

The Study Of Whole Wheat Flour As Prebiotic Compound On The Growth Performance Of Catla (*Catla Catla*)

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ABSTRACT

This study aimed to evaluate the efficacy of entire wheat flour supplementation as prebiotic compound in feeds at the increase, survival rate and manufacturing of *C. Catla*. A total of a hundred and forty four fingerlings of mean initial weight of 6.85 ± 0.45 g became stocked at the equal stocking density (12 fingerlings according to aquarium). Four extraordinary treatments. Feeds have been supplied at 5% frame weight two times every day within the morning at 9.00 am and within the afternoon at five.00 pm for the duration of the study. Weekly weights recorded and feed provided turned into used to compute the growth parameters. Final weight (g), weight gain (g), percent weight advantage (%), specific growth rate (%/day) and protein efficiency ratio (PER) varied from 13.49 ± 0.27 to 15.63 ± 0.88 , 6.64 ± 0.27 to 8.70 ± 0.88 , 96.95 ± 3.88 to 128.11 ± 12.79 , 1.08 ± 0.03 to 1.31 ± 0.09 , respectively. The maximum variety of bacterial colony changed into located in treatment 4 and the lowest bacterial colony changed into observed in treatment 1. The increase performance become highest in treatment three followed through treatment 4, remedy 1, remedy 2 and the bottom FCR (2.28 ± 0.25) was revealed in remedy three whereas the very best FCR became found in remedy 2 (2.99 ± 0.14). The survival rate changed into 100% in all treatments. The end result of the study suggest that prebiotic supplementation for catla has effective effects on the increase performance and the nice end result become obtained with a supplementation of 10% complete wheat flour.

Keywords: Efficacy, growth performance, prebiotic, wheat flour, survival.

Introduction

The experimental diets had been fed to fish to apparent satiation thrice an afternoon at 08:00, 12:30 and 17:30h for 12-16 weeks. Thiamin (nutrition B1), the first defined member of vitamin B own family, capabilities in all cells as the coenzyme thiamin pyrophosphate (TPP) essential for numerous metabolic decarboxylation and transketolation reactions. Thiamine participates within the oxidative decarboxylation of pyruvate into Acetyl-CoA. Dietary thiamin requirement of fingerling *C. Catla* became determined by using feeding casein-gelatine based isonitrogenous (350 g/kg crude protein) and isocaloric (16.72 kJ/g GE) dry diets containing six graded

tiers of thiamin (0, zero.2, zero.Four, zero.Eight, 1.6 and three.2 mg/kg dry food regimen) for 12 weeks. Significantly (P

Aquaculture has emerged as one of the most promising industries inside the global and Asia is still the leading contributor for the global fish production. The limitations of capture fisheries has result in the improvement of technologies for inland fish farming and its progress. In India, although fish tradition is an age-antique practice, with the arrival of composite fish tradition era, extensive . Farming of fish is getting replaced via semi-intensive and in depth structures. The minimal envisioned fish protein needs in the usa is to the quantity 13×10^6 metric tonnes by using the year 2000 A.D for the 70% projected population. Hence there's a need to beautify the prevailing overall fish manufacturing of round 3.8×10^6 metric tonnes by way of many folds. The country has greater scope to reinforce up its freshwater fish production from the existing 1.6 million tonnes through adopting medical farming system (Dwivedi and Ninawe, 1991). This can be done through identifying the manufacturing constraints, techniques to conquer them thru adopting biotechnological strategies. Indian main carps viz, catla, rohu and mrigal are the famous species grown in freshwater bodies in the united states of america and are regularly cultured with unusual carps - commonplace carp, grass carp and silver carp. The species mixture and the ratio in farming varies from location to location depending upon the. Availability of fish seed, consumers call for, faster increase of fish, and so on. Generally fry (upto forty mm), fingerlings (40-150 mm) and advanced fingerlings a hundred and fifty mm) form the seed fabric for culture. The seed produced in hatcheries are reared for periods starting from 15 to ninety days before advertising for lifestyle. Among the Indian carps, catla, Catla catla and rohu.Labeo rohita are the predominant species for culture inside the State of Andhra Pradesh which has performed an explosive increase in fish subculture m much less than a decade, earning extra than Rs. One hundred fifty crores/annum (Dwivedi and Ninawe, 1991). Catla is the largest speedy growing Indian important carp, growing to a most weight of upto sixty three kg (Jhingran, 1968). In composite fish farming, catla contribute to extra than 50-60% of the entire production and for this reason is the most desired carp of farming network.

