



## International Journal of Current Research and Academic Review

ISSN: 2347-3215 Volume 2 Number 12 (December-2014) pp. 201-208

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### Profile albumin fish cork (*Ophicephalus striatus*) of different ecosystems

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#### KEYWORDS

Albumin,  
Ecosystems,  
temperature,  
pH

#### A B S T R A C T

Albumin has a function, namely function first set osmotic pressure in the blood. Albumin care of the water in the blood plasma so that it can maintain the volume of the blood. The aim of this research is to find out the influence of an ecosystem different against the level of albumin fish cork, the temperature and pH waters. An early stage that is performed in this research is to do preparasi raw material. Raw materials is fish cork is still fresh and live obtained from various ecosystem Druju Gondanglegi, such as a river Bendungan sengguruh Kepanjen, Gladak gumukmas Jember, red river the river Bengawan Solo Bojonegoro, fish-ponds cabean a temple Sidoarjo, ponds cultivation Tulungagung, the upstream Brantas Sengkaling Malnag. Fish, then turned off by means of struck his head and performed a weeding. Before in a fillet of fish are weighed beforehand a total 300g. Meat obtained next small cut ( $\pm 5$ mm). The tested levels of albumin use the spectrophotometer, after the level of albumin test continued by test the temperature and pH in the ecosystem. Waters in the river ecosystem Druju Gondanglegi the reached the level of albumin by 3,56% with the temperature waters 26-27°C and pH value of 7, while on the river ecosystem Gladak red gumukmas Jember they reached the level of albumin by 6,05% with the temperature waters 24°C and pH value of 7. To the ecosystem at Tambak Cabean temple Sidoarjo they reached the level of albumin 5,81% with the temperature waters 25°C and pH value of 7, on Sengguruh reservoir Kepanjen reached the level of albumin 5,97% with the temperature waters 24-26°C and pH value of 7-8, cultivation of fish ponds cork Tulungagung they reached the level of albumin 6,24% with the temperature waters 27-34°C and pH value 7-8, the level of albumin in fish obtained a cork on the Sidoarjo Kalanganyar Sedati 4,37% with the temperature waters 22°C and pH value 7.

#### Introduction

Fish cork is the type of freshwater fishes inhabiting the river most and is one type of fish that have the womb albumin is quite

high, the level of albumin in the fish cork as much 61%. Albumin is really needed the human body every day, especially in the

process of healing of wounds. According to Ulandari *et al.*, (2011), fish cork having the benefits of among others increase the level of albumin and endurance, postoperative speed up the process of healing.

Fish cork is fish army, which is quite big can grow up to long 1m, large headed somewhat flattened resemble the heads of a serpent with scales large on his head. Elongated rounded body, like a bullet control. A long dorsal fin and caudal fin globase at the tip. The upper side of the body from head to the tail of dark colored, brownish black or greenish. The under side of the body white, from the chin to the back. Side by side colored thick the slightly obscure. This color often similar the surrounding environment. Big mouth with big teeth and sharpness (Syariffauzi, 2008).

According to Trully (2004), rich in proteins fish cork even the content of protein fish cork higher than several kinds of fish other. Protein cork fresh fish can reach 25,2% albumin fish cork reach 6,224g/100g flesh of a fish cork.

Albumin having a number of functions. The function of the first is set in osmotic pressure in the blood. Albumin care of the water in the blood plasma so that it can maintain the volume of blood, if the amount of albumin down the accumulation of fluid in the network will happen. According to Suprayitno (2008), albumin fish a cork containing 6,2% albumin and 0,001741% zn with the arrangement of essential amino acid treonin namely, valin, metionin, isoleusin, leucin, of phenylalanine, lysine, histidine and arginine, as well as an amino acid non essential aspartic acid, serin, glutamic acid, glisin, alanine, of cyteine, tyrosine, hidroksilisin, ammonia, hidroksiprolin and prolin.

