Prevalence of gastrointestinal parasites in small ruminants of Sirohi district, Rajasthan, India

S Solanki, S Jani and Durga Devi

Abstract
This study was carried out with the aim of investigating endoparasitism by helminthes and protozoa in small ruminants of Sirohi district. Stool samples were collected from Disease Diagnostic Centre (DDC), Sirohi, Rajasthan between April 2015 to March 2017 monthly. The Stool samples were examined to determine eggs and oocytes counts per gram of feces to identify helminthes parasites. These parasites were an accompanying infection in nearly all animals. The parasitological investigation revealed eggs in the following groups of helminthes: Strongyle species, Strongyloides species, Toxocara species, Moniezia species, Fasciola species, Amphistome species and ooctes were also found in coccidian species. It observed that small ruminants have been highly infected with nematode parasites in comparison to trematode and cestode.

Keywords: Gastrointestinal parasite, nematode, helminth, domestic small ruminants

Introduction
Helminthes infections are major health problem in domestic small ruminants throughout the world. The state of Rajasthan is famous for its small ruminant’s wealth. The economy of rural people largely depends on goat and sheep wealth. The domestic small ruminates have been found to suffer from various diseases such as Paramphistomiasis, Fascioliasis etc. Due to presence of different species of helminthes parasites in the gastrointestinal tract. Morbidity and mortality have been observed in helminthes infected goats and sheeps in Rajasthan due to parasitic infections and these diseases lead to great economic losses and affect the productivity directly or indirectly worldwide. (Swarnakar et al., 2014) [29]. In addition to these threats, a helminth infestation lowers the animal’s immunity and renders it susceptible to other pathogenic infections;

Some external symptoms have been produced by the parasitic infected ruminants like reduced production of weight, growth rate, nutrient utilization, meat, wool and milk quality and quantity. Domestic small ruminants due to improper management, unhygienic conditions and improper use of anthelmintic chemicals are suffering from helminthes parasitic diseases and mostly infection occurs when they drinking water and grazing near the pond. Adult worm produce eggs that are passed to field in the faces or stool. Under favorable conditions the egg will hatch and larva transmitted to intermediate host lymnaeid snails and by snail infects many small ruminants as well as man (Pfukenyi et al., 2006) [20]. (Keyyu et al., 2006) [11], (Kumsa & Wossene, 2007) [14], (Hamman et al., 2007) [18], (Biu et al., 2009) [9]. (Rafiuallah et al., 2011) [24]. (Attinhehou & Salifou, 2012) [3], (Getachew et al., 2012) [7], (Akkari et al., 2013) [2]. (Garedaghli et al., 2013) [9], (Hassan et al., 2013) [9], (Kuchai et al., 2012 & 2013) [12][13], (Laha et al., 2013) [15](Mir et al., a & b 2013) [18], (Pfukenyi & Mukaratirwa 2013) [22], (Swarnakar & Kumawat, 2013) [20], (Owoheli et al., 2014) [20], (Raza et al., 2014) [23], (Swarnakar et al., 2014) and (Swarnakar & Sanger, 2014) [27][29]. There for, present investigation had been undertaken with the objective of assessing the occurrence of endoparasites of goats and sheep in Sirohi region, Rajasthan, India.

Materials and Methods
Study animals and sample collection
Stool samples were collected from different villages of Sirohi, Rajasthan (from April, 2015 to March, 2017) for identification of helminthes and coccidia cyst. First of all collect the stool samples with a forceps. Then stool samples were transferred into labeled poly bags and packed. Take one gram stool sample of goats and sheep was mixed with more salt solution...
(15 – 20 ml.) in cylinder and Stir well with glass rod and eggs were collected on and examine under stereo microscope. Many data during the period of study were collected from DDC, Sirohi District, Rajasthan.

**Results and Discussion**

During the study 2400 stool samples were collected from goats and sheep’s of different villages of Sirohi in camps and during the study the only 2 samples were positive for *Toxocara* species in sheep. Mostly *Fasciola* species and amphistomes species present in Sirohi District, 78 goat samples were positive in sheep (129 samples positive) and 49 buffaloes samples were found infected with *Fasciola* species Amphistomes were highly infected in goat (170 samples positive) and sheep (129 samples positive) as compared to *Fasciola* species. Most of the samples were positive in goats and 180 faecal or stool samples in sheep infected with *Strongyle* species, 3 and 7 samples infected with *Strongyloides* species respectively in goat and sheep, *Trichuris* species not found during the study. Out of 2400 samples, 790 samples were positive in goats and sheep’s of different villages of Sirohi and trematode in domestic animals and found reduction in food intake, weight & milk production and higher mortality rate and trematode in domestic animals and found reduction in fertility, work capacity, involuntary culling, reduction in food intake, weight & milk production and higher mortality rate (Biu et al., 2009) (5), (Rafiullah et al., 2011) (23), (Getachew et al., 2012) (19), (Pfukenyi & Mukaratirwa 2013) (22), (Hassan et al., 2013) (19), (Mir et al., a & b 2013) (18), (Raza et al., 2014) (24), (And Owohlo et al., 2014) (19), Present study shows similarity with other scientists that the infection of gastrointestinal parasites responsible for huge economical losses to farmers at large manner in all over the world (Aga et al., 2013) (18) and (Laha et al., 2013) (19).

