Prevalence of Gastrointestinal Parasitic Infections in Cattle of Mahakaushal Region of Madhya Pradesh, India

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Abstract
Gastrointestinal (GI) parasitic infection in cattle is a worldwide problem as a cause of reduced productivity and profitability. The present study deals with the prevalence of various GI parasitic infections in cattle in the Mahakaushal region of Madhya Pradesh. A total of 1243 faecal samples collected during a period of one year revealed, 249 (20.03%) were positive for one or more gastrointestinal parasitic infection viz., Amphistomes (13.03%), Strongyle (5.47%), Moniezia (1.37%), Coccidia (1.21%), Fasciola (0.48%) and Toxocara vitulorum (0.16%) infection. Coproculture studies revealed that Haemonchus was predominant nematode followed by Oesophagostomum, Trichostrongylus, Strongyloides and Bunostomum. Seasonal prevalence revealed significantly higher (p < 0.01) prevalence in monsoon season (25.91%) than summer (21.40%) and winter (12.50%). Whereas, age wise prevalence was non-significantly higher in adult compared to young calves.

Key words; - Cattle, Gastrointestinal parasites, Prevalence, Madhya Pradesh

Introduction
Livestock plays an important role in Indian economy and about 20.5 million people depend upon livestock for their livelihood. Among the different types of livestock species, cattle play a significant role in milk and meat production and skin and hide industry. Although India has a vast population of cattle but the productivity is not optimum and several factors like diseases, genetic makeup, poor nutritional, managerial practices, environmental stress, etc., are responsible for the low productivity of our livestock (Wadhwa et al., 2011). Among all of these, GI parasitism is one of the major health problems as a consequence of reduced weight gain, digestive disturbance, lowered production, impaired reproductive performance, condemnation of affected organs, mortality particularly in calves and high production cost due to the use of drugs. The present study was undertaken to assess the prevalence and seasonal distribution of GI parasites of cattle in the Mahakaushal region of Madhya Pradesh.

Materials and methods
A total of 1243 faecal samples were collected from different localities in the Mahakaushal region of Madhya Pradesh during one year period from April 2016 to March 2017. Samples were collected...
at monthly interval directly from the rectum and examined by standard concentration techniques employing faecal floatation and sedimentation and examined for the presence of eggs / oocysts of GI parasites (Soulsby, 1982). A representative number of faecal samples were pooled in equal quantities and used for coproculture. Culture larvae were harvested using Bearmann's apparatus and were identified as per the key of Soulsby (1982). Suitable statistical technique was performed on prevalence data by applying $\chi^2$-test as described by Snedecor and Cochran (1994).

Results and Discussion

Out of 1243 faecal sample of cattle examined during the period of one year, 249 (20.03%) samples were positive for different GI parasitic infections. More or less, similar observation was reported by Muraleedharan (2005) in Karnataka. Contrary to these findings, high rate of parasitism in cattle was reported earlier by Marskoleet al. (2016) and Jamra et al.(2017) in Madhya Pradesh. The difference in the prevalence rate of GI parasite in this study might be different in managemental practices adopted in different agro-climatic conditions, seasons and number of animals included in study. The eggs of Amphistomes where found predominant (13.03%) followed by Strongyle (5.47%), Moniezia (1.37%), Coccidia (1.21%), Fasciola (0.48%) and Toxocara (0.16%) (Table 1). The maximum prevalence of Amphistomes infection with lesser percentage of other common infections in the present study is in agreement with Titi et al. (2010) and Kuchay et al. (2011). Higher prevalence of Amphistomes infection may be ascribed to presence of molluscan intermediate host

Table 1: Prevalence of gastrointestinal parasitic infections in cattle of Mahakaushal region of Madhya Pradesh

