



Research Journal of Pharmaceutical, Biological and Chemical Sciences

Haematological Studies of Rat Infected with *Hymenolepis* (Cestoda)

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ABSTRACT

In the present investigation the effect of *Hymenolepis diminuta* (Rud 1981) (cestoda) on the haematological parameters of Rat, the hematological parameters were studied viz TEC, TLC, Hb, and PCV. The rat carrying heavy infection of *Hymenolepis diminuta* (cestoda) showed the significant decrease in TEC, Hb and PCV. where as TLC are increased in infected host.

Keywords:- Haematology, Rat, *Hymenolepis*

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INTRODUCTION

Many investigations have been done regarding haematology of Rat related with toxicology and parasitology but very few work has been done on haematological studies of Rat which related with cestode infection. Some parasites like *D. latum* cestode cause low TEC Count [1]. This study was performed to evaluate the burden of cestode parasites like *Hymenolepis diminuta* in rat. Many blood disorders caused due to cestode infection induced population decline are likely to be initiated in area of high population density [2]. Pursuant to this goal of many parasitologists and physiologists have turned to study of haematology probably because it has proved an important diagnostic tool in evaluating human health. The present study will add to the existing scanty information on the subject and assist in control of parasitic infection and treatment of host.

MATERIAL AND METHODS

The study was carried out at Helminthology Research Laboratory, Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. The rats were used for this study, noninfected and infected. Blood samples were collected from rats in the laboratory from noninfected and infected hosts. Blood was collected from the heart of rat with a sterile hypodermic needle and syringe then examined the intestine for cestode infection of same host, blood samples were taken into bottles containing Ethylenediamine tetracetic acid (EDTA) as an anticoagulant. Determination of hematological parameters by standard methods used by [3].

Results and discussion

Table showing blood parameters of noninfected and infected rat.

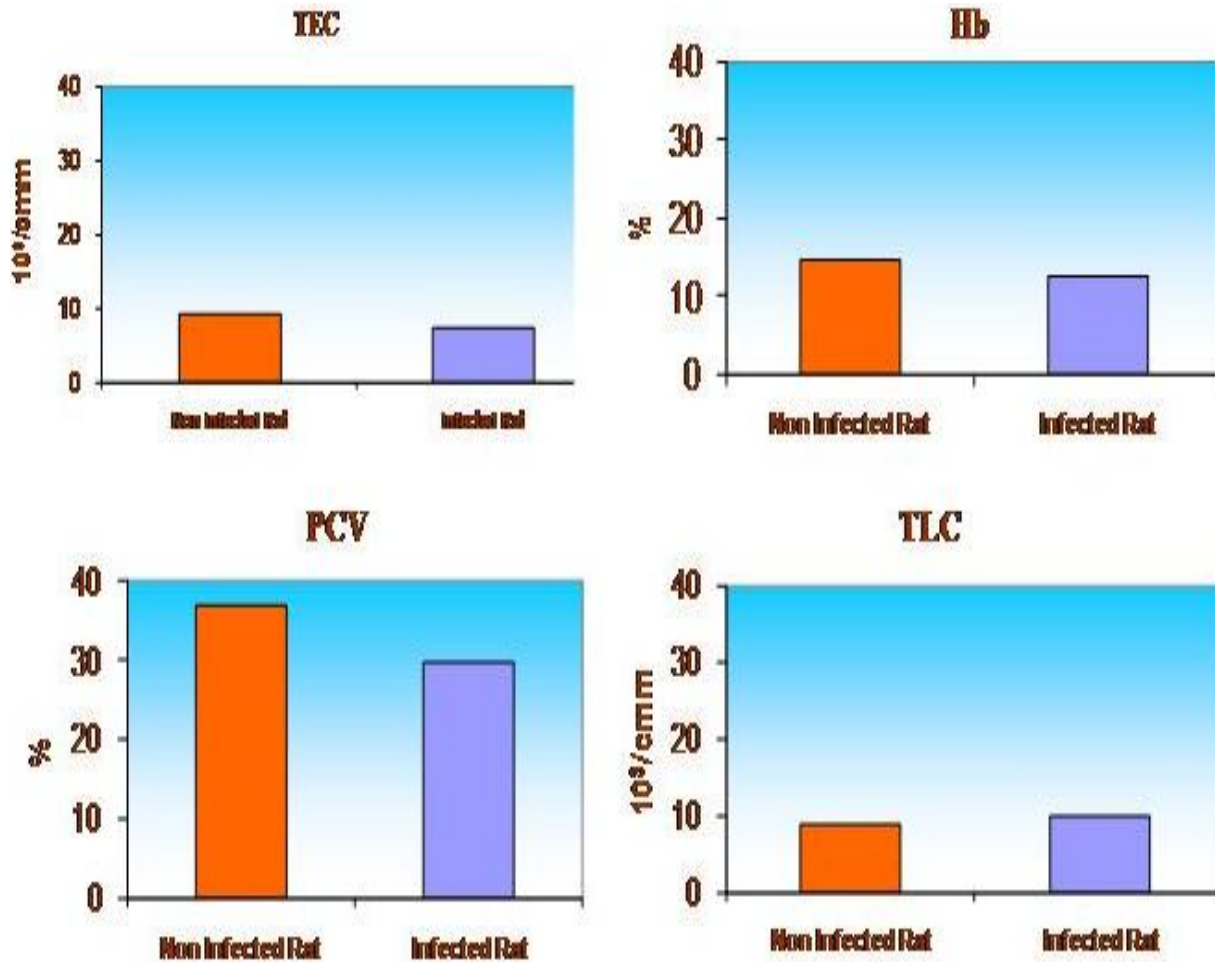
Sl. No.	Blood parameters	Noninfected rat	Infected rat
1	TEC (10^6 /cmm)	09.02 \pm 0.40	07.33 \pm 0.21*
2	Hb %	14.82 \pm 1.02	12.83 \pm 0.82*
3	PCV %	36.94 \pm 1.12	29.52 \pm 1.34*
4	TLC (10^3 /cmm)	08.84 \pm 0.57	09.75 \pm 0.41*

