



STUDIES ON SOME HAEMATOLOGICAL PARAMETERS OF *COLUMBA LIVIA* INFECTED WITH HELMINTH PARASITES IN OSMANABAD DISTRICT, (M.S.) INDIA.

¹D. M. Pathan, ^{2*}K.H.Rajput and ³D. B. Bhure

¹ ShrikrishnaMahavidyalaya Gunjoti, Osmanabad (M.S.)

²Department of Zoology, Madhavrao Patil College, Murum.

³Department of Zoology, Yeshwant Mahavidyalaya, Nanded.

Email.: kiransingh.rajput@rediffmail.com

ABSTRACT

The experiment was carried out to the study of the haematological parameters in *Columba livia* infected with parasites of helminths. Out of 10 *Columba livia* four are infected with cestode parasites. The significant increase in RBC size however reduction in the count of RBC, Hb, WBC, PCV, MCV in infected *Columba livia* compared with normal one. The haematological parameters of the infected bird *Columba livia* suggestive of macrocytic anaemia, lymphocytosis due to deficiency of related factors.

Key words:- *Columba livia* Haematological parameters, parasites.

INTRODUCTION

The study of haematological Parameters are very important in recent era but only few information is available to the haematological parameters of birds. Ot set al, 1998 studied the haematological characters of Great tit. Datta et.al, (1994) studied the haematological values of local duck of Assam. The present study is not only to confirm and finding the haematological parameters of *Columba livia* but also to compare with non-infected one.

MATERIALS AND METHODS

A total 10 species of *Columba livia* are accidentally injured, collected from College campus Shrikrishna Mahavidyalaya, Gunjoti.

Blood Collection: Blood was collected aseptically with sterile syringe and needle either from heart and wing vein. Immediately after collection the blood was transferred to sterile glass bottles containing anticoagulant 1:10 (4% Sodium Citrate solution) for further estimation.

Total Erythrocytes count, Total Leucocytes count, Haemoglobin, Packed cellvolume and Main corpuscular volume measurements -Estimation of Hb, PCV, MCV and determination of WBC, RBC using the routine methods of Sahils Haemocytometer. Statistical Analysis:- Results are calculated according to the standard procedures and the data are analysed using completely randomized desing according to Steel and Torrie, (1980)

RESULTS AND DISCUSSION

The data on the hematological values of *Coulmba livia*_both uninfected and infected with cestode parasites are presented in tables 1. The observations are as follws.

TABLE

Comparison of same haematological parameters of *Columba livia* in relation to infections.

Blood Parameter	Male		Female	
	Normal	Infected	Normal	Infected
RBC number (x 10/mm³)	3.40	2.25	3.50	2.35
WBC Number (x 10⁰/u)	3.2	3.8	3.1	3.6
Haemoglobin (g/100ml)	17.3	15.2	17.1	15
Packedcell volume ex (%)	65	60	68	73
Mean corpuscular volume(UB)	191.1	266.6	194.2	268.08
Mean corpuscular Haemoglobin	50.88	67.55	48.85	63.83

I) Statistically significant decrease in the RBC counts averagely from 3.40 to 2.25 % x 10⁶ /mm³ (34%) in male and 3.50 to 2.35 % x 10⁴ mm³ (33%) in female.

II) Statistically significant increase in WBC count 19% male and 16% female.

III) A significant decrease in haemoglobin content from 17.3 to 15.2 in male (12%) and that from 15 to 17.1 in female (12%).

IV) A significant decrease in PCV from level of 65 to 60 (7.70%) in male andfrom 68 to 63 (7.36 %) in female

V) A significant increase in MCV from a level of 191. 1 to 266.6 (= 39.50%) inmale and from 194.2 to 268.08 = 38.04 %) in female.

VI) The infected Colubalivia show a significant increase in MCH 50.88 to 67.55(=32.76%) in male and from 48.85 to 63.83 (=30.66) in female.

The present investigation provides the increase in RBC size shows macrocytosis, anisocytosis, and poikilocytosis and reduction of RBC, PCV, MCV, and Count (Table-1). This type of results (anaemia)

occur after the helminthic infection and deficiency of vitamin B12. The following reasons can be accounted for producing anaemic disease.

- a. Vitamin B12 deficiency may result in arresting of RBC and formation of large but few RBC.
- b. Deficiency of Vitamin B 12 caused by the helminthic infection.
- c. Deficiency of folic acid as a result of its utilization by the parasites and consequent showing down maturation process.

