A PRELIMINARY FAUNASTIC STUDY ON SERGENTOMYIA SAND FLIES OF MALEH AREA OF SHOUSH COUNTY, SOUTH WEST OF IRAN, 2010

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(Accepted 5 May 2012)

ABSTRACT – There are many published paper regarding roles of Sergentomyia genus in the transmission of infectious diseases in the different countries. Maleh area of Shoush County, south-west of Iran was studied from point of Sergentomyia faunestic in this research project. In the current research study 6 species of Sergentomyia were recognized of 486 collected sand flies. Therefore, it is concluded that further faunistic study of Sergentomyia sandflies in Khozestan, sw of Iran, is a basic point, because CL is endemic in this province and Papatasi fever has been reported from this province.

Key words: Sergentomyia, Leishmaniasis, faunistic study, south west Iran

INTRODUCTION

Sand flies are divided into two groups according to geographical concepts: old world and new world sand flies. They are comprised of six genera: Phlebotomus, Sergentomyia and Chinius in the Old World and Lutzomyia, Brumptomyia and Warileya in the New World (Parvizi and Amirkhani, 2008).

The more concerns have been doing on Phlebotomus genus other than Sergentomyia in Iran, however both sand-fly genera have been collected from same area at the same time and this is because of definite role of Phlebotomus genus in the transmission of leishmaniasis in Iran rather than Sergentomyia genus. However, there are many published paper regarding roles of Sergentomyia genus in the transmission of infectious diseases in the different countries.

Most species of Sergentomyia feed on reptiles and birds and some feed on mammals (Parvizi and Amirkhani, 2008). Therefore, they could potentially be the vectors of zoonotic diseases such as encephalitis viruses Chandipura (Geevarghese et al., 2005), kala-azar (Kakarsulemankhel et al., 2008), Leishmania major (Berdjane-Brouk, 2012, Mukherjee et al., 1997) and lizard leishmaniasis transmission (Seyedi-Rashti et al., 1994).

Consequently, the taxonomy and correct identification of sergentomyia sand flies should become of significant value in the study of epidemiology of the infectious diseases in human and animals. Therefore, Maleh area of Shoush County was studied from point of Sergentomyia faunestic in this research project. The special objectives of the present study regarding to the Sergentomyia sand flies were to determine the species diversity, relative population density and sex ratio in Maleh area of Shoush County. These factors provide basic epidemiologic information to make vector population control and recognizing a programs to reduce the incidence of infectious diseases in the region.

MATERIAL AND METHODS

Study area:

The investigation was carried out in 2010 in Maleh area of Shoush county (48° 24’ E, 32° 19’ N), with 87 m above mean sea level, which is located in Khozestan Province, southwest of Iran. Shoush County is about 3557 square kilometer and its population is 89,060 on 2008 with a hot and dry climate. The majority of people’s occupations in this region are agriculture and and livestock farming (http://fa.wikipedia.org).

Sand fly collection and identification:

The entomological studies were conducted in Maleh area of Shoush county (October 2010). Sand flies were collected using sticky traps (castor oil-coated white papers 20cm x 30cm) from indoors and outdoors. The traps were set at dusk and collected at dawn. Sand flies were removed from the traps, rinsed in acetone and then conserved in 70% ethanol. Sex of all specimens were determined and then mounted as permanent microscopy slides, using Purí’s medium (Smart 1965). The species identified using the keys of Lewis (Lewis 1982), Nadim and Javadian (Nadim and Javadian 1976) and Seyedi-Rashti and Nadim (Seyedi-Rashti and Nadim 1992).
RESULTS

In this faunistic entomological study, totally 486 sand flies, including 73 (15.02%) Sergentomyia and 413 Phlebotomus (84.98%) were collected from outdoor and indoor places. The Sergentomyia insects were included 45 females (61.64%) which collected from out door (38, 84.44%) and (7, 15.56%) indoor places and 28 males(38.36%) which collected from out door (15, 53.57%) and (13, 46.43%) indoor places. In the current research study 6 species of Sergentomyia were recognized of 486 collected sand flies. The rest of them were of Phlebotomus. The most frequent Sergentomyia species was S. sintoni followed by S. antennata, S.clydei, S.dentata, S. tiberiadis and S. mervynae. The results are summarized in the table 1.

