University of Thi-Qar Journal

ISSN (print): 2706- 6908, ISSN (online): 2706-6894

Vol.17 No.2 June 2022

Seasonal Changes Of Some Blood Component Of *Barbus sharpyie* In Al-emaria Marsh water

Ahmed Salman Abudlhasan

Department of Biology , College of Sciences

University of Thi-Qar

Email: Ahmad.sal_bio@sci.ytq.edu.iq

https://doi.org/10.32792/utq/utj/vol17/2/3

Abstract

The ratio of blood component and some special variable of *Barbus sharpyie* specimen has been measured during the hot months of summer, and the cold months of winter extreme changes in ratio of Hb , P.C.V. , RBC , WBC and the effort of blood component have been noticed, which proves environmental and physiological fatigue undergone by this species of Iraqi fish . Also, showed a clear effects between rising in temperatures and the amounts of hemoglobin, P.C.V. , RBC , WBC .

Keywords : seasonal changes , blood component , *Barbus sharpyie* ,.

Introduction

The *Barbus sharpyie* fish spreads in the Iraqi rivers water , its importance for being one of the important economic species (AL- Daham , 1977) . The study of blood and its components is considered one of the studies of great importance from the theoretical and practical aspects , which is considered the basis for understanding the natural and pathological status of fish (Hameed , 1980) one of the most important studies conducted on the blood of this fish was by Hameed (1980) in Sadat AL- Hindia .

University of Thi-Qar Journal

ISSN (print): 2706- 6908, ISSN (online): 2706-6894

Vol.17 No.2 June 2022

Materials and methods

The samples were collected starting from June of the year 2005 to the end of May of the year 2006 from the region of Al-Amayra marsh in the Al-Fuhud sub-district (Central marsh). The collected samples areas are 5 km away from the each other. They were collected from five areas randomly, 107 Barbus sharpyie fish were collected using direct Fishing basket nets with holes (4 × 4) cm. . The scales collected from the area between the lateral line and the dorsal fin, and placed in water for 20-24 hours to clean it, dried and placed between two glass slides. The projectina was used to determine the annual rings.

Blood was collected from the area behind the anal fin of small fish (Ezzat et.al, 1974) and from the heart of large fish (Blaxhall & Diasley, 1973) and heparin was used as an anticoagulant, knowing that blood samples were collected during the time between 10 A.M and 1 P.M

Determination the properties of blood components:

1. Hemoglobin (Hb) Wenck's method was used to determine the amount of hemoglobin in the blood (Oser, 1965) and by using a spectrophotometer (450 spectrophotometers) to read the resulting color.
2. The percentage of packed cell volume P.C.V. , The packed volume of cells was determined using a microcentrifuge at a speed of 1200 rpm for ten minutes using capillary tubes untreated with heparin and blocking one end with artificial clay and two repetitions for each sample.
3. The total number of red and white blood cells. the total number of red blood cells in one cubic millimeter of blood was counted using a Haemocytometer with a glass slide of the type Nieuwer and according to the number of white blood cells in the same previous slide used for counting red blood cells (Hesser, 1960).
4. Dimensions of red blood cells. The longitudinal and transverse dimensions of twenty red blood cells were measured randomly from blood smear using an ocular micrometer.

University of Thi-Qar Journal

ISSN (print): 2706- 6908, ISSN (online): 2706-6894

Vol.17 No.2 June 2022

Results and discussion

Table No.(1) shows that the seasons of the year have an effect on the amount of hemoglobin in the blood , and it appeared that there was an increase during the months of June, July, and August, which are months with a relatively high temperature, as the water temperature rises, but in December, January, and February, in which the temperature is relatively low and the water temperature drops, there is a decrease in the amount of hemoglobin. And this consistent with what was observed by (Salman,2004 ; Fourie & Hattihgh, 1976; Umminger, 1972; Conroy, 1972) in different species of bony fish, it was noted that the amount of hemoglobin reaches its maximum in the hot months of the year and its lowest level in the cold months.

As you can see in table No. (1) there is an increase in the P.C.V during the hot months of the year in June, July, August and a decrease in the cold months in December, January and February and this is in agreement with many researchers (Salman, 2004; Atkinson & Judd, 1978 ; Vanvuren & Hatting, 1978;) in some species of bony fish .

