

ANALYSIS OF ALTERATIONS IN SELECTED HAEMATOLOGICAL PARAMETERS OF *GALLUS GALLUS* *DOMESTICUS* INFECTED WITH CESTODE INFECTION

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ABSTRACT

The present investigation is an attempt to study analysis of alterations in selected haematological parameters of *Gallus gallus domesticus* which is naturally infected with cestode parasites. Out of 15 *Gallus gallus domesticus*, 09 are infected with cestode parasite. The 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. The haematological parameters of the infected bird *Gallus gallus domesticus* shows high infection cause macrocytic anaemia, lymphocytosis due to deficiency of related factors.

Keywords: Cestode infection, *Gallus gallus domesticus*, Haematological parameters

INTRODUCTION

Haematological parameter such as haemoglobin (Hb), packed cell volume (PVC), White blood cell counts (WBC) and red blood cells are very vital in the diagnosis of diseases (Dage and Lewis, 1984). Haematological studies are important in diagnosing the structural and functional status of the body. In last few years many authors are working on haematological parameters of vertebrates in related with toxicology but not much work done on haematological aspect of vertebrates which related with parasitic infection. Tapeworm infection is a major health problem in *Gallus gallus domesticus* because it affects the normal blood parameters and produces anemia, lymphocytosis etc. The study of haematological Parameters is very important in recent era. Only few information is available to the haematological parameters of birds and fishes. Totterman (1944) observed occurrence of pernicious anaemia due to cestode parasite *Diphyllobothrium carriers* infected to fishes. Sinha and Sirkar, 1974 studied haematological investigation of pigeon (Ots *et al.*, 1998) studied the haematological characters of *Great tit*. Datta *et al.* (1994) studied the haematological values of local duck of Assam. Wankhede *et al.*, (2007) described some haematological parameters of normal and infected *Capra hircus* by nematode infection. In 2010 Bhure *et al.*, determined haematological values of normal and infected *Columba livia* parasitized by helminthic infection.

In the present communication, attempts have been made to analyze and correlate the haematological parameters of normal and infected *Gallus gallus domesticus*.

MATERIALS AND METHODS

Blood sample were 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 Ethylenediamine tetra acetic acid (EDTA) as anticoagulant. Estimation of Hb, PCV by Wentrobe’s (1951) method, MCV and determination of WBC, RBC using the routine methods of Sahils Haemocytometer

RESULTS AND DISCUSSION

The data on the hematological values of *Gallus gallus domesticus* both uninfected and infected with cestode parasites are presented in tables 1.

Table 1: Showing haematological status of *Gallus gallus domesticus* (Linnaeus, 1758) for normal and infected with Cestode Sp

Sr.No.	Blood Parameters	Normal Host	Infected Host
1	RBC $10^6/\text{mm}^3$	2.12± 1.9	1.14± 0.9
2	WBC $10^3/\text{mm}^3$	10.45± 3.2	28.29± 2.6
3	Hb /100ml	14.6± 1.2	11.7± 2.2
4	PCV %	23.13± 1.8	17.24± 3.6
5	MCV %	109± 06	151± 18
6	MCH %	69.00± 1.1	102.6± 2.9

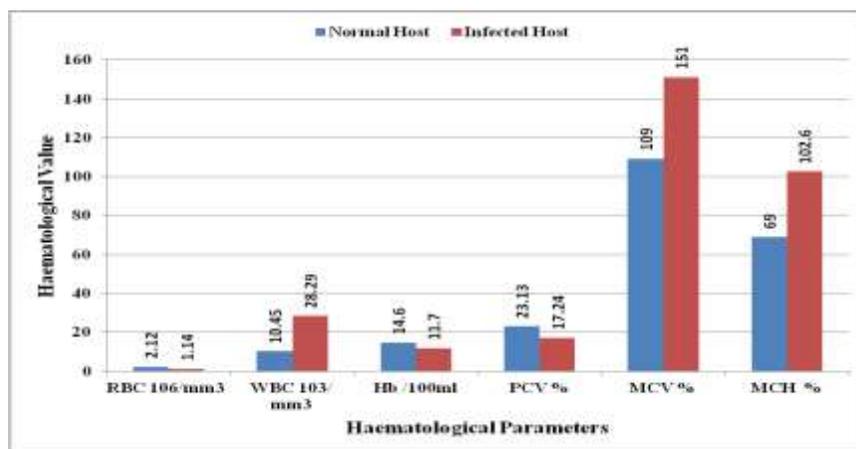


Figure 1: Graphical representation showing haematological status of *Gallus gallus domesticus* (Linnaeus, 1758) for normal and infected with *Cestode* Sp.

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 (Natt *et al.*, 1952) which is quite comparable to those in mammals including man (Weinr’eb, 1956, Johansson *et al.*, 1974). The similar results i.e. decrease in RBC count and increase in WBC count in infected host as compare 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 phygoctytic action, release toxin globins from lymphocytes. The role of globins in tissue repair and blood

clotting, result in their increase during parasitic infection. Wankhede *et al.*, (2007) also recorded similar finding of blood parameters from *Capra hircus* infected with nematode infection. Uzoaru (2007) opined that blood parameters help in the assessment of the health status of the individual to detect disease and also to evaluate the patient's prognosis to treatment. Bhure *et al.*, (2010) also reported increase in WBC count, MCV while decrease in RBC count from normal and infected *Columba livia*. It has been reported that mean haemoglobin level was affected by high parasitic burden. 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.

Due to the cestode infection the occurrence of deficiency of Vitamin B12, may result in formation of large but few RBC. This type of results shows formation of anaemia i.e. macrocytosis, anisocytosis, and poikilocytosis.

Conclusively the entire study reveals that the intensity of cestodal infections is responsible for altering the haematology of avian hosts. Cestode infection is shown to cause decrease in RBC Count, haemoglobin percent and value of packed cell volume while increased report of total white blood cell, MCV and MCH value.

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