

A COMPARATIVE STUDY OF RAILLIETINA ECHINOBOTHRIDA, RAILLIETINA CESTICILLUS, RAILLIETINA TETRAGONA, AND CHOANOTAENIA INFUNDIBULUM THE INTESTINAL PARASITES OF GALLUS DOMESTICUS ON THE LACTIC ACID CONTENT

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ABSTRACT

Raillietina echinobothrida, *Raillietina cesticillus*, *Raillietina tetragona* and *Choanotaenia infundibulum* are the endoparasites living in the intestinal region of *Gallus domesticus*. Study of glycogen was conducted on the mature proglottids of the above recommended parasites and levels were evaluated statistically in relation to metabolic activities. *Raillietina echinobothrida*, *Raillietina cesticillus*, *Raillietina tetragona*, *Choanotaenia infundibulum*, *Gallus domesticus*.

KEYWORDS: Cestode, *Raillietina echinobothrida*, *Raillietina cesticillus*, *Raillietina tetragona* and *Choanotaenia infundibulum*

INTRODUCTION

It was supposed earlier that lactic acid is not the major end product of glycolysis in helminthes parasites. Lactic acid is the end product of glycolysis. The reduction of pyruvate to lactate involves the reoxidation of reduced co-factor NADH which helps in preventing the glycolysis from coming to an end. In vertebrates, the lactate produced forms pyruvate in anaerobic condition in aerobic phase; pyruvate is formed and is incorporated in to the krebs cycle. In helminth parasites lactate is excreted under anaerobic condition without being further metabolised.

Raillietina echinobothrida, *Raillietina cesticillus*, *Raillietina tetragona* and *Choanotaenia infundibulum* are the intestinal parasites of host *Gallus domesticus*. Hence care should be taken for carbohydrate metabolism because it is the main energy source in cestodes Daugherty(1952) found the importance of carbohydrate intermediate of the krebs cycle in protein metabolism of cestodes.

RESULT

Lactic acid was estimated by the method of Barka and summerson (1941) as modified by Huckabee (1961). For the purpose of the study of lactic acid deposit in the mature proglottids of the parasites are used. The mature proglottids are selected as they are more active in the metabolic activity when compared to immature and gravid proglottids. The values for lactic acid content in the 4 parasites

Raillietina echinobothrida

Raillietina cesticillus

Raillietina tetragona

Choanotaenia infundibulum

The values for the lactate content are summarized in the table-2 , and are represented in histogram-2 as well as with the help of pie chart for lactate. The lactate content in *Raillietina echinobothrida* varies from 0.107 to 0.160 mg/100 mg wet weight tissue. The mean value being 0.131 ± 0.020 mg. In *Raillietina cesticillus* the lactate content ranges from 0.026 to 0.032 mg /100 mg wet weight of the tissue, the average value is 0.030 ± 0.00279 mg/100 mg. *Raillietina tetragona* shows a range of 0.020 to 0.045 mg / 100 mg tissue ; the mean value is 0.030 ± 0.00974 mg. In the parasite *Choanotaenia infundibulum* the lactate content ranges from 0.041 to 0.068 mg / 100 mg tissue, the mean value is 0.057 ± 0.00912 mg.

The perusal of the mean values in the table-2 clearly indicate that the highest content of lactate is present *Raillietina echinobothrida* followed by *Choanotaenia infundibulum*, *Raillietina tetragona* and *Raillietina cesticillus* respectively. It is notable that *Raillietina cesticillus* has lowest content of lactate than other parasite studies.

Table 2. Estimation of lactate in cestode parasite of fowl expressed in milligrams / 100 mg wet weight of the tissue

Sr. No	<i>Raillitiena echinobothrida</i> (Mature proglottids)	<i>Raillietina cesticillus</i> (Mature proglottids)	<i>Raillietina tetragona</i> (Mature segments)	<i>Choanotaenia infundibulum</i> (Mature segments)
1	0.110	0.026	0.045	0.058
2	0.157	0.032	0.038	0.068
3	0.131	0.031	0.020	0.060
4	0.160	0.026	0.021	0.065
5	0.107	0.031	0.022	0.050
6	0.125	0.033	0.036	0.041
	0.131	0.030	0.030	0.057
SD	±0.02068	±0.00279	±0.00974	±0.00912

Table-2(b). Ratios and ‘t’ values for lactate content

SL NO	Name of the parasite	Ratios	‘t’ value	Probability	Remarks
1	<i>R. echinobothrida</i> <i>R. cesticillus</i>	40:10	12.1	0.001	Significant
2	<i>R. echinobothrida</i> <i>R. tetragona</i>	40:10	11.0	0.001	Significant
3	<i>R. echinobothrida</i> <i>Choanotaenia infundibulum</i>	22:10	8.15	0.001	Significant

The ratio between *R. echinobothrida*/*R. cesticillus*, *R. echinobothrida*/*R. tetragona*, *R. echinobothrida*/*Choanotaenia infundibulum* respectively are 40:10, 40:10, 22:10. These results are further supported by ‘t’ values. The ‘t’ values are significant at 0.1% level between *R. echinobothrida*/*R. cesticillus*, *R. echinobothrida*/*R. tetragona*, and *R. echinobothrida*/*Choanotaenia infundibulum*.

DISCUSSION

In the present investigation the quantity of lactate was observed from *Raillietina echinobothrida*, *Raillietina cesticillus*, *Raillietina tetragona*, *Choanotaenia infundibulum* from the host *Gallus domesticus*. The result also shows that the large quantities of lactate is produced, (Siv sai kumar, 1989) also observed the similar result in the *P. alata* and *N. singhia*, the cestode and nematode parasite in the *Perdicula asiatica*.

Glycolysis is the fundamental pathway of carbohydrate catabolism in all parasitic helminthes and major end products are lactic acid and succinic acid, this product get accumulated can be usually linked to the activities of pyruvate kinase(PK), phosphoenol pyruvate carboxy kinase(PEPCK) and of LDH and MDH (Bryant, 1975). Moon et al., (1977) have shown that regularity properties of PK and PEPCK are responsible for the accumulation of lactic acid and succinic acid respectively.

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