

Survey and Population Density of Some Ectoparasites Associated with Rodents in Animal Production Farm, Assiut University

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Key words: Rodents, during spring and summer Ectoparasites, Rattus r. seasons by 40.96% and frugivorus, Rattus r. alexandrinus 27.39% and the lowest one

Abstract: during winter by 9.58%. In both species of rodent females exhibited higher numbers of ectoparasites because of females are larger and less active than males.

Introduction
Rodent ectoparasites play an important role in transmitting certain diseases to human and animals. Understanding of reservoir host and their ectoparasites will provide a clue for control of diseases in a given area (Shayan and Rafinejad, 2006). Rodents are associated with ectoparasites belonging to different species of Acari and Insecta. In Argentina there are relatively few records of ectoparasites of wild rodents where mites, ticks and fleas were studied simultaneously. (Castro *et al.*, 1987 and Lareschi, 2000).The arthropod ectoparasites of

The present study was carried out at animal production farm, Assiut University during the period of 2007 to 2009. Two dominant species of rodent were included in the study, white bellied rat, *Rattus rattus frugivorus* and grey rat, *Rattus rattus alexandrinus* with density of 69.16% and 30.84%. The rodent ectoparasites were found to be fleas, lice, ticks and mites. The dominant species of fleas were the oriental rat flea, *Xenopsylla cheopis* and the human flea, *Pulex irritans*. The highest average densities of ectoparasites associated with white bellied rat were observed in autumn and spring by 34.08% and 27.99%, and the lowest one was observed in winter by 15.62%. The highest average densities of ectoparasites associated with grey bellied rat were observed

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Referees: Prof.Dr.: Mohamed A. Ahmed rodents are important vectors of many pathogenic microorganisms and can also act as important reservoirs for parasitic zoonoses, like trichinellosis and capillariosis. Increased rodent population in an area can be directly related to the increased zoonotic diseases in human population. Some parasites are transmitted through contact with infected rodent urine or faeces, others through arthropods. *Rattus rattus*, *Rattus norvegicus* and *Mus musculus* can serve as vectors of zoonotics and many other diseases and may represent serious risks to the human and his domestic animals. Rats are usually infected with a number of zoonotic parasites, including Cryptosporidium, Pasturella, Listeria, Yersinia and Hantavirus, and represent a potential risk to the health of humans and domestic animals. (Beg *et al.*, 1983; Webster & MacDonald, 1995 and Stojcevic, *et al.*, 2004). Most medically important rodents belong to the families of Muridae and the Cricetidae. Rodents play a role in many diseases, such as plague which transmitted by the rat flea, *Xenopsylla cheopis* and Weil's disease, a severe form of leptospirosis transmitted via infected rat urine. (Bell *et al.*,

Prof.Dr.: Elsaied A. M. EL Eraky 1988; Vatandoost *et al.*, 2003 and Telmadarraiy *et al.*, 2004) The present study aimed to survey the rodent ectoparasites in addition to study the population density of some ectoparasites associated with rodents.

Materials and methods

Rodents were trapped monthly from animals folds of the animal production farm at Assiut University from 2007 to 2009. Traps were baited with favorable food of rodents such as slides of tomato or white bread and distributed at night. The positive traps were collected and transported to the laboratory. In the laboratory, rodents were separated into males and females. Five males and five females of both species (i.e., *R.r.frugivorus* and *R.r.alexandrinus*) were anesthetized in jars containing a cotton pad with chloroform and then brushed in a deep white plate using a relatively hard brush. After collecting of the ectoparasites the materials were transferred in plastic bags containing 70% ethyl alcohol and labeled with necessary informations. The ectoparasites were classified to fleas, lice, mites and ticks and identified using a keys illustrated by certain authors.

Results and Discussion

The survey of rodent species in the animal production farm shows the presence of two dominant species of rodents, the white bellied rat, *Rattus rattus frugivorus* that represented 69.16% of the rodent population and the second species was the grey bellied rat, *Rattus r. alexandrinus* that represented 30.84%. Absence of other species such as *Arvicanthis niloticus* may be due mainly to the vicinity of crop farms and the competition between *Rattus r. frugivorus* and the Nile grass rat, *Arvicanthis niloticus*. Data in Table (1) revealed the presence of some ectoparasites extracted from rodent species in the Faculty of Agricultural Farm, the extracted materials were found to be, eight species of mites (*Amerosieus* sp., *Hypoaspis smithii*, *Ornithonyssus bacoti*, *Rhizoglyphus echinopus*, *Glycyphagus* sp., *Myocoptes* sp., *Tarsonemus* sp. and *Cheyletus zaheri* belonging to eight families of mites and two species of hard tick, *Amblyomma* sp. and *Haemaphysalis* sp. pertaining to the family Ixodidae. On the other side, three species of fleas (*Xenopsylla cheopis*, *Leptopsylla segnis*, *Pulex*

irritans) and two species of lice (*polyplax spinulosa*, *Haplopleura oenonydis*) were also collected from the same rodent species. The results show also that, *Haplopleura oenonydis*, *Pullex irritans*, *Hypoaspis smithii* and *Amblyomma* sp. were collected only from *R.r. alexandrinus*, but these species were absence from *R.r.frugivorus*. Abdel-Gawad and Maher Ali (1982) studied the same ectoparasites collected from the body of rodents in agreement with the present findings.

