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Effect of Flax Seed Meal on Hematological Profile of Labeo Rohita

KEYWORDS: Cyprinidae, Flax seed, Hematological Profile

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ABSTRACT *Rohu (Labeo rohita) is a fish of the carp family cyprinidae, found commonly in rivers & freshwater lakes. It is a bottom feeder & prefers to feed on plant matter written Flax seeds which belong to family linaceae, is popular for its protein, fibers quality, as well as its lipid contents. Present study is an attempt to evaluate the effect of fresh seed meal on Hematological profile of Labeo rohita. As hematological profile indicates the physiological condition of an individual. Hemoglobin content, PCV (Packed Cell volume), MCHC (Mean corpuscular hemoglobin conc.) and WBC were investigated in this study.*

Introduction –:
Indian fisheries and aquaculture is important sector of food production, providing nutritional security, contributing to the agricultural exports and engaging about fourteen million people in different activities. Constituting about 4.4% of the global fish production, the sector contributes to 1.1% of the GDP and 4.7 of the agricultural GDP. The total fish production of 6.57 million metric tones presently has nearly 55% contribution for the inland sector and nearly the same form culture fisheries (WHO, 2003).One of the major problems faced by rapidly growing aquaculture is the availability of fish feed, since feed cost is the largest operating (>50%) cost of semi-intensive fish farming (Sehagal and Toor, 1991; De Silva, 1992).

Among cypirnidis labeo rohita (Rohu) is the most popular species cultivated in Indian sub continent. Rohu is highly delicious carp among other Indian carps (FAO 2000).

Flax seeds are rich in lipid and dietary fibers and contain 20% proteins (Flax council of Canada).

Present study is proposed to evaluate the effect of flaxseed meal on hematological changes in Labeo rohita.

Materials and Method:
1 Experimental organism
Fingerlings of Indian Major Carp, Labeo rohita were procured from Fish Seed Production Centre, Sundrel, Madhya Pradesh

2 Experimental Units
Uniform sized rectangular aquarium tank 150L capacity were used as experimental units throughout the experiment for all the trials. The tanks were covered with perforated cover. The tanks were initially washed and filled with potassium permanganate solution (4 mg l^{-1}) that were left overnight Fifteen fishes of uniform size were kept in each tank. Fifteen fishes of uniform size were kept in each tank. The experimental conditions were kept same throughout the study. Blood collected by puncturing the heart of fish on 10^{th} day and 30^{th} The fishes were t overnight before taking the bodyweight.

3 Formulation and Preparation of Experimental Diets
Ingredients of interest such as flaxseed, wheat bran, rice bran, corn flour, oil mix (sunflower oil + cod liver oil), vitamin and mineral mixture (premix plus), BHT (Butylated hydroxyl toluene) and vitamin C were taken for feed formulation (Table1). Four diets, one control diet and other Diet A (10% flax seed), Diet B (30% flax seed), Diet C (50% flax seed) were prepared respectively.

Table 1:Composition of the experimental diets (% Dry matter basis)

Ingredients	Control Diet	Diet - A T1	Diet - B T2	Diet -C T3
Company feed	30	-	-	-
Flaxseed	-	10	30	50
Wheat bran	30	30	25	18
Corn flour	15	24	15	12
Rice Bran	30	30	25	16
Oil mix	4	4	4	4
premix	2	2	2	2
Vit C	0.2	0.2	0.2	0.2
BHT	0.2	0.2	0.2	0.2

4 Collection of Blood:
Each fish was anesthetized with clove oil at 50µl of clove oil per litre of water before taking blood. Blood was withdrawn from caudal vein (Vena caudalis) using a medical syringe (23G), which was previously rinsed with 2.7% EDTA solution. Blood collected was then transferred immediately to test tube vontaining thin layer of EDTA powder (as anticoagulant) and shake well in order to prevent haemolysis of blood.

RBC, WBC Hb, PLT, MCV, MCH, and MCHC were measured by using Colter Counter, Hematological 5 part auto analyzer machine.