The albumin from cork fish can speed healing of injured patients the operation so that advisable to be consumed, after delivery. This is because of a cork containing fish (albumin) high protein, so that can speed healing of wounds (Santoso, 2009). In the flesh of fish cork contained a mineral closely related to the process of healing wounds, namely Zn of 1,7412mg/100g flesh of a fish (Carvalho, 1998).

To get the albumin from the cork done with extraction. According to Ciptarinin and Nina (2006) , cork extract fish can be defined as a substance (of liquids) cork out of a network of fish for processing and has been through this filtering. Extract cork and colored fishes yellowish white roily, resulting from cork stew meat fresh fish. At the end of the process of extracting will produce filtrat and residue of fish the cork.

Land and water are the two important components on the Earth, and the waters is the largest component of this earth, which is nearly 70% magnitude. The water it self is composed of two types of ground waters and the waters of the sea. Ground waters include rivers, lakes, reservoirs and wetlands, while the sea waters cover the seas off. Phytoplankton has an important function as a primary manufacture that can change in organic materials be organic through the process of photosynthesis.

Phytoplankton is the biological parameters of indicators to evaluate the quality and the level of fertility is an aquatic. One of the factors that influence the presence of phytoplankton is the availability of nutrients in the water. The availability of excess nutrients can cause the explosion of the population so as to lower the quality of the water.

Plankton are organisms that have an important role in a natural food that is as the waters of the larvae of aquatic organism. Major manufacturers in the water sare phytoplankton, where as consumer organism is zooplankton, larvae of fish, shrimp, crabs and so forth (Herawati and Kusriani, 2005).

The temperature of the water will affect the solubility of dissolved oxygen in the water, the higher the temperature of the waters then O<sub>2</sub> is getting down. Suharijanti (1990), the temperature of the waters has an important role in the ecosystem of the waters.

### **Methodology**

Research methods used in this research is descriptive method. The descriptive method is a method in the study of human groups, the status of an object, a condition, a system of thought, nor a current events class. This method also investigated the status (status) of a phenomenon or factors and choose the relationship between a factor with other factors (Ginitasasi, 2011).

The purpose of this descriptive study was to make the decryption, the picture or painting in a systematic, factual and accurate regarding the facts, properties and relationships between phenomena investigated (Hidayat, 2007).

This research includes the preparation of raw material, raw material used is the fish fresh Cork is obtained from a variety of ecosystems such as River Druju Gondang legi, Dam Sengguruh Kepanjen gladak Red River gumukmas, Jember, Solo River Bojonegoro, Embankment Pendowoharjo village temple Sidoarjo, outdoor cultivation of

Tulungagung, Malang Sengkaling Brantas River, Embankment (brackishwater) Kalanganyar Sedati Sidoarjo and Karangates Reservoirs. Then the fish are turned off by hitting the head and do weeding. Before the fish fillets weighed in advance as much as 100 g. The meat obtained next cut small ( $\pm 5$  mm) and tested the levels of albumin.

### **The level of albumin**

The level of albumin determined by using a method of the spectrophotometer. A the spectrophotometer is an instrument for measuring transmittance or absorbance a cross section as a function of the wavelength of, the measurement of against an array of samples to the wavelength of a single. To the method spectrofotometri, sample absorbs radiation (transmitter) electromagnetic who at wavelengths 550nm can look. The determination of the level of albumin can be done by using the method spektrofotometri, namely : example 2 cc or by samples with a reagent added biuret and heated at a temperature 37°C for 10 minutes. Chill then measured by spektronik 20 and note absorbantion. The formula could use the level of albumin:

$$(\%) \text{ Kadar Albumin} = \frac{\text{ppm} \times 25}{\text{berat sampel} \times 10^6} \times 100\%$$

### **pH test on the ecosystem (water) fish cork**

Waters is the size of the pH of a concentration of hydrogen ions is in these waters. In other words pH value of a waters will show whet her water reacts acid or bases.

