

Impact of crude extract of herb & shrub antioxidants (Curcuma, Mentha & Cocoa) on blood parameters & health Of *Clarias batrachus*

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Abstract :-

Fish *Clarias batrachus* commonly known as Asian walking cat fish and known as Mangur in India. Mangur is the cheapest fish in India and they are used for eating by a large population. Cat fish is also an air breather fish which keeps alive out of water for a pretty long time. Artificial antioxidants are fed to fishes to improve the oil quality and immune defense and to make them live for a long period. This work is done to find out how natural herb antioxidants help to improve the oil quality and immune defense of cat fish. As cat fish oil is very rich in Omega -3- PUFA among all the fresh water fishes. The natural antioxidants used in this are Turmeric (*Curcuma longa*), Mint (*Mentha*) and Coffee (*Cocoa*). All these natural antioxidants are very easily available at home and they are very economic. By this work tried to find out the biochemical impact of these antioxidants on cat fish. Aim of study, is to improve the quality of fish oil of, economic fish using economic antioxidants to improve the oil quality; at such level that it available in market at a cheaper price so, everyone can afford it.

Keywords: *Clarias batrachus*, Omega -3-PUFA, *Curcuma longa*, *Mentha* and *Cocoa*

Introduction :-

As we know that *Clarias batrachus* is a common fresh water fish comes under the family *Actinopterygii* and they are commonly known as walking cat fish [*Mangur*] in India. An antioxidant is a molecule that inhibits the oxidation of other molecules. Oxidation is a chemical reaction that can produce free radicals, leading to chain reaction that may damage cells. *Curcuma longa*: commonly known as Turmeric its yellow in colour & normally used in cooking and cosmetic. In old days these are used for clotting of blood and on unhealed wounds. Mint is also a commonly used spice in kitchen. And it is also an antioxidant herb and also used as a medicine in case of indigestion and throat irritation. Cocoa powder is derived from bean that contain hefty quantities of natural antioxidants called flavonoids.

Material & Methods

Material: *Clarias batrachus* 4 adults, 2 aquariums, 2 water pumps, fish feed, meat, gloves, antibiotic tablets, fresh turmeric juice, fresh mint juice and powder cocoa, 30 lt of water, syringes, test tubes, measuring cylinder, hand net, clove leave oil, tray,

METHOD: As there is no particular data regarding the method of treating the *Clarias* fish with antioxidant. So I took the idea from some other related work by other scholar. Generally the Asian cat fish is not seen reared in aquarium normally there is another species of cat fish which is white and have black spot on its body is seen to be reared in aquarium. They have more resistant power and they have blood of a good quality, they can survive for few minutes without oxygen and they are omnivorous in feeding behavior. They eat whatever we serve them, they are very active in nature.

1:- First we need to rear the fishes and acclimatize for some days normally for one week. To make comfortable in its changed environment, it being very hard to get them in aquarium rear them and feed them. Because they live in muddy and fresh water and live free as they are very active in behavior. They normally need a shady and darker place. So to make them comfortable/habitat formation a pipe is placed inside the aquarium so they can go inside, during the day when they need darkness.

2:- After one week work starts, tanks were filled with 30ltr of water each then I put the 2 large fish in controlled and remaining 2 in another aquarium where dose is given.

3:- Making the dose of antioxidant herbs as 10ml concentrated and then add the dose into the tank which is containing 30ltr of water for each herb the concentration will be taken the same.

Dilution factor of aquarium= 10/30,000 ml/per week

= 0.0003 ml/per week

4:-Give the dose on each week by washing the tank and filling it with water . Add antibiotic in the tank to protect the fishes from any bacteria and fungus attack.

5:-Feed them with liver of chicken which is soft and easy them to eat and feed them also with artificial fish feed 2 time in a day. Donot feed the fries much because over eating may cause problem for them and they don't know when to stop eating.

6:-For giving dose I used the method of dissolving the extract directly in water. We can also use the injecting method (intra muscular) injection directly filling the dose into the syringe and injecting that just behind the head of the fish in intramuscular.

7:-Before injection the fish with dose we need to make the fish unconscious by mixing 4 drops of clove oil in 2ltr of water and mixed and shake it well.

8:-Than put the fish into the container in which we put the clove oil in 2ltr of water for 2 minute and after that take the fish out on a tray and slowly massage the portion of injecting after and before the dose for some seconds and leave the fish in the fresh water tank immediately this procedure is used in case of adult fishes.

9:-This process repeated about 2 months,then fish blood were collected & send to the pathology lab for further tests

Blood Collection method from fish:-Blood is collected from experimental animal for a wide range of scientific purposes including; Hematology, clinical biochemistry parameters, immunology, studies in bacteriology, parasitology and investigations in reproductive performance and health. The number of methods employed to collect blood from fish including ; the puncture of caudal vein, dorsal aorta or cardiac vessels and the severance of the caudal vein. Unfortunately, all these procedure are practically found to be slow and stressful to *Clarias batrachus*, including the popular caudal vein approaches, likely due to small size of caudal veins relative to the size of the species. In the line with the universal ethical recommendations for taking blood from small research animals, there is another simple method for *Clarias batrachus* which is rapid and without the need of sacrifice the fish as with other methods. This procedure targets the dorsal aorta(a relatively large blood vessel) in a sedated fish, puncture by inserting a needle directly from the anterior part of the anal fin about 2-5mm behind the genital papilla, to draw desired amount of blood. Operation is unique since it permits the continuous collection of blood from the same experimental fish over a varied time course and reducethe need for a large number of replicate animals.