Data are expressed as mean \pm S.D * indicates the presence of significant difference between groups * $p < 0.05$, ** $p < 0.01$.

The hematological (mean \pm S.D) parameters are presented in table when rat has naturally infected with intestinal cestode parasite *Hymenolepis* then the following variations observed in hematological parameters of noninfected and infected rats. Total 90 cestodes were collected from intestine of rats. Ten times recorded heavy infection with *Hymenolepis* sp.

- i) Statistically significant decrease observed in TEC of infected rat than noninfected one as 7.33 \pm 0.21 and 9.02 \pm 0.40 respectively.
- ii) A significant decrease in Hb concentration in infected than noninfected as 12.83 \pm 0.82 and 14.82 \pm 1.02 respectively.

- iii) The PCV was recorded significant decline in infected rat than noninfected one as 29.52 ± 1.34 in infected and 36.94 ± 1.12 in noninfected hosts.
- iv) The TLC recorded significant increase in infected than noninfected host as 8.84 ± 0.57 in noninfected and 9.75 ± 0.41 in infected one.



Graph showing some haematological parameters of non infected and infected Rat with *Hymenolepis*

In the present investigation the haematological parameters were studied of rat correlates with cestode parasitism, the parameters were studied as TEC, Hb, PCV & TLC infected as well as noninfected rats. Present results shows highly significant correlations between blood parameters and parasitic worm burden in rat were comparable to those previously reported by many workers which are discussed below.

The effect of *Vampirolepis fraternal* (cestoda) on blood parameters of rat like RBCs, WBCs, and Hb concentration, they observed the RBCs count in normal and infected rat as 716471.42 ± 27077.02 and 692500.00 ± 70752.39 respectively, and WBCs count in uninfected rat as (29605.88 ± 1018.94) and in infected rat WBCs were $(34368.75 \pm 2095.20/\text{mm}^3)$ and they reported about haemoglobin the level of Hb was significantly reduced in infected rat [4]. Same



results in domestic goats and camels infected with gastrointestinal helminthes [5]. Then many workers like [6-9] given the similar results from different mammalian hosts.

CONCLUSION

It can be concluded from this study the internal parasites like cestodes causes significant clinical alteration in rat, it is necessary to take adequate parasite control measures to insure the health of animals forgoing results also suggests that there are progressive changes in haematological parameters like TEC, Hb, PCV & TLC. The increase and decrease in parameters depends upon the intensity of parasitic infection. From the above results it may be mentioned that during infection of cestode TEC, Hb & PCV are decreases and TLC are increases, so these parameters are very important for diagnosis of diseases at the earliest possible.

ACKNOWLEDGEMENT

The authors are thankful to Head Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University Aurangabad for providing necessary facilities during this work.

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