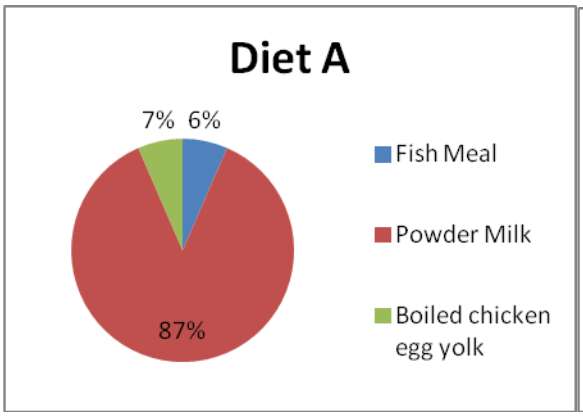

Chart 1

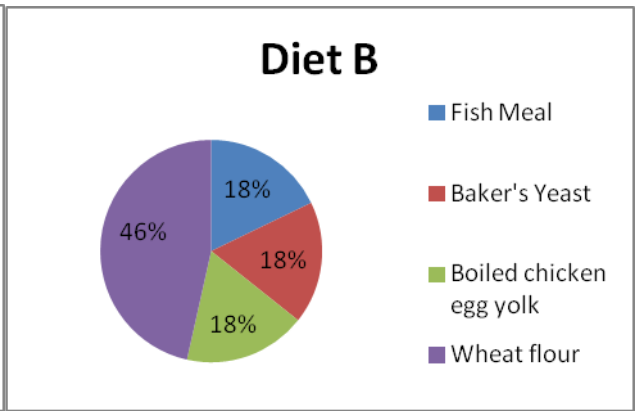

Chart 2

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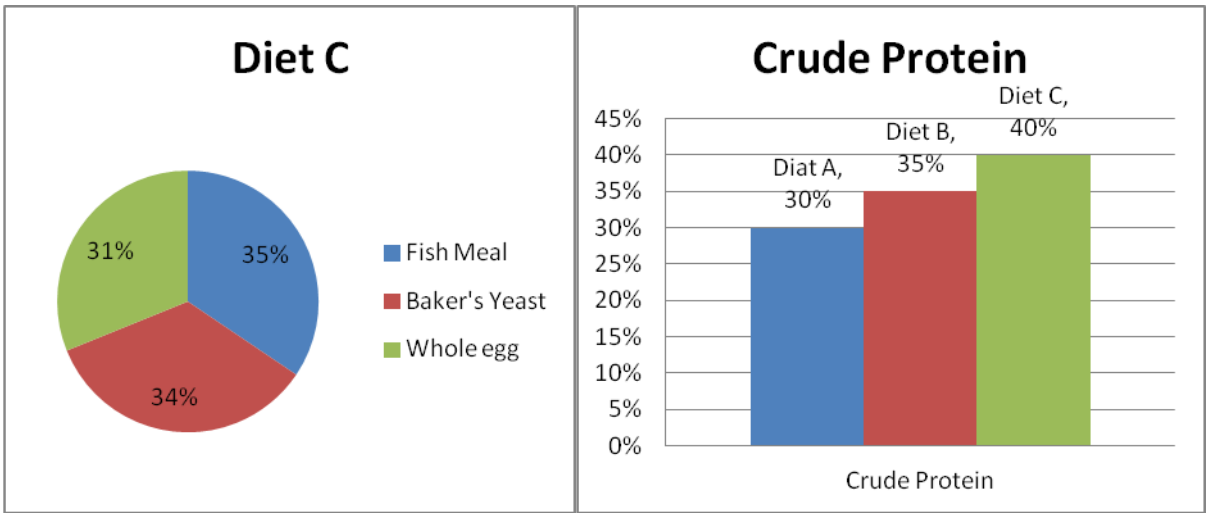

Chart 3 **Chart 4**

Figure 2. Chart 1, 2 and 3 showing % of feed ingredients and Chart 4 showing Crude Protein level in Diet A, B and C.

The experiment was carried on for 21 days more. Four times a day, between 8:00 and 20:00, the fish were fed. Feeds were given out in excess of what was needed. Even though there were still some feeds to be fed and constructed in the corners of the trays, the larvae were deemed satisfied when they stopped feeding. Before the subsequent feeding, the extra feed was removed, and the dead larvae were also taken out and counted. At the conclusion of the experiment, the larvae's growth in terms of length (mm) and weight (mg) were determined.

Result:

Table 2 shows the growth rates of *C. batrachus* larvae in response to variously designed diets. The larvae fed diets B and C considerably outperformed that fed diet in terms of length and weight increase in diet A. The variations in the length and weight increases of the larvae fed diets B and C had no real impact. The larvae fed the diet C, which contained a whole egg, had a greater growth rate than the larvae fed the other two diets.