Results & Discussion :-

Table 1 :The Following results were found in lipid profile of Dose & Control fish

LIPID PROFILE	CONTROL	DOSE
TOTAL CHOLESTROL	324.5mg/dl	529.5mg/dl
TRIGYCERIDES	103.1mg/dl	283.3mg/dl
H D L CHOLESTROL DIRECT	56.8mg/dl	76.9mg/dl
V L D L	20.6 mg%	56.7mg %
L D L CHOLESTROL DIRECT	247.1 mg%	396.1 mg%
TOTAL CHOLESTROL/HDL RATIO	5.7	6.9
LDL/ HDL CHOLESTROL RATIO	4.4	5.2

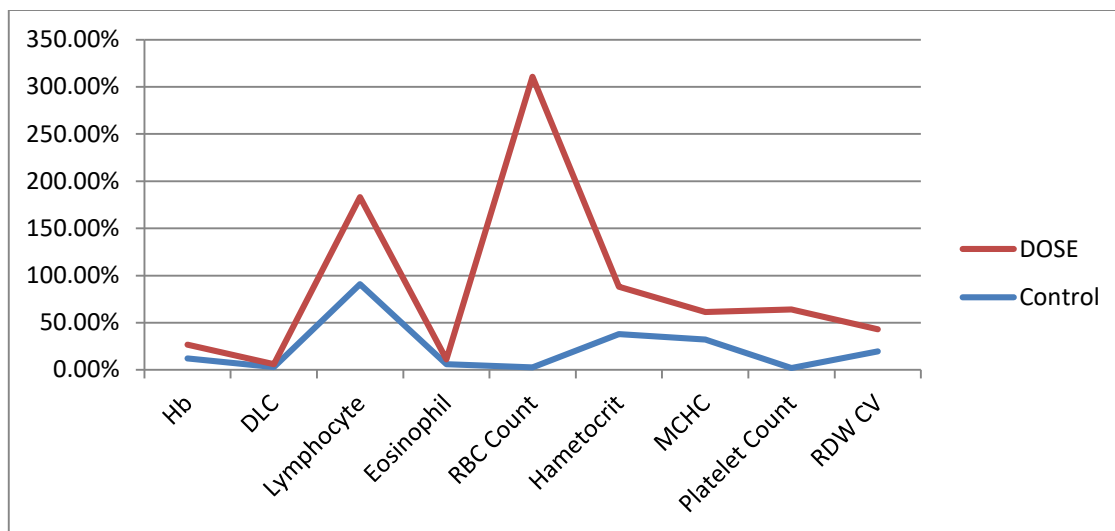


Fig 1. Line graph showing the relationship between Control & Dose fish Blood Parameters(Table 2)

Table 2 :-The Following results were found in CBC (complete blood count) profile of Dose & control fish :

HAEMATOLOGY COMPLETE HAEMOGRAM	CONTROL	DOSE
HEAMOGLOBIN (hb)	12.3gm%	14.5 gm%
TOTAL LEUCOCYTE COUNT (TLC)	57,800/cumm	60,600/cumm
DIFFERENT LEUCOCYTE COUNT (DLC)		
NUTROPHIL	03%	03%
LYMPHOCYTE	91%	92%
EOSINOPHIL	06%	05%
RBC COUNT	2.63 Million/ul	3.08 Millions/ul
HEAMAROCRIT	38.0%	50.0%
M C V	144.8fl	162.3fl
M C H	46.7Picogram	47.0Picogram
M C H C	32.3%	29.0%
PLATELET COUNT	1.88Lacs/ul	0.62 Lacs/ul
RDW-CV	19.6%	23.3%

Discussion :-As the result shows that there are lots of differences regarding the blood parameters of control and the dose fish. It shows that the value of the RBC count of the dose fish is increase as compare to the controlled one. And it is also showing that the hemoglobin level is also increased of the dose than the controlled one. This mean the red blood cells are effected and they are dividing and as we know if the RBC cells increase the hemoglobin also increase which effect the oxygen carrying capacity of the fish and this can make the fish alive with out water for a long time. Total Leucocyte Count (TLC) shows also differences in between the dose and control fish and Lymphocyte also increased in case of control this means that the fish is getting better in there immune system because we know that the Leucocyte play a great role in defense mechanism of the whole

body. So here the herb antioxidants also become beneficial for the fish. There are also some other blood parameters are found increased in the control fish like the (MCV), (MCH) and (RDW-CV).

Now coming on the Lipid Profile in this case the dose is dominating the controlled one as the Total cholesterol is increased in the case of dose fish and the triglycerides are also increased in dose as compare to the controlled one. As it was earlier discussed in the historical review that high cholesterol fishes are also safe to consume they also contain the important fatty acid like ω -3. HDL cholesterol is also high in dose as compare to the control the high density lipoprotein cholesterol is often referred to as the good cholesterol because it helps remove other, more harmful forms of cholesterol from the body. It usually thought that the higher HDL level are, the better. In most people, this is true. But some research shows that high HDL can actually be harmful in certain people (Medically reviewed by Graham Rogers, MD on March 27, 2017- written by Kristeencherney)

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