Impact of seasons and different microhabitat on Thelandros infections in the house lizard (Hemidactylus flaviviridis) of Jodhpur district, Rajasthan

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ABSTRACT The influence of seasons and different microhabitat on the infectivity of the nematode, Thelandros in Hemidactylus flaviviridis was evaluated for one annual cycle in Jodhpur district, Rajasthan. Seasonal study consequences the incidence of Thelandros was higher in the rainy season (60.29%) whereas lowest during winter (20%). Microhabitat wise study shows that hosts trapped from university residential areas and urban areas have the high infective rate of 54.71% and 48.78% respectively. Whereas hosts trapped from village houses and farmhouses have the least infectivity of 39.47% and 38.46% for the same. The study hence indicated that the seasons and different habitats act as the most influencing extrinsic factors for Thelandros infections in H. flaviviridis in the Jodhpur district, Rajasthan.

Keywords: Thelandros, Microhabitats, Seasonal variations, Hemidactylus flaviviridis.

Introduction Various types of reptiles are found in hot atmospheres everywhere throughout the world. House lizards (H. flaviviridis) are generally found in human houses and are intently connected with them. Wall lizards are typically nocturnal, great quick climbers and near the human residence, where they mostly feed on insects. Domrow et al. (1980) reported that house lizards, as other vertebrates, are susceptible to parasitic infections in their living space. Rataj et al. (2011) have shown that contamination with different parasites assumes a key part in reptiles and numerous components add to the development and spread of parasites. Mihalca et al. (2007) showed that reptiles have an extensive variety of endoparasites. Ameh et al. (1991) reported that parasites of house lizards represent a hazard to human and other residential animals. Sharma and Pathak (1976) reported that the wall lizards play a fundamental role of a reservoir for Salmonella. In this manner, immediate and indirect contact with local house lizards is clearly a hazard to human wellbeing. The parasitic fauna of Indian reptiles has been considered by a few workers. Saxena and Nama (1978) detailed numerous reptile nematodes from Rajasthan. Manohar and Rajeshwara (1996) reported that poikilothermic hosts are effectively affected by climatic components. Sinha (2005) and Chandra et al. (2006) considered the impacts of the seasons on helminthic contaminations in reptiles. Bhaskar and Gupta (2008) reported that the levels of parasitic infections in the hosts do not depends just on characteristic factors yet additionally on ecological variables. Recently, Gambhir et al. (2013) demonstrated the seasonal dynamics of the Thelandros maplestonei in the house lizards in relation to temperature and rainfall. Various examinations have been directed to discover environmental impacts on helminth contaminations, however, almost no data is accessible on the impact of various microhabitats and seasons on Thelandros infection in wall lizards. The present examination deals with seasonal variation, incidence and distribution of the Thelandros infectivity in wall lizards in relation to different microhabitats in the locale of Jodhpur district.

Materials and methods For the present examination, H. flaviviridis were captured with hand nets arbitrarily from the distinctive microhabitats of Jodhpur region amid March 2016 to February 2017. The captured hosts were brought to the research laboratory for parasitological examination. The house lizards were euthanized with chloroform-drenched cotton and the gastrointestinal tract prodded carefully for the recovery of nematodes. Obtained nematodes were washed in normal saline, at that point fixed in glycerine-alcohol. For additionally handling and slides prepared by the methods of Gibson (1984). Nematodes were identified under the compound microscope. Just sexually develop nematodes were checked in the present examination.

Results and discussion During the study, it was observed that H. flaviviridis is susceptible to the endoparasite infestation in all seasons with different infectivity levels. Out of 158 individuals, a total of 248 Thelandros were recovered from 74 house lizards with the incidence of 46.83% as shown in Table 1.
The seasonal incidence study showed that *Thelandros* parasitize host during the study year; however, variations do occur in different seasons. The incidence of *Thelandros* infection was extensively high during the rainy season (60.29%) and lowest during the winter (20%) showed in Table 1. In another hand microhabitat wise study reveals that hosts caught form University residential areas have the highest infection of 54.71%, while hosts trapped at farmhouses have the lowest infectivity of 38.46% (Table 2).

