ORIGINAL RESEARCH PAPER | Veterinary Science | Volume : 6 | Issue : 10 | October 2016 | ISSN - 2249-555X | IF : 3.919 | IC Value : 74.50

Influence of Method of Rearing on The Parasitic Load in Mandya Sheep

KEYWORDS: Mandya sheep, different farming systems, parasitic load

V. Sudharshan	Y. B. Rajeshwari	S. Supriya
Department of LPM, Veterinary College Hebbal, Bengaluru - 560 024, India.	Department of LPM, Veterinary College Hebbal, Bengaluru - 560 024, India.	Department of LPM, Veterinary College Hebbal, Bengaluru - 560 024, India.

Naveen kumar	A. R. Banuprakash	P. K. Anup kumar
Department of AGB, Veterinary College, Hebbal, Bengaluru - 560 024, India.	Department of LPM, Veterinary College Hebbal, Bengaluru - 560 024, India.	Department of LPM, Veterinary College Hebbal, Bengaluru - 560 024, India.

ABSTRACT *A study was conducted to assess the growth performance of Mandya lambs reared under intensive (T1) and semi intensive system (T2) of management. Twenty Mandya lambs of three months age were grouped in to two groups of ten each. T1 group was fed with concentrate mixture (300g) and maize fodder (ad lib), whereas animals in T2 group were allowed for grazing 8 hour and fed concentrate mixture (150g) for maintenance. During study period faecal samples collected at every four weeks interval to assess parasitic load. The average parasitic load estimated (EPG) was 14.90 ± 6.034 (T1) and 36.63 ± 13.45 (T2). There was significant (P<0.05) difference in parasitic load. In the study it was concluded that Mandya sheep performed better under intensive management system, considering parasitic load was minimum in lambs reared under intensive farming system.*

Introduction:

Sheep being the close grazers are easily infested with helminth parasites especially gastrointestinal . Helminth parasites cause the most economic losses ravaging sheep productivity. Sheep act as the hosts to multiple species of parasitic helminths that cause varying degree of diseases ranging from chronic form, characterized mainly by diarrhea, dehydration, anemia and weight loss, to highly acute infections resulting high mortality, reduced wool yield and reproductive rate. Pathogenicity of these helminth parasites varies with different intensity. The major endoparasitic diseases of economic importance include gastrointestinal and respiratory nematodioses, fascioliosis and cestodiosis. These infections in general produce anorexia, reduce food intake, loss of blood and plasma proteins into gastrointestinal tract, alteration in proteins metabolism, enteritis, diarrhea resulting in reduce, body weight gains, wool growth, reproduction and death due to secondary infections. The climate in a certain locality is one of the major factors that determine the type and severity of parasitic infection in grazing animals (Amin *et al*., 2012). The age, sex, season and the other associated environmental conditions including temperature and moisture have a greater role to play in the onset of gastro-intestinal parasitic infection in sheep. Warm, humid and wet grazing seasons are some of the factors that contribute the parasitic disease in sheep.

MATERIAL AND METHODS

The present study was designed to assess the effect of different farming systems on growth performance and parasitic load of Mandya breed reared under different farming systems. The experiment was carried out at a private sheep farm located at Gadenahalli, Bengaluru North Taluk, Bengaluru Urban District, Karnataka. The study was conducted for a period of three months. Twenty weaned Mandya lambs aged 3 to 4 months were randomly distributed to two groups of ten animals. Group I with average bodyweight of 10.06±0.17 Kg (Intensive system) and Group II with average bodyweight of 10.18±0.11Kg (Semi-intensive). All the experimental lambs were identified by ear tags. All the experimental animals were deworrmed before the start of the experimental trial with broad spectrum anthelmintics, albendazole and praziquantal and were vaccinated against Enterotoximia and pest –des-petits.

The sheep in intensive group were reared with the floor space area of 1 m^2/animal in the covered shed. Shed was well ventilated and well protected. Animals were not allowed for grazing in intensive group. The animals in semi hours (Morning 7 a.m. to 12 p.m. and evening 4 p.m. to 7 p.m.) these animals were housed in a protected shed with floor space area of 1 m^2/animal during from 7 p.m. to 7 a.m. All the experimental animals had access to clean, fresh drinking water when they were in shed during the entire experimental period.