The fish is a zooplanktivorous floor feeder, also show backside surfing and column feeding conduct. The fish has big upturned mouth with out sensory papillae and barbels and is a sight-feeder (Jhingran, 1968). The indices of preponderance of different food items of youngster and person catla recorded became crustaceans (79.Sixty eight and sixty four.20%), algae (nine.68 and 30.06%) and rotifers (5.66 and 1.19%). The different meals gadgets being aquatic insects, protozoans, mollusca, polyzoa, decayed natural count number, sand and dirt. Plants and plant rely (1.03 and a couple of.Forty one%) have been'also observed in the gut contents of teenage and grownup fishes (Jhingran, 1968). Availability of commercial fish feed formulations for supplementary feeding that caters to the nutrient wishes of cultured fishes is one of the proscribing factors for each intensive and semi-intensive fish farming within the united states of america. Feed value being the most highly-priced enter, it'll be the best operational cost of tradition systems (De Silva and Davy, 1990) often account to as excessive as seventy five% (Shang, 1981). This has necessitated for making concerted efforts closer to development of low-cost feeds. Further,the very fulfillment of hatchery rearing of carp seed depends particularly on larval feeds evolved on scientific knowledge. This has therefore grow to be any other lacuna for the

popularisation of fish farming in the USA. The paucity of know-how on primary aspects viz. Nutrient necessities of cultured species of fishes; feeding conduct; nearby availability, value and nutritive price of feed ingredients; potential of fish to utilize nutrients from diverse assets; type of ration preferred for larval, 2 starter, grower, broodstock, and many others., anticipated feed consumption; feed additives and type of feed processing which are identified in general for different fishes (Lall, 1991) also hold appropriate for the Indian carps.

Materials and Methods

The test became completed within the Wet Laboratory of the Department of zoology Osmania University, Hyderabad, telangana kingdom. Among April and June.

Experimental design

The test become carried out the usage of 12 glass aquaria of 0.61 m × 0.31 m × 0.40 m in the Wet Laboratory of the Department of zoology Osmania University, Hyderabad, telangana nation.. Aeration was furnished to the aquariums for the duration of the experimental length using aerators that top off the amount of dissolved oxygen within the water and also to supply some contemporary for the movement of food debris inside the water. Four treatments had been used with three replicates. The fish in every of the aquarium changed into weighed weekly the use of an electronic balance. Fingerlings of *C. Catla* of similar weight variety and preferred length changed into procured from Department of zoology Osmania University, Hyderabad, telangana country. The fingerlings had been transported to the Wet Laboratory through using a plastic bag containing 70% water and 30% oxygen and were straight away placed in a 60 litres aquarium. The fingerlings have been fed a control weight-reduction plan at each nine am and four pm for seven days and were then starved for twenty-four hours previous to the begin of the test earlier than lightly stocked into the 12 aquariums at 12 fingerlings in keeping with aquarium.

Experimental diets

Locally procured feed components were used to formulate the weight loss plan for the fingerlings throughout the test. The feed elements for all 4 diets had a regular inclusion level of: fish meal (FM) 30%, soybean meal (SBM) 20%, mustard oil cake (MOC) 12%, molasses five.5%, vitamin premix 1%, mineral premix 1%, and chromic oxide 0.5%. Four graded stages of whole wheat flour zero%, five%, 10% and 15% had been included inside the basal diet on the cost of rice bran. The components used for preparation of basal experimental diets together with their proximate composition are proven in Table 1.