Temperature influences a wide variety of expansion and development processes of parasites (Esch *et al.*, 1977). Sinha (2005) reported that the intensity of nematode to be relatively higher during pre-monsoon. Fontes *et al.* (2003) also reported that lizards get more infections during the wet season. Gambhir *et al.* (2013) opined that temperature and rainfall plays a vital role for nematode infections in house lizard and recorded the highest prevalence in monsoon. High infection in the monsoon may be due to more feeding accessibility for the host. The lower incidence of infection in winter may be due to fewer chances of fresh infection and hibernation of the host (Rajeshwari, 2005).

Chandra *et al.* (2006) showed the helminth fauna of amphibian and reptiles, concluded that *H. flaviviridis* had 92.59% total prevalence of *Thelandros*. Since the present outcomes are in consensus with workers mentioned above, still the dissimilarity in seasonal variation can be ascribed to the lacking accessibility of intermediate host and ecological conditions of territory. The present study in relation to microhabitat, demonstrates that different habitat for host has a significant impact on nematode infections and distribution. *Thelandros* infection was recorded highest in intense human population areas like university residential areas (54.71%) and urban residential areas (48.78%). In low-density population areas, hosts were less infected with *Thelandros* like village houses (39.47%) and farmhouses (38.46%).

<table>
<thead>
<tr>
<th>seasons</th>
<th>host examined</th>
<th>host infected</th>
<th>% infection</th>
<th>total worm</th>
<th>mean worm burden</th>
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<tbody>
<tr>
<td>summer</td>
<td>45</td>
<td>21</td>
<td>46.66666667</td>
<td>71</td>
<td>3.380952381</td>
</tr>
<tr>
<td>rainy</td>
<td>68</td>
<td>41</td>
<td>60.2941176</td>
<td>143</td>
<td>3.487804878</td>
</tr>
<tr>
<td>autumn</td>
<td>25</td>
<td>8</td>
<td>32</td>
<td>23</td>
<td>2.875</td>
</tr>
<tr>
<td>winter</td>
<td>20</td>
<td>4</td>
<td>20</td>
<td>11</td>
<td>2.75</td>
</tr>
<tr>
<td>Total</td>
<td>158</td>
<td>74</td>
<td>46.83544443</td>
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<th>microhabitat</th>
<th>host examined</th>
<th>host infected</th>
<th>% infection</th>
<th>total worm burden</th>
<th>mean worm burden</th>
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</thead>
<tbody>
<tr>
<td>university residential</td>
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<td>29</td>
<td>54.71698113</td>
<td>104</td>
<td>3.586206897</td>
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<tr>
<td>urban residential</td>
<td>41</td>
<td>20</td>
<td>48.7804878</td>
<td>62</td>
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<tr>
<td>village houses</td>
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<td>15</td>
<td>39.47368421</td>
<td>48</td>
<td>3.2</td>
</tr>
<tr>
<td>Farmhouses</td>
<td>26</td>
<td>10</td>
<td>38.46153846</td>
<td>34</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Therefore, the present study has an agreement with Gambhir *et al.* (2013) in relation to the seasonal influence of nematodes. House lizards in human habitations have been found to be harmful to humans.

Table 1. Season-wise incidence % and total worm burden.

Table 2. Structure wise incidence % and worm burden

Figure 1. Microhabitat wise infection % in different seasons
Conclusion

The present investigation demonstrates that house lizards are usually tainted with *Thelandros* in all seasons consistently. This study reveals that seasons, distinctive living space, a high incidence of host and dense human population significantly affect the infectivity of the host. The house lizards being found in human residence expressed that man can be tainted through unhygienic food and water which can be infected by faeces, salivation or incidentally ingesting the egg. In this manner, this calls for health awareness against house lizards in human residence.

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