Table (2) emphasized an average seasonal abundance of some ectoparasites collected from the white bellied rat, *Rattus r. frugivorus*. The collected ectoparasites were found to be fleas, lice, mites and ticks. The captured fleas were the oriental rat flea, *Xenopsylla cheopis* and the human flea, *Pulex irritans*. The study of rodent ectoparasites density showed that the high density of ectoparasites in *Rattus r. frugivorus* was observed in autumn 34.08% from the population studied followed by spring 27.99% and summer 22.31%. The lowest population was recorded during winter 15.62%.

Male rodents were found to be harboured the highest density of ectoparasites in March and the lowest one in January while in female rodents the highest density was recorded in October and the lowest one were noticed in January. Data from the same Table showed that the high population of fleas was noticed during autumn with 34.08% followed by spring 27.99% and the lowest one was observed during winter with 12.50%. The study of the other ectoparasites such as lice, mites and ticks showed the same trend of fleas. The comparative study between males and females showed that there was an increase in rate of infestation by females than males.

Data in Table (3) show the ectoparasites species on the body surface of the grey bellied rat, *Rattus r. alexandrinus*. From this Table the high density of ectoparasites was recorded during spring season followed by summer and autumn with 40.96%, 27.39% and 22.07%, respectively. The lowest density was observed during winter by 9.58%. Male rodents were found to be harboured the highest density of ectoparasites in June and the

lowest one in September, while in female rodents the highest density was found in both rodent species in April and the lowest one in January. The study of all collected ectoparasites showed that the high density of fleas was observed during winter in the case of males by 35% and during autumn in females with 36.11% and the lowest density was observed during spring 6.15% in males and in spring by 11.24% in females (Table 2). In the other side, the density of lice species showed that moderate population was observed during summer in males with 38.73%, and in females the densities were 43.85% and 30.54% during spring and autumn. The lowest densities in both sexes were observed during winter with 11.56% in males and 7.88% in females.

In general, high population of rodent ectoparasites were recorded in white bellied rat than in grey rat, this may be due mainly to the high numbers of the former than the latter in addition to its increasing weight and size, wholly in agreement with results obtained by Maher Ali *et al.*, (1982) and Abdel Gawad *et al.*, (1987).

Table (1) Survey of ectoparasites extracted from two rodent species in Animals Production Farm, Assiut University, 2007-2009.

Species	<i>R.r.frugivorus</i>	<i>R.r.alexandrinus</i>
Insecta		
A-Lice		
<i>Polyplax spinulosa</i>	+	+
<i>Haplopleura oenonydis</i>	-	+
B-Fleas		
<i>Xenopsyllae cheopis</i>	+	+
<i>Leptopsylla segnis</i>	-	+
<i>Pullex irritans</i>		
Acari		
A-Mites		
Ameroseiidae	+	-
<i>Amerosieus</i> sp	+	
Dermanyssidae	-	+
<i>Ornithonyssus bacoti</i>		
Laelapidae	(2) Astigmata	+
<i>Hypoaspis smithii</i>		
Acaridae	+	+
<i>Rhizoglyphus echinopus</i>	+	+
Glycyphagidae	+	+
<i>Glycyphagus</i> sp		-
Listrophoridae	(3) Prostigmata	+
<i>Myocoptes</i> sp		+
Cheyletidae	+	-
<i>Cheyletus zaheri</i>	+	
Tarsoemidae	-	
<i>Tarsonemus</i> sp	+	
B-Ticks		
Ixodidae		
<i>Amblyomma</i> sp		
<i>Haemaphysalis</i> sp		

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حصر وكثافة عددية لبعض الطفيليات الخارجية المصاحبة للقوارض في مزرعة الإنتاج الحيواني ، جامعة أسيوط

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ملخص:

تم إجراء هذه الدراسة في مزارع الإنتاج الحيواني بجامعة أسيوط خلال موسمي
2008/2007 و 2009/2008 لحصر الطفيليات الخارجية المصاحبة للقوارض
وقد أظهرت النتائج:

وجود نوعين من القوارض السائدة هما الجرذ المتسلق ذو البطن البيضاء
ويمثل 69.16% والجرذ المتسلق الرمادي 30.84% و ذلك لقرب المحاصيل
الحقلية و نخيل البلح.
أظهرت الدراسة وجود طفيليات خارجية علي القوارض تنقسم إلي طفيليات
حشرية مثل البراغيث والقمل وطفيليات حيوانية مثل القراد والحلم ومن الأنواع
السائدة من البراغيث هو برغوث الفار الشرقي مقارنة ببرغوث الإنسان.
وفي الجرذ المتسلق ذو البطن البيضاء كان أعلى متوسط كثافة للطفيليات
الخارجية في العامين
هي فصل الخريف و الربيع 34.08% و 27.99% على التوالي ي بينما سجلت
أقل كثافة في فصل الشتاء 15.62% .
وفي الجرذ المتسلق ذو البطن الرمادي كان أعلى متوسط كثافة للطفيليات
الخارجية في فصل الربيع والصيف 40.96% و 27.39% على التوالي، أيضا
كانت أقل كثافة في فصل الشتاء 9.58% وأوضحت النتائج أنه لا يوجد
اختلاف ملحوظ في الكثافة العددية للطفيليات الخارجية في عامي الدراسة. ولوحظ
أن الكثافة العددية للطفيليات الخارجية كانت أكثر على إناث القوارض من
الذكور، و هذا يرجع إلي قلة حركتها و تواجدها بالجحور.