



## DIETARY EFFECT OF VITAMIN D ON GROWTH PERFORMANCE OF JUVENILE FISH LOACH LEPIDOCEPHALUS THERMALS

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### ABSTRACT

Vitamin D is mainly involved in calcium metabolism. In this study, supplementary vitamin D was provided to different group of Fish Loach *Lepidocephalus thermalis* and growth performance was observed. The growth was slowly increased up to 800 IU/Kg Vitamin D treatment,. After that it was slowly decreased..So that, it is concluded that these optimum level is recommended to fish farmers for preparation of farm made fish feed.

**Key words:** *Vitamin D, Loach, Nutrition.*

## INTRODUCTION

Vitamin D stimulates calcium absorption from the intestine and regulates its movements to maintain physiologically normal level in the blood (NRC, 1983). Fish fed with diets lacking supplementary vitamin D had poor growth and low haemoglobin, hepatosomatic index values and plasma alkaline phosphates activity (Sheiu-Shiyen *et al.*, 1993). Vitamin D deficiency in Rainbow trout was characterized by a marked decrease in weight gain and feed efficiency lethargy and anorexia., the clinical manifestations tendency without hypocaliemia an increase in lipid content of carcass dry matter (Burnett *et al.*, 1979). In this study, graded level of vitamin D was provided to loach and at the end of the experiment growth performance was analysed in all the treatment.

## MATERIALS AND METHODS

The feeding experiment was conducted in plastic troughs (15L capacity) filled with well water. Each trough contained 10 fishes and triplicate were maintained for each treatment, The water was changed daily. The fish was collected from river tembiraparani, Tirunelveli, Tamil Nadu, After one week acclimation fish are introduced in experimental setup. For this experiment, test feed with USP-12 mineral and vitamin supplementation-H44 formula was used before introduce the fishes, individual fish weight was recorded. Test fishes were fed once a day (8.00Am) at 5% of their body weight. The unfed were regularly collected. The fish weight was recorded once in 60 days and feeding ratio was adjusted accordingly. In this study graded semi purified diet was prepared (Table1) and graded level of vitamin D was provided to different group of fishes. The duration of the experiment was 240 days.

## RESULTS

Vitamin D induce growth at certain level after that, it suppress growth metabolism of the fish. So first find out the optimum level to enhance maximum growth of the fish. Was observed If use more and more supplementary vitamin D leads to reduced growth and survival and they will develop disease condition.. In the present study, graded level of vitamin D was provided to fish loach and growth performance was observed. The maximum weight, weight gain, average daily growth and Specific growth rate were observed in 800IU/kg vitamin D treatment. After that these parameters were slowly

decreased. It indicates that this treatment is the saturation limit which induce maximum growth rate of fish loach..Based on this study It is concluded that 800IU/kg vitamin D is recommended to fish farmers for preparation of loach feed.

## DISCUSSION

Vitamin D is necessary to maintain normal growth and physiology of cultivable fishes. (Sheiu-Shiyen *et al.*, 1993, Muruganandam, 2004). At the higher supplementary levels if ergocalciferel (vitamin D), the weight gain was significantly less than those obtained from 2000 to 20,000 IU /kg of cholecalciferal. The weight gains were significantly reduced when 50,000 IU/kg of cholecalciferal was fed (Andrew *et al.*, 1980) .Muruganandam *et al.*,(2005) reported that the higher level of supplementary vitamin D contributed negative growth rate in catla fry and also more than optimum level produce negative growth rate in fish. In this study, similar results was observed in loach (*Lepidocephalus thermalis*) The maximum growth was observed in 800IU/kg diet. After that growth was decreased (Table:2). Andrew *et al.*,(1980) also reported that reduced weight gain and feed efficiency were the only signs of vitamin D during hyper and hypovitaminosis. Based in this trial it is concluded that 800IU/kg vitamin D in diet was recommended to small scale farmers who prepare their own farm made fish feed.

**Table 1: Basal Fish Feed composition**

S.No	Ingredients	Weight (gm)
1.	Fish meal	55 gm
2	Ground nut oil Cake	22gm
3	.Rice bran	10gm
4	Topiaco flour	10gm
5	Cod liver oil	1 ml
6	Vitamin mix	1 gm
7	Mineral mix	1 gm
Proximate composition		
8	Protein	45%
9	Lipid	7.3%
10	Carbohydrate	9.6%
11	Grass energy (kcal)	2.98

**Vitamin mix (H440)**

Thiamine Hcl -5 Riboflavin 20,Pyridoxine Hcl Choine chloride 500,Nicotinic acid 75, calcium pantothenate 50, Inositol 200, Biotin 0.5, Folic acid 1.5, L-ascarbys-2-monophosphate 100, Vitamin B12 0.01, menodione 4,  $\alpha$  tocopheral 40, Retinal 400, calcalciferol-3

**Mineral mix (USP-12)**

Nacl4.33,mg So<sub>4</sub>7H<sub>2</sub>O 13.63, NaH<sub>2</sub>po<sub>4</sub> 8.67 KH<sub>2</sub>Po<sub>4</sub> 23.86, Ca(H<sub>2</sub>po<sub>3</sub>)<sub>2</sub> H<sub>2</sub>O 13.51 Fe-citrate 2.95, Ca-Lactate32.52, Al Cl 30.015,LI0.015,Cucl0.010,Mnso<sub>4</sub> 0.080 Cal. Cl<sub>2</sub> 0.100, Znso<sub>4</sub> 0.300.

**Table 2: Weight, Weight gain, SGR, FCR and ADG of *L.thermalis* fed diets with different levels of Vitamin D.**

Diet No	Supplementary Vitamin D (IU/Kg)	Initial Wight (mg)	Final Weight (mg)	Weight Gain (mg)	SGR (%)	FCR (%)	ADG (mg/day)
I	0	102	802	700	0.88	2.96	2.92
II	400	102	841	739	0.88	2.39	3.08
III	800	102	1040	938	0.96	3.93	3.91
IV	1200	102	1009	907	0.95	3.57	3.78
V	1600	102	994	892	0.95	3.58	3.78
VI	2000	102	936	786	0.95	3.77	3.48

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