Zoonotic diseases of infectious origin in zoo animals pose big risk for domestic animals and man in vicinity, as more than 150 recognized zoonotic diseases in wild animals are maintained under a single facility in a zoo (Acha and Szyfres 1987). Parasitic diseases of wildlife constitute one of the major problems in management causing mortality and morbidity in wild animals in captivity (Rao and Acharjyo, 1984). Very little information is available on the epidemiology of different parasitic diseases in zoo animals in India (Chhangani et al., 2001; Kumar et al., 2005; Singh et al., 2006). These infections in wild animals can affect directly through various pathological effects (blood loss, tissue damage, spontaneous abortion, congenital malformations, death) and indirectly by reducing host condition (Singh et al., 2009).

Keeping in view the importance of parasitic infections, present study was planned to assess their prevalence in different species of herbivores and carnivores at Sanjay Gandhi Biological Park in Patna, India.

Faecal samples from herbivore (Rhinoceros, hippopotamus, nilgai, sambar, black buck, spotted deer) (171 samples) and carnivore (Lion, tiger, leopard, golden cat, fishing cat, fox, wolf, hyaena, bear) (114 samples) animals were collected during winter (November - February), summer (March - June) and monsoon (July - October), to know the occurrence of gastrointestinal parasitism. The samples were collected from individual animals and were transported to the laboratory in cold condition. Parasitic analysis was done using standard qualitative (sedimentation and floatation) technique as per the method of Soulsby (1982). Data were analyzed by employing $\chi^2$ test as described by Snedecor and Cochran (1968).

The zoo animals of Sanjay Gandhi Biological Park (SGBP), Patna indicated significant parasitic infection in both herbivorous and carnivorous wild animals. Out of 171 samples of herbivorous animals screened for the presence of parasitic eggs, 18 (10.52%) were found positive for parasitic eggs. Whereas out of 114 samples of carnivores examined, 14 (12.3%) were positive for parasitic infestation. Seasonal variation

**Prevalence of Parasitic Infections in Zoo Animals of Sanjay Gandhi Biological Park, Patna**

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**ABSTRACT**

The study was conducted to assess the prevalence of parasitic infection in zoo animals of SGBP, Patna. Examination of 285 fecal samples from herbivores and carnivores collected during summer, monsoon and winter season revealed 10.52% of herbivores and 12.3% of carnivores to be positive for different gastrointestinal parasites. The study also indicated the seasonal variation in the parasitic infections with maximum infection in monsoon and minimum during winter season in both herbivore and carnivore animals.

**Keywords:** Parasite prevalence, parasitic zoonoses, zoo animals.
studies revealed that parasitic infections were highest during monsoon i.e. 19.29% and 23.68% and lowest during winter season i.e. 3.5% and 2.63% respectively, among the herbivores and carnivores. The prevalence was found significantly higher (p<0.01) in young males compared to females in carnivores, whereas there was no significant difference in adult male and female herbivores. However, the overall prevalence was significantly higher (p<0.01) in adult herbivores as compared to young ones (Table 1). The carnivores also showed the similar pattern of infection with significantly higher (p<0.01) prevalence in adult male and female carnivores (Table 1).

Significantly higher prevalence of parasitic infection during monsoon (Table 1) indicates that the climatic conditions were favourable for the development and maturation of parasites. Such types of variations in parasitic prevalence among zoo animals were also reported by Chauhan et al. (1973), Henriksen and Andersen (1986) and Prasad (2004).

Preliminary study on the presence of parasites among zoo attendants indicated them to be infected with the parasites (data not shown). It may indicate the possibility of exchange of parasites from zoo animals to man and vice-versa which need to be explored. This type of zoonotic relationship for these parasites has also been found to be significant in adult male and female carnivores (Table 1).

Table 1. Prevalence of parasitic infection among carnivore and herbivore zoo animals

<table>
<thead>
<tr>
<th>Sex</th>
<th>Age</th>
<th>Winter</th>
<th>Summer</th>
<th>Monsoon</th>
<th>Overall</th>
<th>χ²</th>
<th>Winter</th>
<th>Summer</th>
<th>Monsoon</th>
<th>Overall</th>
<th>χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Adult</td>
<td>8.33 (1/12)</td>
<td>16.66 (2/12)</td>
<td>25.00 (3/12)</td>
<td>16.66 (6/36)</td>
<td>8.33*</td>
<td>0.00 (0/18)</td>
<td>5.55 (1/18)</td>
<td>16.66 (3/18)</td>
<td>7.40 (4/54)</td>
<td>9.24**</td>
</tr>
<tr>
<td></td>
<td>Young</td>
<td>0.00 (0/8)</td>
<td>0.00 (0/8)</td>
<td>12.50 (1/8)</td>
<td>4.16 (1/24)</td>
<td>3.79</td>
<td>0.00 (0/8)</td>
<td>0.00 (0/8)</td>
<td>25.00 (2/8)</td>
<td>8.33 (2/24)</td>
<td>8.50**</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>5.00 (1/20)</td>
<td>10.00 (2/20)</td>
<td>20.00 (4/20)</td>
<td>11.66 (7/60)</td>
<td>8.38*</td>
<td>0.00 (0/26)</td>
<td>3.84 (1/26)</td>
<td>19.23 (5/26)</td>
<td>7.69 (6/78)</td>
<td>12.53**</td>
</tr>
<tr>
<td>Female</td>
<td>Adult</td>
<td>0.00 (0/11)</td>
<td>9.09 (1/11)</td>
<td>27.27 (3/11)</td>
<td>12.12 (4/33)</td>
<td>11.73**</td>
<td>10.00 (2/20)</td>
<td>15.00 (3/20)</td>
<td>25.00 (5/20)</td>
<td>16.66 (10/60)</td>
<td>8.82**</td>
</tr>
<tr>
<td></td>
<td>Young</td>
<td>0.00 (0/7)</td>
<td>14.28 (1/7)</td>
<td>28.57 (2/7)</td>
<td>14.28 (3/21)</td>
<td>7.15*</td>
<td>0.00 (0/11)</td>
<td>9.09 (1/11)</td>
<td>9.09 (1/11)</td>
<td>6.06 (2/33)</td>
<td>5.44</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>0.00 (0/18)</td>
<td>11.11 (2/18)</td>
<td>27.77 (5/18)</td>
<td>12.96 (7/54)</td>
<td>9.65**</td>
<td>6.45 (2/31)</td>
<td>12.90 (4/31)</td>
<td>19.35 (6/31)</td>
<td>12.90 (12/93)</td>
<td>6.45</td>
</tr>
<tr>
<td></td>
<td>Young</td>
<td>0.00 (0/15)</td>
<td>6.66 (1/15)</td>
<td>20.00 (3/15)</td>
<td>8.88 (4/45)</td>
<td>8.62*</td>
<td>0.00 (0/19)</td>
<td>5.26 (1/19)</td>
<td>15.78 (3/19)</td>
<td>7.07 (4/57)</td>
<td>6.75*</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>2.63 (1/38)</td>
<td>10.52 (4/38)</td>
<td>23.68 (9/38)</td>
<td>12.28 (14/114)</td>
<td>18.16**</td>
<td>3.50 (2/57)</td>
<td>8.77 (5/57)</td>
<td>19.29 (11/57)</td>
<td>10.52 (18/171)</td>
<td>4.39</td>
</tr>
</tbody>
</table>

Differs significantly *p<0.05, **P<0.01
Figures in parenthesis indicates number of samples found positive and total number of samples examined, respectively.
been reported by Choubis and Chubisa (1992) and Garg et al. (2003).

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References


