

## RESEARCH ARTICLE

# A Study on Ectoparasites Associated on the White Bellied Rat, *Rattus rattus* Frugivorus Captured from the Houses at Sohag Region, Sohag Governorate, Egypt

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## ABSTRACT

The present study was carried out to study ectoparasites infesting the white bellied rat, *Rattus rattus* frugivorus captured from the houses at Sohag region, Sohag Governorate, Egypt. The results found two species of mites *Ornithonyssus bacoti* and *Dermanyssus* sp., infested the white bellied rat which captured from the study area. Furthermore, the study of ectoparasites from insects shows that two species of fleas were *Xenopsylla cheopis* and *Pulex irritans* and two of lice were *Polyplax spinulosa* and *Haplopleura oenonydis* infested the captured rats.

**Key words:** *Dermanyssus* sp., *Ornithonyssus bacoti*, *Polyplax spinulosa*, *Rattus rattus* frugivorus, *Xenopsylla cheopis*

## INTRODUCTION

Rodents play an important role in disease transmission by their urine, feces, bite, and ectoparasites. Different disease agents of bacteria, rickettsia, viruses, protozoa, and helminthes can be transmitted by rodents to human and animals. Some examples of such diseases are plague, leptospirosis, salmonellosis, rat-bite fever, leishmaniasis, Chagas' disease, Omsk hemorrhagic fever, murine typhus, and Lassa fever (Bell *et al.*, 1988). The close association of commensal rodents with human and domestic animals is a risk factor for transmission of these diseases. Rodent is considered as the main reservoir host of zoonotic cutaneous leishmaniasis and plague. Knowledge on reservoir host and their ectoparasites will provide a clue for control planning of diseases in a given areas. There are a few documented papers on ectoparasites of rodent different regions (Tajedin *et al.*, 2009). The aim of this study was to identify for external parasite

species on *Rattus rattus* frugivorus captured from the houses.

## MATERIALS AND METHODS

### Study area

The present study was carried out to study ectoparasites infesting the white bellied rat, *R. rattus* frugivorus captured from the houses at Sohag region, Sohag Governorate, Egypt.

### Rat capturing and classification

The method of Soulsby, 1982, was adopted using locally made metal traps (live trap) to capture the rats. Traps were baited with vegetables and bread. Traps were placed in rodent activity areas such as kitchens and corridors. The rats were transported to the laboratory in perforated metal boxes to provide good ventilation and allow conducive environment for the animals in transit. Rats were identified and classified to specie level using the method of Meerburg *et al.*, 2009. The study was carried out using 50 rats (*R. rattus* frugivorus) during 2019

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from February till October. It is the period of rodent activity during the year.

### Survey for ectoparasites

The ectoparasites study was carried out using the method of Soulsby, 1982. Captured rodents were subjected to euthanasia under diethyl ether anesthesia. The unconscious rats were placed on a clean white tile. Starting from the head to the neck, trunk and the tail, ectoparasites were dislodged from the rats body by brushing with the aid of hand brush onto cotton wool soaked in formalin. Visible ectoparasites such as ticks that could easily be removed without brushing were removed with a pair of forceps. The ectoparasites recovered were preserved in specimen bottles containing 70% alcohol, the parasites were sorted and transferred to the microscope slide for identification. Identification of mites and ticks was done using different keys constructed by Hoogstraal and Kaiser (1958), Zaher (1986a and b), and Evans (1992).

### RESULTS AND DISCUSSION

Data in Table 1 found two species of mites *Ornithonyssus bacoti* and *Dermanyssus* sp., infested the white bellied rat which captured from the study area. Furthermore, the study of ectoparasites from insects shows that two species of fleas were *Xenopsylla cheopis* and *Pulex irritans* and two of lice were *Polyplax spinulosa* and *Haplopleura oenonydis* infested the captured rats. Results similar with Vatandoost *et al.* (2003) and Telmadarraiy *et al.* (2004) found that most medically important rodents belong to the families of Muridae and the Cricetidae. Rodents play a role in many diseases, such as plague, transmitted by the rat flea *X. cheopis* and Weil's disease, a severe form of leptospirosis transmitted through infected rat urine. Dada (2016) showed that this study has shown that infestation of rodents by ectoparasites is of serious zoonotic importance. Rodent and rodent-borne parasites may become more serious in human population, zoonotic transmission of these rat-borne parasites is exacerbated in communities where standards

**Table 1:** Types of external parasites identified on *Rattus rattus frugivorus*

Rat ectoparasites	Species
Lice	<i>Polyplax spinulosa</i> <i>Haplopleura oenonydis</i>
Fleas	<i>Xenopsylla cheopis</i> <i>Pulex irritans</i>
Mites	<i>Ornithonyssus bacoti</i> <i>Dermanyssus</i> sp.

of environmental and personal hygiene are not maintained.<sup>[1-11]</sup>

### CONCLUSION

Infestation of the white bellied rat, *R. rattus frugivorus* with various types of external parasites (lice, fleas, and mites) may transmit some common diseases to humans or animals. From these results, an integrated control program for the white bellied rat must be established inside the houses.

### REFERENCES

- Bell JC, Plamer SR, Payne JM. The Zoonosis: Infection Transmitted from Animal to Man. London UK: Edward Arnold Press; 1988.
- Dada EO. Study on the ectoparasites and haemoparasites of domestic rats in parts of Akure south local government area of Ondo state. Int J Clin Chem Lab Med 2016; 2:1-5.
- Evans GO. Principles of Acarology. Wallingford: CAB International; 1992. p. 522.
- Hoogstraal H, Kaiser MN. The ticks (Ixodidae) of Egypt a brief review and keys. J Egypt Public Health Assoc 1958;33:52-85.
- Meerburg BG, Singleton GR, Kijlstra A. Rodent-borne diseases and their risks for public health. Crit Rev Microbiol 2009;35:221-70.
- Soulsby EJ. Helminthes, Arthropods and Protozoa of Domesticated Animals. 7<sup>th</sup> ed. London: Bailliere Tindal; 1982. p. 367-703.
- Tajedin L, Rassi Y, Oshaghi MA, Telmadarraiy Z, Akhavan AA, Abai MR, *et al.* Study on ectoparasites of *Rhombomys opimus*, the main reservoir of zoonotic cutaneous leishmaniasis in endemic foci in Iran. Iran J Arthrop Borne Dis 2009;3:41-5.
- Telmadarraiy Z, Bahrami A, Vatandoost H. A survey on fauna of ticks in West Azer-baijan Province, Iran. Iran J Public Health 2004;33:65-9.
- Vatandoost H, Ghaderi A, Javadian E, Zahirnia AH, Rassi Y, Piazak Y, Kia EB, *et al.* Distribution of soft ticks

- and their infection with *Borrelia* in Hamadan Province, Iran. Iran J Public Health 2003;32:22-4.
10. Zaher MA. Survey and Ecological Studies on Phytophagous, Predaceous and Soil Mites in Egypt. II-A: Predaceous and Non-predaceous Mites in Egypt (Nile Vally and Delta). School of Biological Sciences; 1986a. p. 567.
  11. Zaher MA. Survey and Ecological Studies on Phytophagous, Predaceous and Soil Mites in Egypt. III: Mites of Sinai. School of Biological Sciences; 1986b. p. 36.