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Mamatha GS

Assistant Professor, Centre of
Advanced Faculty Training,
Department of Veterinary
Parasitology, Veterinary College,
Hebbal, Bengaluru, Karnataka,
India

Jaya N Lakkundi

Assistant Professor, Centre of
Advanced Faculty Training,
Department of Veterinary
Parasitology, Veterinary College,
Hebbal, Bengaluru, Karnataka,
India

Sunitha CR

MVSc Scholar, Centre of
Advanced Faculty Training,
Department of Veterinary
Parasitology, Veterinary College,
Hebbal, Bengaluru, Karnataka,
India

Yuvaraja TY

MVSc Scholar, Centre of
Advanced Faculty Training,
Department of Veterinary
Parasitology, Veterinary College,
Hebbal, Bengaluru, Karnataka,
India

Jayashri V

MVSc Scholar, Centre of
Advanced Faculty Training,
Department of Veterinary
Parasitology, Veterinary College,
Hebbal, Bengaluru, Karnataka,
India

Myreddy Nikhil

MVSc Scholar, Centre of
Advanced Faculty Training,
Department of Veterinary
Parasitology, Veterinary College,
Hebbal, Bengaluru, Karnataka,
India

Corresponding Author:**Mamatha GS**

Assistant Professor, Centre of
Advanced Faculty Training,
Department of Veterinary
Parasitology, Veterinary College,
Hebbal, Bengaluru, Karnataka,
India

Incidence of bedbug (*Cimex lecturalis*) infestation in a poultry farm in Karnataka State

Mamatha GS, Jaya N Lakkundi, Sunitha CR, Yuvaraja TY, Jayashri V and Myreddy Nikhil

Abstract

An investigation was carried out to study the incidence of bed bug infestation in a poultry farm situated in Kunigal taluk of Tumkur district in Karnataka state. The poultry farm consisted of 25,000 parent broiler birds aged around 66 weeks. The farm had a history of presence of bed bugs in cracks and crevices of the poultry sheds. The birds were showing scratching on the body in less than 25.0 percent of the flock with decreased body weight. The collected bed bugs were identified as *Cimex hemipterus* based on the standard morphological characters. Based on laboratory confirmation, the owner was advised to clear the parents stock immediately. The bed bugs present in the cracks and crevices were destroyed by burning with the flame. The use of permethrin spray to the entire poultry sheds, floors, walls and bird cages aimed in control of bed bugs infestation very effectively.

Keywords: *Cimex lecturalis*, incidence, infestation, poultry farms, Karnataka

Introduction

In recent decades, bedbugs have re-emerged globally as an obligate hematophagous ectoparasites. They are wingless belonging to the Order Hemiptera, family Cimicidae and genus *Cimex* [1]. These bedbugs are of both medical and veterinary importance primarily causing the loss of blood and discomfort by their feeding habitats on vertebrate hosts. There are 91 species grouped under the family Cimicidae and are arranged in 23 genera. Most of them are parasites of bats or birds. The genus *Cimex* parasitizes both mammals and birds. Twelve of the genera are found only in the New World, nine only in the Old World and two *Cimex* and *Oeciacus* in both [2]. The 21 species of *Cimex* are mainly parasites of bats with one species parasitic on birds and the bedbugs *Cimex lecturalis* and *Cimex hemipterus* which feed on humans. The two important species viz., *C. hemipterus* (Syn: *Cimex rotundatus*) is a tropical bedbug parasitic on humans and chickens in the Old and New World tropics [3] but only rarely of bats and *C. lecturalis* is a cosmopolitan species of temperate and subtropical regions associated primarily with humans, bats, chickens and other domestic animals [2]. Many authors have reported inhabitant of bedbugs and in particular *C. lecturalis* in human settlement areas from abroad [4, 5]. In India, the history on bedbugs has been reviewed [6]. The present study investigates on occurrence of bed bugs infestation, morphological identification and control in a poultry farm in Karnataka State.

Material and Methods

During this study, the bedbugs were collected in a 70% ethyl alcohol from a private poultry farm situated in Kunigal taluk of Tumkur District in Karnataka State. The poultry farm consisted of 25,000 parent broiler birds aged around 66 weeks and were housed in an open farm cage system. The poultry farm had a history of presence of bedbugs in the cracks and crevices of the poultry shed, scratching in less than 25.0% of the flock and decreased bodyweight gain. In the laboratory, the bedbugs were subjected for clearing by boiling in 10% KOH [3]. The boiled bedbugs were washed in distilled water to remove the traces of KOH. Then, they were subjected to ascending grades of alcohol from 50%, 60%, 70%, 80%, 90% and absolute alcohol for 15 minutes each. The bedbugs were cleared in clove oil for 5 minutes and mounted with phenol: balsam (1:1) for further morphological identification.