Table 1: Proximate composition analysis of different feed ingredients (dry basis)

Feed ingredients	Crude protein (%)	Crude Lipid (%)	Moisture (%)	Ash (%)
Fish meal	58.74	10.60	8.51	16.00
Rice bran	13.61	11.40	12.01	13.60
wheat flour	16.13	5.60	13.14	13.40
Soybean meal	32.34	4.60	13.48	8.40

Each ingredient of the feed was ground to dust using a grinding machine. All the various components were mixed in their various ratios in order to produce the various diets needed for the experiment. The feed ingredients (finely ground and sieved) were weighed accordingly, moistened with water to form dough and pelletized using an electric meat mincer. The feeds were stored in airtight polythene bags at room temperature. The experimental diet samples were analyzed for proximate composition at the Fish Nutrition Laboratory of the department of zoology Osmania University, Hyderabad, telangana state. using the Association of Official Analytical Chemists official methods of analysis. Proximate composition of the three formulated feed is shown in Table 2.

Table 2: Proximate composition analysis of formulated feed (dry basis)

Diet	Moisture (%)	Crude Lipid (%)	Crudeprotein (%)	Ash (%)	Crude15fibre (%)	NFE
Control	9.15	8.90	37.39	15.69	4.40	24.47
Diet 2	9.33	8.56	37.93	15.33	4.65	24.20
Diet 3	7.31	7.90	39.35	14.31	4.80	26.33
Diet 4	8.97	8.35	38.26	13.96	5.30	25.16

Fish feeding and aquarium management

The fish were fed at 5% of their body weight in two rations, during the morning at 9 am and the afternoon at 5 pm throughout the experiment. The rations were adjusted every week when new weights of the fish for various experimental aquariums were determined. Left over feed and faeces in each tank were siphoned every morning prior to feeding and replaced with fresh water.

Monitoring of water quality

Physico-chemical parameters such as temperature, dissolved oxygen and pH in the various aquariums were taken once per week during the early morning periods prior to siphoning and feeding throughout the experimental period.

Determination of growth and nutrient utilization

The weekly weights of fish and feed supplied was recorded and used to compute the growth nutrient utilization parameters. Weight of fish was taken weekly using digital balance (AND GULF, Dubai, model: GL-300). The growth and nutrient utilization parameters such as weight gain (g), percentage weight gain (%), specific growth rate (SGR, %/day), protein efficiency ratio (PER), feed conversion ratio (FCR), survival rate (%) were calculated.

Data analysis

The collected data were statistically analyzed by one-way ANOVA with the help of SPSS to see whether the influence of different treatments on these parameters were significant or not. The means of different treatment were compared by DMRT (Duncan, 1955) [3] to test the significance of variation between the treatment means at $p < 0.05$.

Results

Growth performances of *C. catla*

The growth performances of *C. catla* in terms of initial weight (g), final weight (g), weight gain (g), percent weight gain (%) and specific growth rate (%/day) were calculated at the end of the experiment.

Discussion

Growth performance

In the present study the effect of different levels of wheat supplementation on the production of catla fish was studied. At the end of experiment the highest mean final weight (g), weight gain (g) and percent weight gain (%), FCR, specific growth rate and survival rate was observed.

Weight gain

In this experiment the significantly ($P < 0.01$) highest weight gain was observed in treatment 3 which contains 10% whole wheat flour in the diet composition and the significantly highest percent weight gain was also found in treatment 3 which was about 1.31 where the lowest weight gain was observed in treatment 2 which contains 5% whole wheat flour in the diet composition. Salim *et al.* (2009) [13] assessed growth performance and FCR of wheat bran, rice broken and blood meal were evaluated in hybrid fish *C. catla* x *L. rohita*. The fish gained higher body weight (1.60 ± 0.14 g) on wheat bran, followed by rice broken (1.51 ± 0.07 g) and blood meal (1.24 ± 0.09 g). The body weight of fish on wheat bran and rice broken was significantly higher ($p < 0.05$) than those

fed blood meal, while the difference between the former two groups was non-significant. The percent weight gain in the present study was lower due to the quality of the fingerlings.

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