

Impact of *Ocimum tenuiflorum* extract supplemented diet on RBCs and WBCs of *Cyprinus carpio*

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Abstract:

Addition of Herbal extract and herbs added to the feed supplement provide more resistant and healthy fish to the aquaculture. The herbal additives are cheaper, easily available and eco friendly with minimum or no side effect to fish and consumer. In this study *Ocimum tenuiflorum* was added as additive in the food supplement in different concentration feed to fishes twice a day, after 15 days the hematological parameters such as red blood corpuscles (R.B.Cs.) and white blood cells (W.B.Cs) were estimated. The result shows the progressive increase in the hematological parameters of *Cyprinus carpio*.

Key words:

Cyprinus carpio, Red blood cells (R.B.Cs.), White blood cells (W.B.Cs.), *Ocimum tenuiflorum*, food supplement.

Introduction:

Now a day's herbal medicines are one of the promising sources of medicines and drugs. Medicinal plants are economically less expensive, effective, easily available and safe to use. Plants are used as medicine in different countries, these are act as potent and powerful drugs (Shrivastava et al.,1996). Plant produces different bioactive molecules (Nair et. al., 2005) these compounds are alkaloids, flavonoids, steroids, resins, tannins and phenolic compounds etc. These compounds are extracted from different parts of the plant to treat various diseases of human beings all over the worlds from ancient time. Various researches in aquaculture reveled that use of herbal medicine is effective on growth parameters in fishes (Rao et al.,2006, Palacios et al., 2006)

A large number of medicinal plants have been used for different treatment and growth promotion purpose in aquaculture (Direkbusarakom and Aekpanithanpong 1992, Rao et. al., 2006, Sharma et.al., 2010, Harikrishnan 2010, 2011 and Kolkovski & Kolkovski 2011). The oral administration of natural plants products promote various activities like growth promotion, stimulations, antimicrobial properties and stress reducer etc.

Ocimum tenuiflorum which belongs to the family Lamiaceae, commonly known as Tulsi, 'Holy Basil' and Mother Medicine of nature. The name given to the Tulsi is due to number of reasons, it have various medicinal properties like- antibacterial (Phadke and Kulkarni 1989), antipyretic and anti inflammantory (Singh and Majumdar 1995), antiasthmatic effect (Sharma 1983). Tulsi can be used for curing and preventing diseases like- cough and cold, fever and pain. The present study aims to investigate the efficiency of Tulsi suppimentated fish food diet on hemoglobin content changes in *Cyprinus carpio*.



Figure 1: *Ocimum tenuiflorum* (TULSI)

Material and method:

Collection of fish:

The common carp (*Cyprinus carpio*) weighing about 100- 150 gm were obtained from the local fish farm. Randomly 20 fishes are divided into four different sets. Each aquarium contains 5 fishes with well sufficient aeration, one aquarium was kept for control group (T₀) and remaining three sets were for (T₁, T₂ and T₃) show the different concentration of *Ocimum tenuiflorum*. The control group (T₀) feed with normal supplemented diet and another three group (T₁, T₂ and T₃) were feed with 1%, 2% and 3% tulsi supplemented diet.

Preparation of *Ocimum tenuiflorum* (Tulsi) extract:

The tulsi leaves were collected locally washed in clean water and powered by grinder and sieved. The paste was then incorporated into fish feed at 5Kg/Kg of feed to prepare experimental fish feed diet and tulsi free fish food was used as a control diet.

Preparation of fish food:

Soyabean meal was taken 80 gm in powder form (soya cake) as main component add other ingredients like milk powder 60 gm, corn flour 20gm and egg 70 gm(only egg albumin), agar powder 4 gm as binding agent and add the paste of tulsi of different concentration 5gm, 10 gm, 15 gm for three types of experimental fish food. All the ingredients mix well and boiled cooled at room temperature after cooling add cod liver oil 3.5ml, vitamin mixture of B complex and vitamin E (in capsule). It was kept in refrigerator for 12 hrs, then

after 12 hrs squeezed over polythene sheet and dried at room temperature. The dried nodules were crushed into small pellets and sun dried to avoid fungal growth (S. V. Bhosale et. al., 2010).

Experimental design:

Take 20 fishes of about same size and approximate weight randomly divided into 4 groups T₀ (control), T₁, T₂, T₃ (experimental group). The control group fishes feed with the plain fish food, and the experimental groups fishes feed with the tulsi supplemented fish food twice a day according to their weight.

Collection of blood:

Each fish was anesthetized with clove oil (Merck Germany) at the rate of 50ml of clove oil per liter of water before collecting blood samples from fish. Blood was drawn out by using 10 ml hypodermal syringe and 24 guage needle. The collected blood was immediately transferred to vial containing thin layer of EDTA to prevent hemolysis and clotting of blood. The RBCs and WBCs counting was performed with the help of Neubauer chamber, under 40X and 10X power of microscope respectively.

Result and discussion:

Table 1: Impact of *Ocimum tenuiflorum* supplemented fish food diet of different concentration on RBCs and WBCs of *Cyprinus carpio*.

Sr. no.	Groups	R.B.Cs. (million/cumm)	W.B.Cs. (cumm)
1	T ₀	1.66	64,200
2	T ₁	1.70	64,350
3	T ₂	1.73	64,550
4	T ₃	1.77	64,870

Hematological parameters are used as an indicator of fish health status, in various fish species to detect physiological changes followed by different stress conditions (Agrawal and Mahajan 1980). There are many herbal medicines in the world but *Ocimum tenuiflorum* is considered as a queen of herbs. It is well documented in the Ayurveda for its great medicinal value. The present study revealed that there is significant increase in the content of RBCs and WBCs. As the concentration of herbal constituent in the diet increases the RBCs and WBCs also increases. The same results are correlated with the findings in gold fish by Harikrishnan et al., 2003, 2010. In common carp Guojun et al., 2009.

The outcome of this study shows the use of *Ocimum tenuiflorum* seems to have potential as an additive to fish food, which promote growth and minimizes infections in fishes. That will help to produce healthy fishes for consumption.

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