<table>
<thead>
<tr>
<th>Factors</th>
<th>No. Examined</th>
<th>Positive (%)</th>
<th>Strongyle (%)</th>
<th>Toxocara (%)</th>
<th>Fasciola (%)</th>
<th>Amphistome (%)</th>
<th>Moniezia (%)</th>
<th>Coccidia (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Season wise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer</td>
<td>430</td>
<td>92 (21.40)</td>
<td>18 (4.19)</td>
<td>1 (0.23)</td>
<td>2 (0.47)</td>
<td>74 (17.21)</td>
<td>0 (0)</td>
<td>7 (1.63)</td>
</tr>
<tr>
<td>Monsoon</td>
<td>413</td>
<td>107 (25.91)</td>
<td>32 (7.75)</td>
<td>0 (0)</td>
<td>3 (0.73)</td>
<td>66 (15.98)</td>
<td>13 (3.15)</td>
<td>6 (1.45)</td>
</tr>
<tr>
<td>Winter</td>
<td>400</td>
<td>50 (12.50)</td>
<td>18 (4.50)</td>
<td>1 (0.25)</td>
<td>1 (0.25)</td>
<td>22 (5.50)</td>
<td>4 (1)</td>
<td>2 (0.50)</td>
</tr>
<tr>
<td>$\rho$ value</td>
<td>df=2</td>
<td>&lt;0.01</td>
<td>&lt;0.05</td>
<td>NS</td>
<td>NS</td>
<td>&lt;0.01</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Age wise</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Adult</td>
<td>928</td>
<td>193 (20.80)</td>
<td>54 (5.82)</td>
<td>2 (0.22)</td>
<td>4 (0.43)</td>
<td>132 (14.22)</td>
<td>10 (1.08)</td>
<td>5 (0.54)</td>
</tr>
<tr>
<td>Calf</td>
<td>315</td>
<td>56 (17.78)</td>
<td>14 (4.44)</td>
<td>0 (0)</td>
<td>2 (0.63)</td>
<td>30 (9.52)</td>
<td>7 (2.22)</td>
<td>10 (3.17)</td>
</tr>
<tr>
<td>$\rho$ value</td>
<td>df=1</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>&lt;0.05</td>
<td>NS</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Overall</td>
<td>1243</td>
<td>249 (20.03)</td>
<td>68 (5.47)</td>
<td>2 (0.16)</td>
<td>6 (0.48)</td>
<td>162 (13.03)</td>
<td>17 (1.37)</td>
<td>15 (1.21)</td>
</tr>
</tbody>
</table>

Figures in parentheses indicate per cent.
in the surroundings, use of contaminated water for drinking purpose and grazing of the animals in and around infected water bodies in this area. Coproculture studies of the pool faecal samples revealed that *Haemonchus* sp. (41.1%) as the predominant nematode larvae followed by *Oesophagostomum* sp. (24.3%), *Trichostrongylus* sp. (17.4%), *Strongyloides* sp. (6.0%), *Bunostomum* sp. (5.5%) and other 5.7 per cent (Figure 1). Predominance of *Haemonchus* sp. parasites in coproculture examination has also been reported by Yadav et al. (2008).

The seasonal prevalence of GI parasitic infection revealed significantly (p< 0.01) higher in monsoon season (25.91%), followed by summer (21.40%) and lower in winter (12.50%) (Table 1). These findings are in agreement with Shirale et al. (2008) who recorded higher incidence of parasitic infection during monsoon season. Higher incidence of GI parasitic infection during monsoon season may be due to environmental factors like temperature, humidity and rainfall which are favourable for the survival of the developmental stages of these GI parasites. In this study, the prevalence of Amphistomes infection in summer season significantly (p < 0.01) higher (17.21%) followed by monsoon (15.98%) and winter (5.50%). Similar observation has also been recorded by Mir et al. (2013). The geographical and climatic conditions like temperature, rainfall, humidity, etc. and availability of intermediate host in water bodies in this area may play important role in such type of incidences. The prevalence of strongyle infection in monsoon season significantly (p < 0.05) high (7.75%) followed by winter (4.50%) and summer (4.19%). This study is in agreement with Muraleedharan (2005) and the reason might be favourable conditions for development of larvae. Age wise prevalence was non-significantly (p>0.05) higher in adult cattle (20.80%) as compared to the calves (17.78%). This study is in agreement with Marskole et al. (2016). Prevalence of Amphistomes was significantly (p<0.05) higher in adult cow as compared to calves, whereas coccidia was significantly (p<0.01) high in young calves than adults. Vanisri et al. (2016) reported that the adult cattle were highly infected with Amphistomes than the young animals. The variations in prevalence on age basis can be attributed to group composition along with the use of management practices and immune status of animals.

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**Conflict of Interest:** All authors declare no conflict of interest.

**References:**