The present study indicates a very interesting feature that accounts for infected birds show restlessness and different types to helminths produce different types of changes in haematological parameters in birds which is quite comparable to those in mammals including man (Natt M.P. et al., 1952). The similar results i.e. decrease in RBC count and increase in WBC count in infected host as compared to normal host also reported by Ramkrishnan, 1950 from albino rats infected with Plasmodium parasites. The erythrocyte count of 6.4 million/cu in normal, while decrease to 4.6 million/cu during acute infection. As well as he suggests the physiological significance of leukocyte like their phagocytic action, release toxin globins from lymphocytes. The role of globins in tissue repair and blood clotting, result in their increase during parasitic infection. Denisov (1979) reported RBC count decreased by 25% while TLC increased by 44% in silver carp infected with Posthodiplostomum jicokt. Wankhede et al., 2007 also recorded similar finding of blood parameters from *Capra hircus* infected with nematode infection. Bhure et al., 2010 also reported increase in WBC count, MCV while decrease in RBC count from normal and infected host. Saxena et al., 1993 reported TLC increased by 3.72% in *Heteropneustes* fossils due to infected with *Lucknoma indica*. Ibraq Khurshid and Fayaz Ahmad, 2013 reported decreased value of RBC, HB and increased value of TLC and ESR in infected *S.labiatus* with Helminth parasites than normal host. Pinky Kaur and Rekha Shrivastav, 2014 found decrease in Haemoglobin and Erythrocyte count, increase in granulocyte and lymphocyte count in *Channa punctatus* and *Channa striatus* infected with Cestode *Senga*. Bhure et al., 2011 reported significant increase in size of RBC and number of WBC; however reduction in the count of RBC, Hb, PCV, MCV in infected *Gallus gallus domesticus* as compared with normal one. Barshe et al., 2016 studied significant impact of Cestodal Infection on Haematological Profile of *Gallus gallus domesticus*. Bhure et al., 2019 reported The significant increase in size of RBC and number of WBC; however reduction in the count of RBC, Hb, PCV, MCV in infected *Clarias batrachus* as compared with normal one.

Present study reveals that the intensity of helminthic infections is responsible for altering the haematology of *Columba livia*. Mechanical damage caused by helminths to the host intestine could cause vitamin B-12 and folic acid deficiency, which may result in formation of large but few RBC. This type of results shows formation of anaemia i.e. macrocytosis, anisocytosis, and poikilocytosis.

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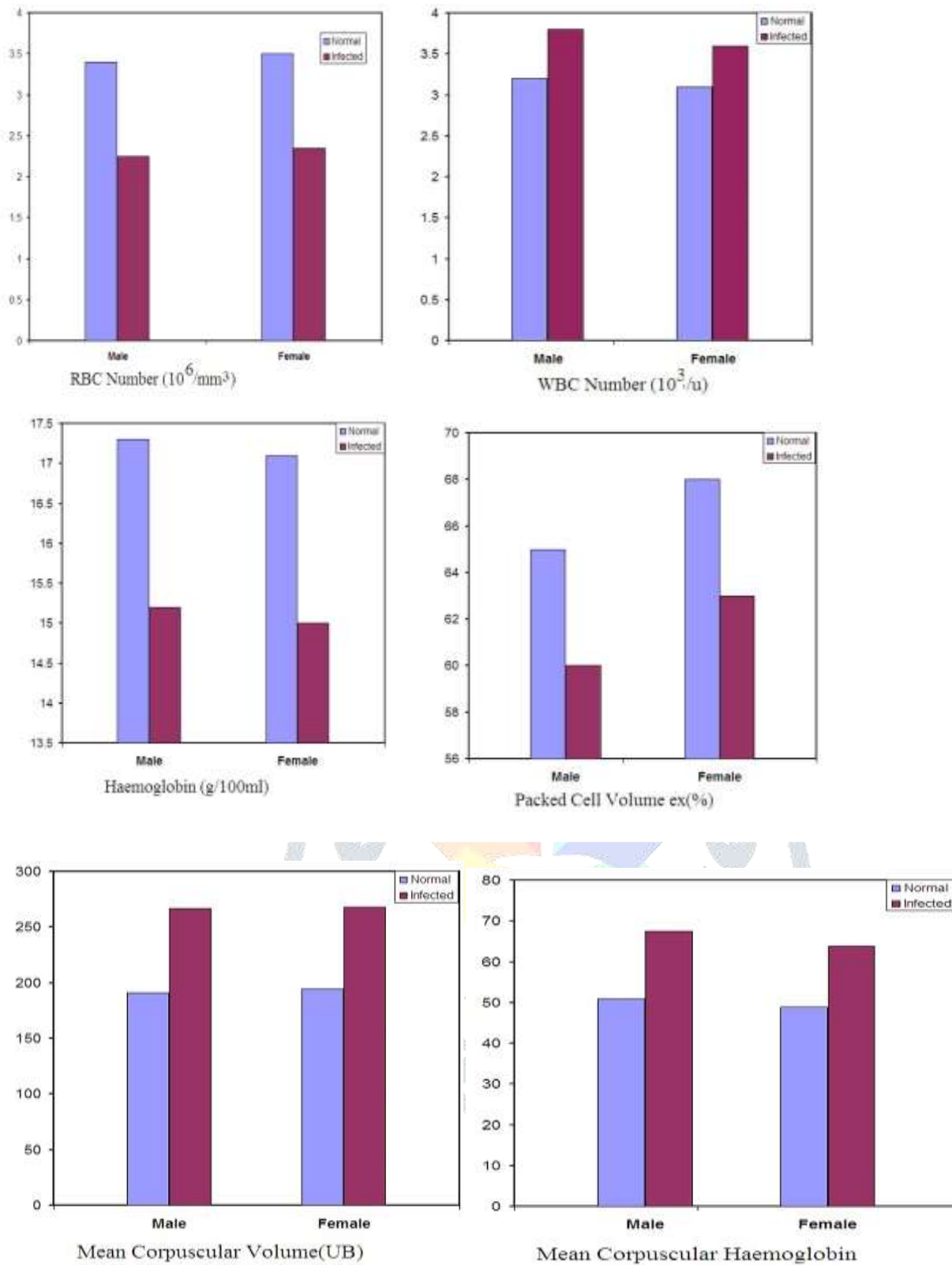


Figure: Graphical Representation of selected Blood parameters in Normal and Infected *Columba livia*