The lambs in intensive system were fed with 300 g Concentrate + *ad libitum* Maize fodder. The lambs in semi-intensive system were fed with 150 g concentrate + 8 hours of grazing. All the experimental animals were offered clean, fresh drinking water when they were in shed during the entire experimental period. Diets for the experimental lambs were formulated to meet the energy and protein requirements as per ICAR (2013) for the growth rate of 100 'g' gain.

Table 1: Ingredients composition of concentrate mixture fed to experimental lambs

Sl. No.	Ingredients	Level of inclusion (%)
1	Maize	34
2	Soya bean meal	34
3	De oiled rice bran	15
4	Molasses	14
5	Mineral mixture	2
6	Salt	1

Volume : 6 | Issue : 10 | October 2016 | ISSN - 2249-555X | IF : 3.919 | IC Value : 74.50

The lambs were offered weighed quantities of concentrate feed and green fodder and the ort were weighed on the next day morning before cleaning and feeding to find out daily feed intake. The ort were sampled once in 15 days for estimation of moisture content. From this data daily dry matter intake was calculated. For semi intensive group the daily feed intake was assessed by weighing the lambs before allowing for grazing in the morning at 7 a.m. and again after return from grazing in the evening once in a week, as described by Pelle *et al*. (1988). The difference in morning and evening body weight was taken as an estimate of amount of feed consumed. The dry matter content of grass was assessed once a fortnight for estimation of dry matter intake.

Prior to the start of the experiment (week 0) and end of the experimental trial (week 12) faecal samples were collected to estimate parasitic load. Faecal samples were collected directly from the rectum of each animal and were stored in airtight faecal collection vial. Gross examination was done for color, consistency and for presence of any adult worms. The samples were immediately transferred to laboratory and kept 4ºC until further examination. The faecal samples were processed and screened by sedimentation technique. The ova of parasites were identified from their morphological features. Quantitative examination of faeces was conducted to know the intensity of parasitic infestation (EPG) by McMaster's technique (Singh *et al.*, 2013).

The data on various parameters were subjected to unpaired "t" test analysis and individual differences between means were tested using Graph-pad prism and results were interpreted accordingly

Results and discussion

The average parasitic load in lambs reared under two different systems i.e., treatments T1 and T2 is presented in Table 2. The parasitic load increased from 1.6 ± 0.4 and 2.8 ± 0.6 on day 0 to 28.1 ± 1.3 and 62.1 ± 6.4 on 90 day. While the parasitic loads were similar in both the treatments on day 0 the parasitic load significantly increased at all the days of sample in the lambs of T2 than T1 group.

Different species of parasites (per cent) in the faecal samples of lambs reared under intensive (T1) and semi intensive (T2) group are presented in Table 3. The proportions of Stongyle and Trichuris eggs were significantly higher in T2 than T1 group. The Oocysts of Eimeria was significantly higher in T1 than T2.

Sheep is one of the most susceptible species for parasitic infection among the different types; are the most common parasites affects gastro intestinal tract leading to decreases productivity and reproductive losses. The other major endo parasitic diseases of economic importance in sheep are gastro intestinal and respiratory nematodes Fasciola and cistodes. The age, sex, season and environmental condition like temperature and humidity play major role in parasitic infection of sheep.

In the present study the average parasitic load (Eggs per gram of faecal sample) were the lowest on day 0 of sampling in lambs under both the types of the management as the animals were deworrmed one week before the start of the experiment. The parasitic load increased with time throughout the experimental period in both the groups, however the increase was more than double in the lambs under semi intensive system of management compared to those under intensive system of management this increase is mainly due to the fact that the animals in semi intensive system are let out for grazing every day where they are most likely to come in contact with endoparasites. Previous reports also indicated that the lambs under semi intensive system showed higher parasitic load compared to animals reared under stall fed conditions (Vekataraju *et al.*, 2015) confirm the results observed in the study.