**Table 1:** Showing different type of gastrointestinal parasites collected from sheep and goat between years April 2015 to March 2017

<table>
<thead>
<tr>
<th>Species</th>
<th>Nematode</th>
<th>Trematode</th>
<th>Coccidia</th>
<th>Cestode</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow</td>
<td>259</td>
<td>14</td>
<td>11</td>
<td>2</td>
<td>2015-16</td>
</tr>
<tr>
<td></td>
<td>360</td>
<td>15</td>
<td>8</td>
<td>1</td>
<td>2016-17</td>
</tr>
<tr>
<td>Total</td>
<td>619</td>
<td>29</td>
<td>19</td>
<td>3</td>
<td>2015-17</td>
</tr>
<tr>
<td>Buffalo</td>
<td>44</td>
<td>21</td>
<td>3</td>
<td>1</td>
<td>2015-16</td>
</tr>
<tr>
<td>Tot al</td>
<td>98</td>
<td>26</td>
<td>2</td>
<td>2</td>
<td>2015-17</td>
</tr>
</tbody>
</table>

**Table 2:** Total prevalence (%) of different types of gastrointestinal parasites in sheep and goat

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Gastrointestinal parasites</th>
<th>Total parasite found in sheep and goat</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><em>Strongyle</em> species</td>
<td>717</td>
<td>35.41</td>
</tr>
<tr>
<td>2.</td>
<td><em>Strongyloides</em> species</td>
<td>10</td>
<td>0.49</td>
</tr>
<tr>
<td>3.</td>
<td><em>Trichuris</em> species</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.</td>
<td><em>Toxocara</em> species</td>
<td>02</td>
<td>0.099</td>
</tr>
<tr>
<td>5.</td>
<td><em>Fasciola</em> species</td>
<td>90</td>
<td>4.44</td>
</tr>
<tr>
<td>6.</td>
<td><em>Amphistome</em> species</td>
<td>224</td>
<td>11.06</td>
</tr>
<tr>
<td>7.</td>
<td><em>Coccidia</em> and others</td>
<td>24</td>
<td>1.19</td>
</tr>
<tr>
<td>8.</td>
<td><em>Moniezia expansa</em></td>
<td>13</td>
<td>0.64</td>
</tr>
<tr>
<td>9.</td>
<td><em>Moniezia benedeni</em></td>
<td>07</td>
<td>0.35</td>
</tr>
</tbody>
</table>

**Fig 1:** Egg of *Fasciola* spp. showing operculum.  
**Fig 2:** Egg of *Toxocara* spp.
Due to helminthiasis, cause severe anaemia, bloody diarrhea and death to many domestic animals (Kumawat et al., 2006) [11]. The main nematodes recovered from the study were Strongyloides species, Trichuris species, Toxocara species and Trichuris species, on the other hand, reported high prevalence of amphistomes species commonly called as rumen flukes compared to Fasciola species in domestic animals. The main nematodes observed in the present investigation were Strongyloides species, Strongyloides species, Toxocara species and Trichuris species, the most common parasite found in large no. in the domestic ruminants compared to other parasites. The findings also similar with (Biu et al., 2009) [15]. Observed that Strongyloides species the most common parasite found in large no. in the domestic ruminants compared to other parasites. Examined that metacestodes are responsible for severe tissue damage, reduction in meat and milk production and considerable economic loss due to condemnation of the infected organs of herbivorous animals.

The only cestode observed in the ruminants was Moniezia species i.e Moniezia expansa and Moniezia benedeni. The occurrence of cestode species is very low compared to others gastrointestinal parasites (Keyyu et al., 2006 and Raza et al., 2014) [16, 20] and (Attindehou & Salifu, 2012) [3]. Observed that cestode infection was so high in Bening. The prevalence of oocysts of coccidia species reported in the current study was higher in cow than buffalo. This study states that infection of oocysts of coccidia species is less to others parasites. Present study have agreements with (Raza et al. 2014) [21]. Revealed that protozoans infection lower than others gastrointestinal infection in domestic animals. Present investigation revealed that nematode infection highly prevalent, followed by trematode, cestode and oocysts of coccidia species. Similar investigation have been reported in Maiduguri, Nigeria, Lafia Town and Environ, Nigeria and the Cholistan desert, Pakistan (Biu et al., 2009; Hassan et al., 2013 and Raza et al., 2014) [5, 9, 21].

Conclusion

In the present investigation revealed that Small ruminants were heavily infested with a variety of GI parasites including some that potentially entail substantial economic losses. Especially suckling animals carry a severe helminth burden, which indicates that particular attention should be paid to their management. In view of high prices, unavailability or accessibility of drugs and veterinary services, systematic deworming of animals with a broad-spectrum anthelmintic cannot be recommended to pastoralist. Therefore inexpensive locally applied measures such as the use of plant-based remedies against GI parasites should be systematically evaluated for their effectiveness against the most prevalent helminth species, so as to devise cheap but effective remedies that pastoralists can synthesize themselves and use regularly.

References