Naturally pH waters influenced by the concentration of CO<sub>2</sub> and compounds that are acidic. As the reaction pH value of waters will turn out to be lower in the

morning, rising during the day and reached a maximum in the early afternoon and will decrease go back at night. Therefore the measurement of pH waters performed on morning and evening, because at the moment the pH of the water reached the top of the highest and lowest.

In order to support fish life culture and natural fodder (phytoplankton) pH value of water ranging between 6,5 - 8,5. Namely the pH meter tool used, pH meters is making use of dipped in water then waiting until the pH meter appear on the screen.

### **Temperature on test ecosystem (waters) fish cork**

Water temperature is one of the parameters of physical that need attention because it can affect on fish as the growth rate of metabolism fish like, breathing, heart rate, enzyme activity on fish and other physiological processes. This situation will look at the maintenance of fish with low temperatures slow the growth of fish can cause even stopped.

Besides the temperature will also effect the level of oxygen dissolved in water and power poison an ingredient contaminant. The higher temperature a waters the less oxygen dissolved in it while the need for oxygen any the temperature increase 10°C, fish rose by almost two times will oxygen needs. Every organism had a temperature of maximum requirements, optimum and minimum of his life and have the ability to adjust to a certain temperature. In instinct fish have low tolerance on changes in temperature. Good for the maintenance of fish temperatures ranged from 25-31°C. to measure the temperature waters in an instrument that is used is digital thermometer, how to work the measurement of temperature that is the end of a

thermometer digital dipped in water for 1 minute was later appointed a little and seen the results on the screen digital thermometer. When a thermometer appointed do not exposed to the sun the result of measurement of appropriate for the conditions waters.

### **Identification of Plankton**

According to Herawati and Kusriani (2005), plankton is a small sized organisms lived tossed swayed by the flow of the water. This organism consisting of micro-organisms whose life as animals (zooplankton) and plants (phytoplankton). According to Handayani and Patria (2005), is the first consumer zooplankton which utilizes the resulting phytoplankton primary production. The role of zooplankton as link between primary producers with large and small carnivores. The importance of studying plankton is to determine the magnitude of the role of plankton as the composition of the food cycle aquatic surroundings.

Water sampling for plankton identification taken after sunrise: 7:00 PM-finish, as for the water sampling technique is to insert the 600 ml bottle of mineral water into the waters with open lid, then appointed after fully charged. As for plankton ampling technique can be described as follows:

- install the bottle flim on the plankton net (netplankton No. 25)
- grab samples as many as 25 litres water and note the amount of water that is filtered out as (W)
- filter the water with plankton net samples so concentrates the plankton will be accommodated in a bottle flim, recorded as (V)

- member of lugol's is as much as 3-4 drops in a bottle of plankton samples on flim
- labelled on bottles containing samples of plankton flim

### Result and Discussion

Results of testing the levels of albumin fish Cork (*Ophicephalus striatus*) shows that the different ecosystems affect the levels of albumin from fish Cork (*Ophicephalus striatus*) is.

The levels of albumin fish Cork (*Ophicephalus striatu*) from different ecosystems can be seen on the chart. 1

Ecosystem	Kadar Albumin (%)
Sungai Druju, Gondang legi	3,56
Tambak cabean candi, Sidoarjo	5,81
Sungai gladak merah gumukmas, Jember	6,05
Kolam budidaya, Tulungagung	6,24
Waduk Sengguruh, Kepanjen	5,97
Sungai Bengawan Solo, Bojonegoro	5,36
Hulu Sungai Brantas, Sengkaling Malang	6,16
Tambak Kalanganyar Sedati Sidoarjo	4,37
Waduk Karangates	3,01

The Results of testing the temperature and pH of water on fish ecosystems Cork (*Ophicephalus striatus*) are different also shows the value of different temperatures and pH. The following conditions of temperature and pH of water ecosystem of fish Cork (*Ophicephalus striatus*) are different can be seen on the chart. 2

