

Influence of Mint extract supplemented diet on Protein content of *Cyprinus carpio*

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Abstract: Addition of herbal extract to the feed supplement provides more resistant and healthy fish to the aquaculture. Herbal additives are cheaper, easily available and ecofriendly with no side effects to fish and consumer. In this experiment the *Mentha spicata* was added as additive in the food supplement in different concentration feed to the experimental fish *Cyprinus carpio* twice a day, after 15 days the protein in liver and muscles were evaluated by standard method. The result shows the progressive increase in the protein content of *Cyprinus carpio*.

Key words: *Cyprinus carpio*, Protein, *Mentha spicata*, food supplement.

INTRODUCTION:

The use of herbal dietary supplement as a medicine is very helpful to promote health in aquaculture (Dubic M.A. 1986). Use of natural feed additives is becoming more important for fish feeding rather than chemical feed additives due to the cumulative effect of synthetic components on animal and human health. Hence use of herbal medicine seems to be best alternative to control fish diseases and enhance the growth (Keifer *et.al.*, 2007; Tyler *et.al.*, 2007). Traditional medicines are often used in aqueous solution because of their wide therapeutic values (Zhang S.T. 2002). Herbs are used as source of medicine, flavoring agent, dyeing and beverages in the field of biotechnology, pharmaceuticals, cosmetics and food industries.

'*Mentha spicata*' is the perennial herb belonging to the 'Lamiaceae' family and it is one of the oldest medicinal herbs. It is an important herb used as fresh and dried for folk medicine such as stimulant and carminative. Essential oil is extracted from freshly harvested mint leaves by Soxhlet and in dried leaves via the distillation process. Essential oils obtained possess antibacterial, antifungal, antiviral and antioxidant properties (Singh and Agrwal, 2013). The aim of this study to investigate the efficiency of *Mentha spicata* leaves extract supplemented food diet on protein content in *Cyprinus carpio*.



Fig. 1 *Mentha spicata* (Mint)

MATERIAL AND METHODS:

Collection of fish and management:

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 *Mentha spicata*. The control group (T₀) feed with normal supplemented diet and another three group (T₁, T₂ and T₃) were feed with 1%, 2% and 3% Mint supplemented diet.

Preparation of Mint (*Mentha spicata*) extract:

The Mint 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 Mint 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 capsules). 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 (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 and T₃ (experimental group). The control group fishes feed with the plain fish food, and the experimental group fishes feed with the Mint supplemented fish food twice a day according to their weight.

Estimation of protein content in liver and Muscles:

Estimation of liver and muscles protein was done according to Lowry's method (Lowry *et.al.*, 1951)

Statistical analysis:

The data were analyzed statistically at $P < 0.05$ to test their significance the t- values were calculated by Student's t-test.

RESULT AND DISCUSSION:

Table 1: Effect of supplemented fish food diet of different concentrations on protein content of *Cyprinus carpio*.

Serial no.	Groups	Protein content (mg/gm wt of tissue)	
		Liver	Muscles
1	T ₀	132±2.10*	95±1.7*
2	T ₁	134±2.0*	98±1.8*
3	T ₂	137±1.47*	102±2.0*
4	T ₃	140±1.40*	104±1.5*

Values are ± SD (p<0.05)

RESULT AND DISCUSSION:

The total protein content in *Cyprinus carpio* in liver and muscles increased in dose dependent manner (Table 1). Those group of fish fed 3% Mint supplemented diet showed highest protein concentration in liver and muscles as compared to the control group. Similar findings were found by (Milad Adel, 2015) when Fry Caspian White fish (*Rutilus frisii kutum*) when fed with dietary Peppermint (*Mentha piperita*). Increased concentration of protein content were also found in Broiler chickens when fed with Mentha extract (Fallah & *et.al.*, 2013). While broiler chickens fed with two herbal medicines of Thyme and Cinnamon also showed significant increased in protein content (Al-Kassie, 2009).

Our result demonstrated the positive effect of *Mentha spicata* leaves extract when administrated on diet to *Cyprinus carpio*. Outcome of the study shows that the use of *Mentha spicata* in fish feed seems to have potential as an additive to fish food, which promotes growth and minimizes infection in fishes which will help to produce healthy fishes for consumption.

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