The total number of R.B.C and W.B.C increases with the increase in the age of the fish Table (1). The total number of R.B.C increases during the hot months of the year and decreases during the cold months. This is consistent with what was indicated by each of (Salman,2004 ; Ezzat et. al ,1974) Table No. (1) shows that the dimensions of the R.B.C increase with the increase in the age of the fish, and this is agrees with what (Conroy,1972) mentioned in a study of the salmon fish Salmon salmoslar .

Table No. (1) Shows that the seasons of the year have no effect on the longitudinal and transverse dimensions of the R.B.C of *Barbus sharpyie*. The reason for that increase in the amount of hemoglobin, P.C.V and the number of R.B.C during the hot summer months may be attributed to increased salinity or lack of dissolved oxygen and other factors such as food Atkinsan & Judd (1978) noticed that high salinity causes an increase in bioactivity of fish, including respiratory activity to regulate the need for oxygen, and this is reflected by the increase in the amount of hemoglobin, the number of R.B.C, and the P.C.V .

University of Thi-Qar Journal

ISSN (print): 2706- 6908, ISSN (online): 2706-6894

Vol.17 No.2 June 2022

Table No. (1)

The relationship between months of the year, age and some of blood components of *Barbus sharpyie*

No. W.B.C. × 10^6 /mm^3	transvers dimension (µ m)	longitudinal dimension (µ m)	No.R.B.C. × 10^6 /mm^3	P.C.V. %	Hb 1g/100c m^3	Avarge age (years)	Months
45.11	7.49	12.3	2.185	39.08	10.45	7	June , July, August
35.5	7.49	12.66	1.67	34.325	9.39	6	September, October , November
37.3	9.285	14.5	1.38	30.9	7.8	4	December, January , February
38.1	8.36	12.9	1.6	36.99	10.3	5.5	March , April , May

References

1. الدهام , نجم قمر . 1977 . اسماك العراق والخليج العربي , ج1 , جامعة البصرة .

2. سلمان , علي نعيم ; العبادي عباس . 2004 . التغيرات الفصلية في مكونات سمكة الشبوط في مياة جدول
الغراف جنوب العراق . مجلة القادسية للعلوم الصرفة 9 (1) : 50 – 54 .

3. Atkinson, E. & Judd , f. w. 1978 . Comparative haematology of *Lepomis microlophus&*
Cichlasom cyanoguttatum copeia . 2 : 230 – 237 .

4. Blaxhall , P.C. & Biasley K.W. 1973 . routine haematology methods for use with fish blood . J. fish. Biol. 5 : 771- 781 .

5. Conroy , A.D. 1972 . studies on the haematology of of the Atlantic *Salmon salm osalar* L. symp. Zool. Soc. Lond. 30 : 101 – 127 .

6. Ezzat , A.A. ; Shabbana M. B. & Farghaly A.M. 1974 . studies on blood characterstisers of *Tilapia zilli* blood cells . J. fish . Biol. 6 : 1 – 12 .

ISSN (print): 2706- 6908, ISSN (online): 2706-6894

Vol.17 No.2 June 2022

7. Fourie , F.I.R. & Hattihgh , J. A. 1976 . seasonal study of the haematology of carp *Cuprinus carpio* from a locality in the tarsal south Africa zool. Aft. 11(1) : 75 – 80 .
8. Hameed , A.H.M. 1980. Seasonal changes in some haematology aspects of three species of Iraqi fishes of *Barbus genus* in Saddat – Alhindia Msc. Thesis univ. Baghdad .
9. Hesser , E. F. 1960 . method for routine fish haematology . porg . fish . cult. 22 : 164 – 171 .
10. Oser , B.L. 1965 . ahwk`s physiological chemistry Mcg raw – Hill publ. comp. Ltd Bombay & NewDelhi .
11. Umminger , B.L. 1972 . Seasonal changes in the serum chemistry of the winter flounder trans. Amer . fish Soc. 4 : 746 – 748 .
12. Vanvuren , J.H. & Hattingh , J. 1976 . the seasonal haematology of the small mouth yellow fish zool. Afr. 11 (1) : 68 – 81 .