Ecosystem	pH	SUHU
Sungai Druju, Gondang legi	7	26-27°C
Tambak cabean candi, Sidoarjo	6	25°C
Sungai gladak merah gumukmas, Jember	7	24°C
Kolam budidaya, Tulungagung	7-8	27-34°C
Waduk Sengguruh, Kepanjen	7-8	24-26°C
Sungai Bengawan Solo, Bojonegoro	7,1	24°C
Hulu Sungai Brantas, Sengkaling Malang	7	22°C
Tambak Kalanganyar Sedati Sidoarjo	7	22°C
Waduk Karangates	8-10	28-31°C

Identification of plankton is carried out to know the structure of the community and find out the type of plankton in the water. Results identification of plankton found in the various ecosystems, fish Cork is as follows:

#### 1. River Druju Gondang legi

Phytoplankton is found to consist of 2 phylum Chlorophyta, (*Zygnema*, *Eudorina*, *Pediastrum*, *Radiococcus*, *Volvox*), and phylum Cyanophyta (*Anabaena*, *Oscillatoria*, *Gleocapsa*). Picture Druju Riverwaters Gondang legi can be seen in Figure 1.



Picture 1. Druju River waters Gondang

## 2. Bendungan Sengguruh Kepanjen

Zooplankton found consists of 2 phylum, namely Arthropoda (*Nauplius* sp, *Chydorus* sp, and *Cyclops* sp, *Acartia* sp) and the sponge (*Brachionus* sp, and *Keratella* sp). Picture Sengguruh Kepanjen Dam waters can be seen in Figure 2.



Picture 2. Sengguruh Kepanjen Dam

## 3. Sungai gladak merah gumukmas Jember

Phytoplankton is found to consist of 3 phylum Cyanophyta (*Anabaena*, *Oscillatoria*, *Gleocapsa*), Cyanobacteria (*Merismopedia*), Basillarophyta (and *Stephanodiscus Stauroneis*). Gladak Red River waters pictures gumukmas Jember can be seen in Figure 3.



Picture 3. Sungai Gladak merah

## 4. Sungai Bengawan Solo Bojonegoro

Zooplankton found consists of 3 phylum, the Rotifers (*Colurella* sp, *Euchlanis* sp),

Arthropoda (*Mysis* sp), and Protozoa (*Trichocerca* sp, *Diurella* sp). Pictures of the waters of the river Bengawan Solo River Provides can be seen in Figure 4.



Picture 4. Sungai Bengawan Solo

## 5. Tambak Cabean candi Sidoarjo

Phytoplankton is found to consist of 2 phylum Chlorophyta (*Zygnema*, *Eudorina*, *Radiococcus*, *Volvox*) phylum, and *Chlorella*. Picture Pendowoharjo village Pond waters of Sidoarjo temples can be seen in Figure 5.



Picture 5. Tambak Cabean candi Sidoarjo

## 6. Kolam budidaya Tulungagung

Phytoplankton is found to consist of 5 phylum Chlorophyta (*Zygnema*, *Arthrodesmus*, *Eudorina*, *Pediastrum*, *Radiococcus*, *Selenastrum*, *Volvox*), Chrysochyta (*elipsoidon*, *Cyclonexis*, *Navicula*, *Bummleria*) and phylum Cyanophyta (*Anabaena*, *Oscillatoria*, *Gleocapsa*), Cyanobacteria (*Merismopedia*, *Basillarophyta* and *Stephanodiscus Stauroneis*). The aquatic cultivation

Ponds Tulungagung pictures can be seen in Figure 6.



Picture 6. Kolam budidaya Tulungagung

### 7. Hulu Sungai Brantas Sengkaling Malang

Zooplankton found consists of 3 phylum, the Rotifers (*Colurella* sp, *Euchlanis* sp), Arthropoda (*Mysis* sp), and Protozoan (*Paramecium* sp, *Stentor* sp).