Hb - Haemoglobin
MCH - Mean corpuscular haemoglobin
MCHC - Mean corpuscular haemoglobin concentration
MCV - Mean corpuscular volume
PLT - Platelets
RBC - Red Blood Cell

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WBC - White blood corpuscle

Result and Discussions:

After all experiments it was observed that the RBC, Haemoglobin content, PLT, MCV, MCH, MCHC values were more with T2 diet (30% flax seed) while RBC, WBC count and Haemoglobin content values were less with T1 (10% flax seed) and T3 (50% flax seed) diet.

In the present study the fingerlings of the Labeo rohita were fed with 10%, 30% and 50% flax seed meal out of which 30% flax seed meal showed the best performance. To get an insight into nature of changes that are taking place in the blood parameters in an organism as a result of high-low protein diets(main inclusion flax seeds), encounter, haematological studies were carried out in the fish Labeo rohita. The amount of RBC, WBC, Haemoglobin, PLT, MCV, MCH and MCHC were found to be increased from the control. The values were more significant with 30% (T2) flax seed diet diet in comparison to control and (T1, T3), 10% and 50% respectively.

Hence it was found that the low cost feed ingredients showed encouraging result.

Similar findings for Labeo rohita Were also reported by(Abid and Ahmad 2009, and Hussain et al., 2011), as they concluded that alternative cheaper protein sources can be efficiently used in making cost effective aqua feeds.

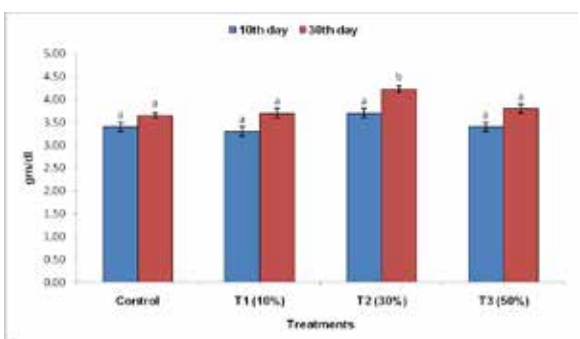

Fig. 1: Total Haemoglobin content in the different experimental groups at 10th days and 30th days interval period.

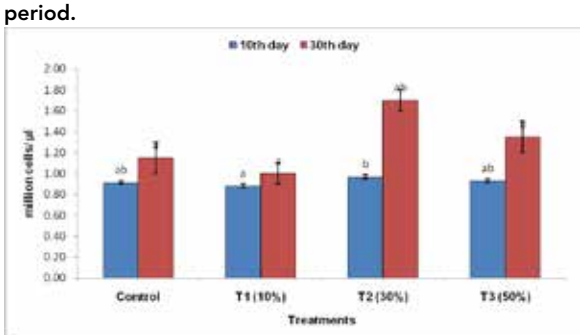

Fig. 2: Total RBC in the different experimental groups at 10th days and 30th days interval period.

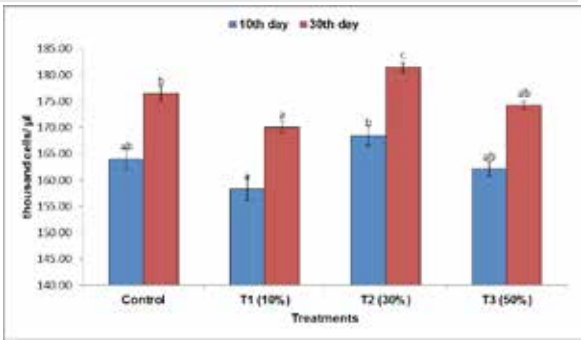

Fig. 3: Total WBC in the different experimental groups at 10th days and 30th days interval period.

The feeding concept thus presents new options for famers in particular for the culture the more expensive carnivorous fish which tend to require a higher protein input. Such a feeding schedule will significantly reduce the total feed costs (Kumar et al., 2013)

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