The proportion of different species of parasites in the faecal samples of lambs in this study was found to be different in lambs reared under intensive and semi intensive system of management. The eggs of Strongyles and Trichuris and Oocysts of Eimeria were identified in faecal samples of lambs reared under both the systems. However the proportion of Strongyle eggs were predominant in lambs from semi intensive management compared to intensive group suggesting that the animals in the semi intensive were more exposed to Strongyle infection during grazing. In contrast, the proportion of Oocysts of Eimeria was almost double in the faecal samples of the lambs reared under intensive system compared to semi intensive system. This could be due to the fact that Eimeria are shed in faecal material and the possibilities of lambs coming in contact with these parasites in increased frequencies are much higher in the lambs under intensive management compared to those under semi intensive system.

The type of parasitic infection depends on season, age and environmental condition and the prevalence of specific parasite in the contact area. Amin *et al*, 2012 has reported the presence of Cestodes (13.9%), Nematodes (37.62%) and Trematodes (10.16%) in sheep. Sangma *et al*, 2012 has reported the presence of strongyle eggs (62.6%) and Trichuris (2.1%) in sheep. Singh *et al*, (2012) has reported haemonchous as the most common gastro intestinal parasite in sheep.

Conclusion

The parasitic load is minimum in lambs reared under intensive farming system. It can be conclude that intensive system of lamb rearing can be adopted in urban and peri-urban areas where grazing lands are meager.

Table 2: Average parasitic load (Eggs per Gram of Faecal sample) of lambs during different weeks of experimental period

Days	T1	T2	Significance
0	1.6 ± 0.4	2.8 ± 0.6	0.1177
30	8.4 ± 1.1	27.7 ± 2.9	< 0.0001
60	21.5 ± 1.7	53.9 ± 6.8	0.0002
90	28.1 ± 1.3	62.1 ± 6.4	< 0.0001
Mean ± SE	14.90 ± 6.034	36.63 ± 13.45	< 0.0001

T1-Intensive system, T2- Semi intensive system

Table 3: Different species of parasites (per cent) in the faecal samples of lambs during different weeks of experimental period

Parasite	T1	T2	Significance
Strongyle eggs	54.6	70.2	*
Trichuris eggs	24.8	18.8	*
Oocysts of Eimeria	20.6	11	*

Note: * (P<0.0001); ** (P<0.001); * (P<0.05)**

Volume : 6 | Issue : 10 | October 2016 | ISSN - 2249-555X | IF : 3.919 | IC Value : 74.50

References:

1. AOAC. 2005. Official Methods of Analysis, 18th Edition. Association of Official Analytical Chemists, Washington, DC.
2. AYSHIA AMIN and WANI, S. A., 2012. Gastrointestinal helminth parasites of slaughtered sheep with special reference to age, sex and seasonal distribution in district Doda, Jammu & Kashmir state, India. *Indian J. Sci. Res. Tech.* **1**(1):25-28
3. BASHIR, A. L., CHISHTI, M. Z., FAHMAD, A. and TAK, H., 2012. Survey of Gastrointestinal Helminth Parasites of Slaughtered Sheep and Goats in Ganderbal. *Kashmir Global Veterinarian.,* **8** (4): 338-341
4. BHARATHY, N. and VIJAYKUMAR, A., 2016. Assessment of Parasitic Worm Load in Small Ruminants. **6**(4)
5. ICAR, 2013. Nutrient requirements of sheep, goat and rabbit . ICAR. New Delhi
6. PELLE, E., ENYEDI, S., MUSCI, I. and BORSI, I.J., 1988. Quantification of grass intake of grazing ewes and some data for the utilization of permanent grasslands. *Allattenyesztes es takarmanyozas,* 35(5): 409-422
7. SANGMA, A., BEGUM, N., ROY, B. C. and GANI, M. O., 2012. Prevalence of helminth parasites in sheep (*Ovis aries*) in Tangail district. *Bangladesh J. Bangladesh Agril. Univ.*, **10**(2): 235–244
8. SINGH, V., VARSHNEY, P., DASH, S. K. and LAL, H. P., 2013. Prevalence of gastrointestinal parasites in sheep and goats in and around Mathura, India**.** *Vet. World.*, **6**(5): 260-262
9. VENKATA RAJU, N., PANKAJ, P. K., RAMANA, D. B. V., RANI, R., NIKHILA, M. and SUDHEER, D., 2015. Physiological responses to intensification in Deccani sheep. *Int. J. Plant Animal And Environment Sciences.,* **5**(1)