Phytoplankton is found to consist of 3 phylum Chlorophyta (*Asterococcus* sp, *Basilcladia* sp), Chrysophyta (*Navicula* sp., and *Amphipleura* sp) and phylum Cyanophyta (*Mycrocystis* sp, *Spirulina* sp and *Romeria* sp). Picture of the Brantas River Sengkaling Upstream waters of Poor can be seen in Figure 7.



Picture 7. Hulu Sungai Brantas Sengkaling Malang

### 8. Tambak Kalanganyar Sedati Sidoarjo

Phytoplankton is found to consist of 3 phylum Cyanophyta, (*Anabaena*,

*Oscillatoria*, *Gleocapsa*), Cyanobacteria (*Merismopedia*), Basillarophyta (and *Stephanodiscus Stauroneis*). The image of farmed aquatic Kalanganyar Sedati Sidoarjo can be seen in Figure 8.



Picture 8. farmedaquati Kalanganyar

### 9. Reservoirs Karangkates

Zooplankton found consists of 2 phylum, namely Arthropoda (*Cyclop*, *Daphnia*, *Nauplius*, *Zoea*) and Rotifers (*Brachionus*, *Keratella*, *Asplanchna*, *Diurella*, *Trichocerca*). Picture of water Reservoirs Karangkates can be seen in Figure 9.



Picture 9. Reservoirs Karangkates

### Conclusion

Different ecosystems affect the levels of albumin in fish Cork (*Ophicephalus striatus*), different ecosystems also affects water temperature and pH levels of the water. In addition to temperature and pH factor the amount of plankton in the water also affects the levels of albumin fish Cork. The value of the highest albumin levels found in fish Pond ecosystem in Cork fish farming in voves Tulungagung, come by albumin

levels of 6.24% with water temperature 27-34 ° C and a pH of 7-8 with an abundance of phytoplankton comprising 5 phylum Chlorophyta (*Zygnema*, *Arthrodesmus*, *Eudorina*, *Pediastrum*, *Radiococcus*, *Selenastrum*, *Volvox*), Chrysophyta (*elipsoidon*, *Ciclonexis*, *Navicula*, *Bummleria*) and phylum Cyanophyta (*Anabaena*, *Oscillatoria*, *Gleocapsa*), Cyanobacteria (*Merismopedia*), Basilliarophyta (and *Stephanodiscus* *Stauroneis*)

Mencegah Kwashiorkor pada Balita di Provinsi Jambi. Universitas Jambi. Jambi.Hal. 6.

## References

- Carvallo. 1998. Studi Profil Asam Amino, Albumin dan Seng Pada Ikan Gabus (*Ophiocephalus striatus*) dan Ikan Tomang (*Ophiocephalus mikropeltes*). Skripsi. Fakultas Perikanan. Universitas Brawijaya. Malang
- Ciptarini, D. A. dan N. Diastuti. 2006. Ekstraksi *Crude* Albumin dari Ikan Gabus (*Ophiocephalus striatus*) dengan Menggunakan Ekstraktor Vakum. Politeknik Negeri Malang. Malang. Hal. 5, 12, 13.
- Santoso,S. 2009. Bahan – bahan Pemanis. Agritech : Yogyakarta
- Suprayitno, E., A. Chamidah dan J.W. Carvallo. 2008. Studi Profil Asam Amino, Albumin dan Senga Pada Ikan Gabus (*Ophiocephalus striatus*) dan Ikan Tomang (*Ophiocephalus nacropeltes*). Fakultas Perikanan. Universitas Brawijaya.
- Syariffauzi, 2009. Ikan Gabus (Haruan/*Snake head/ Channa striata*). <http://syariffauzi.wordpress.com/2014/02/25/ikan-gabus-haruansnake-head-channa-striata/>. Diakses pada tanggal 4 Juli 2014. Pukul 12.26 WIB.
- Trully, S. 2004. Pemeliharaan Ikan dalam Karamba. Gramedia. Jakarta.
- Ulandari, A.; D. Kurniawan dan A.S. Putri. 2011. Potensi Protein Ikan Gabus dalam