The sex ratios (number of males/females x 100) of S. sintoni and S.clydei, 400 and 100, in the indoor places, respectively and 34.3and 50 in the outdoor places for S. sintoni and S. antennata, respectively.

DISCUSSION

In the current study 6 species of Sergentomyia have been collected (table 1). S.sintoni was the most predominant Sergentomyia sand fly species, which were collected in this study. This result is similar to the other studies with respect to S.sintoni as the predominant species of Sergentomyia (Rassi, 2008).

From point of species composition, the results of this study are similar to the other studies of Iran, which have been carried out in the nearly areas and adjoining countries.


Javadian et.al. have reported 11 species of Sergentomyia in their study from Ilam as an . They were S. sintoni, S.dentata, S.antennata, S.theodori, S.mervynae, S.pawlowskyi, S.africana, S.clydei , S.tiberiadis , S.iranica and S.squatnipleurs an adjoining province (Javadian et.al. 1997).

In another study in and around Kuwait city only was found one species associated with human habitations: Sergentomyia antennata (Lane, 1983). This species has been reported in the current study from Maleh area of Shoush in Khozestan. Kuwait has not border line with Iran, but is very near to Khozestan province and both regions have similar climate.

In another study which was carried out in Iraq, the authors have identified the Sergentomyia only by genus level and reported that there were included 25%- 60% of all collected sandflies per month during their study (Coleman, 2007).This showed that there should be a very rich biodiversity of Sergentomyia in Iraq that is very similar to the present study which reported 6 species of Sergentomyia from Maleh area. Iraq climate is very similar to Khozestan province of Iran which has border line with Iraq. This is a reason for the reported sand flies with a very rich biodiversity in both countries, regarding Sergentomyia sandflies.

In another study which was carried out in Palestine, the authors have reported 4 species of Sergentomyia sandflies including: S. theodori, S. fallax , S. tiberiadis and S. christophersi (Sawalha, 2003).

Table 1 : Frequency of Phlebotomus species of Maleh area of Shous County, 2010.

<table>
<thead>
<tr>
<th>Species</th>
<th>Indoors</th>
<th>Total</th>
<th>Outdoors</th>
<th>Total</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>males</td>
<td>%</td>
<td>females</td>
<td>%</td>
<td>males</td>
</tr>
<tr>
<td>S. sintoni</td>
<td>12 80</td>
<td>3 20</td>
<td>15 24.19</td>
<td>12 25.53</td>
<td>35 74.47</td>
</tr>
<tr>
<td>S. antennata</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
</tr>
<tr>
<td>S. clydei</td>
<td>1 50</td>
<td>1 50</td>
<td>2 66.67</td>
<td>0 0</td>
<td>1 100</td>
</tr>
<tr>
<td>S. tiberiadis</td>
<td>0 0</td>
<td>1 100</td>
<td>1 100</td>
<td>0 0</td>
<td>0 0</td>
</tr>
<tr>
<td>S. dentata</td>
<td>0 0</td>
<td>2 100</td>
<td>2 66.67</td>
<td>1 100</td>
<td>0 0</td>
</tr>
<tr>
<td>S. mervynae</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
<td>1 100</td>
</tr>
<tr>
<td>total</td>
<td>13 -</td>
<td>7 -</td>
<td>20 -</td>
<td>15 -</td>
<td>38 -</td>
</tr>
</tbody>
</table>
ACKNOWLEDGMENT

We are very thanks to the Dean of Medicine School and head of Medical Parasitology department of Ahvaz Jundishapur University of Medical Sciences to provide finance support of this research study.

REFERENCES