Table 2. Growth of C. batrachus in different times of the experimental period in terms of length (mm) and weight (mg)

Sampling	Diet A		Diet B		Diet C	
Days	Length (mm)	Weight (mg)	Length (mm)	Weight (mg)	Length (mm)	Weight (mg)
(Initial) 5 days	7.0	3.1	7.0	3.1	7.0	3.1
10	12.0	35.6	15.31	57.6	18.40	83.9
15	18.6	95.1	24.44	115.4	28.55	128.6
(Final) 21 days	25.4	125.6	34.21	140.8	41.66	177.2
Total growth	18.4	122.5	27.21	137.7	34.66	174.1

(Total growth = Final growth – Initial growth)

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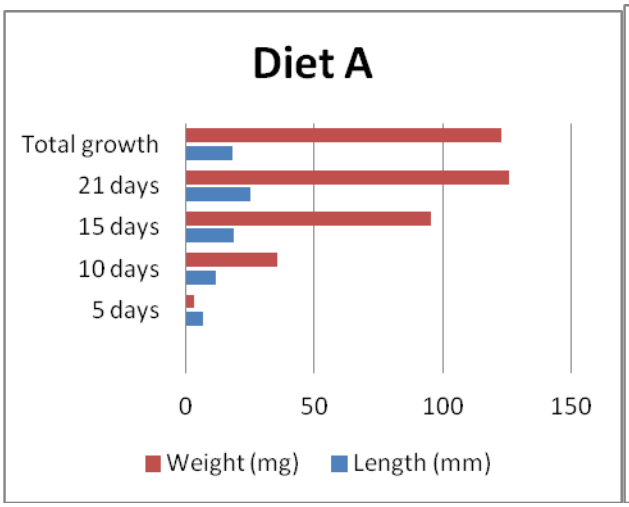

Chart 5

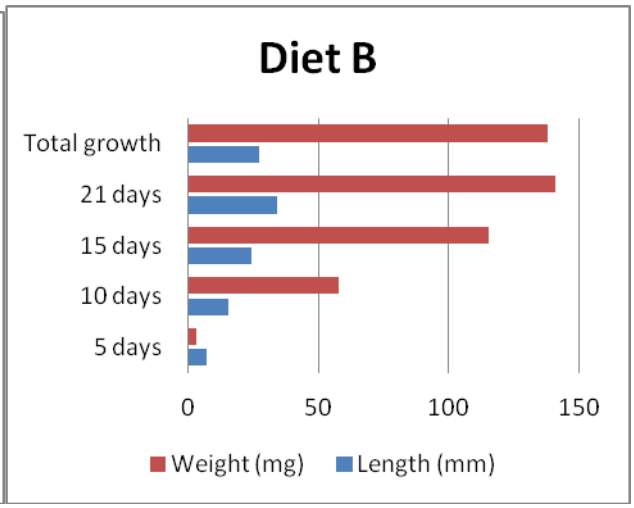

Chart 6

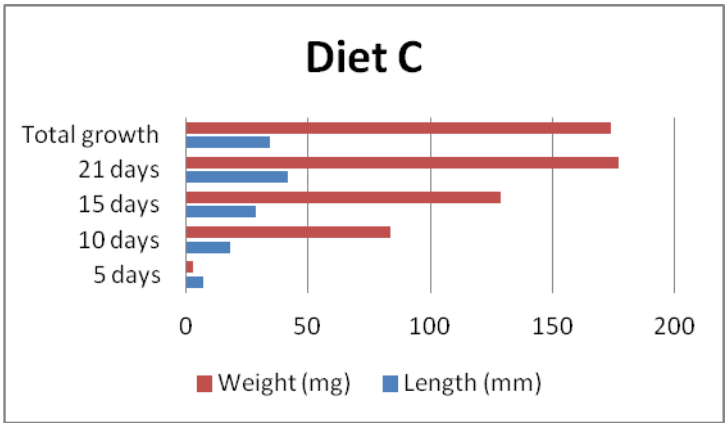

Chart 7

Figure 3. Chart 5, 6 and 7 shows the conclusion of the 21-day study period, numerous growth parameters of *C. batrachus* larvae fed on three different diets were measured.

Discussion:

In the current study, the suitability of artificial feed for C. batrachus larvae rearing was examined. During the 21-day feeding study, three diets were evaluated. The larvae fed on diets C had the best growth rates at the end of the feeding trial. After a 21-day feeding study, the larvae fed diet C had an average weight gain of 43.53 mg. The larvae fed diets A, B and C showed growth rates, but the larvae fed feed with entire eggs had a higher growth rate than the larvae fed diet A and B.

Conclusion:

In the current study, larvae that were fed a diet that contained 31.12 % whole eggs and 34.44 % yeast and fish meal grew better over the course of the 21-day trial period. As a result, feeding *C. batrachus* larvae a diet consisting of 31.12 % entire eggs, 34.44 % yeast, and 34.44 % fish meal could be successful.

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