Results

In the present study, an adult male, females and different nymphal stages were observed. The bedbugs were identified based on morphological characters as per standard keys [1, 2]. The adult bugs were oval in shape, dorsoventrally flattened and reddish brownish in colour. In adults, the head bears long four segmented antennae, of which the first segment scape is short, the second segment pedicel, the third flagellum and the fourth distal flagellum are very long (Fig.1) Compound eyes are placed on lateral sides and are widely separated. Ocelli are absent. The labium is three segmented and is reflected back under the head reaching the first coxae.



Fig 1: Adult male bedbug a) Antennae b) Scape c) Pedicel d) Flagellum e) Compound eyes f) Labium

The thorax consists of three parts. The prothorax is wide, deeply notched and surrounds the posterior part of the head. The mesothorax is triangular in shape with the base directed towards pronotum and the apex directed backwards (Fig. 2). Laterally, hemelytral pads are present. The abdominal segments are eight with smooth hairs on the dorsal surface. There are paired abdominal spiracles on the ventral side. In females, on the posterior border of the fifth abdominal segment, paragenital sinus is present. In males, only the left paramere is developed at the posterior end of the abdomen (Fig. 3A & B). There is no corresponding structures either in male or female bedbugs. The legs are slender, with three segmented tarsi in the adults.

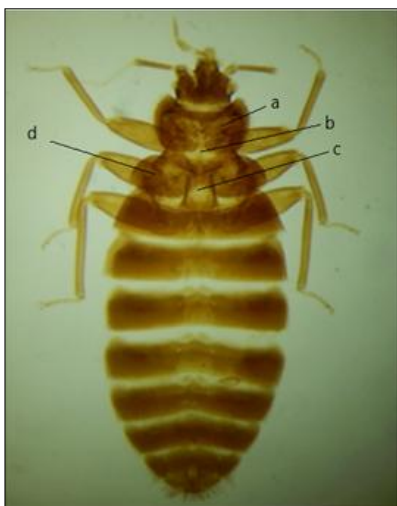


Fig 2: Adult female bedbug a) Prothorax b) Mesothorax c) Metasternum d) Hemelytral pads

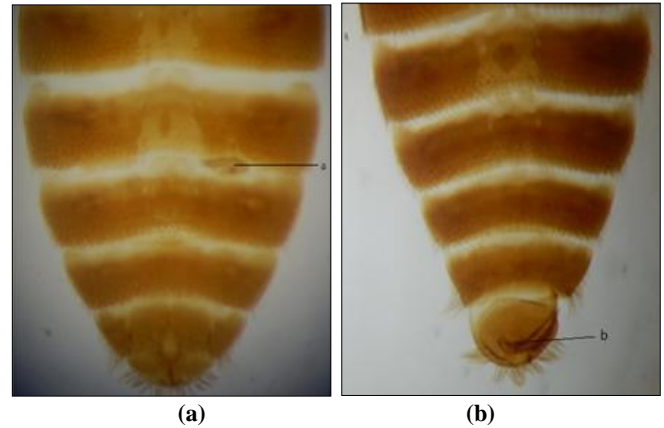


Fig 3: Female and Male abdominal segments A) Fifth abdominal segment showing paragenital sinus B) Left paramere at the posterior end of abdomen

In the present study, the nymphal stages were creamish white in colour, the legs were slender with two segmented tarsi. The first nymphal instars were pale yellow in colour and measured 1.5 mm in length. The second nymphal instars measured 2 mm in length. The third nymphal instars measured 2.5 mm in length and slightly darker (Fig. 4). Based on the above morphological characters, the bedbugs were identified as *C. lecturalis*.



Fig 4: Nymphal instar

To control the *C. lecturalis* infestation in poultry sheds, the poultry farm owner was advised to clear the parent stocks immediately. The whole poultry sheds, floors, walls and bird cages were sprayed with permethrin as per manufacturer's instruction. The bedbugs present in the cracks and crevices were destroyed by burning with the flame. The working personnel did not complain about itching or development of rashes on their body. However, they were advised to use gumboots while cleaning the poultry sheds with personal hygiene.

Discussion

The bedbugs are gregarious and frequently encountered in large numbers. They live in crowded areas and are usually associated with favourable conditions such as crevices and cracks of the buildings, furnitures, water or drainage pipelines. During this study, the bedbugs were identified as *C. lecturalis*. Either birds or working personnel had shown much

pathological effects. Since, during the day the bedbugs hide in crevices and cracks of debris, buildings and cages. Only they seek the host during night for the blood meal. They become very active during night, and feed during the day when hungry^[2]. This particular behavior of bedbugs probably has led to less exposure time to the working personnels. Though, the birds were exposed for longer duration to bedbugs, since all the birds were in 66 weeks age and was advised to clear the birds. Therefore, the pathogenic effects observed in the birds may be very meagre. The spraying of insecticide permethrin to the poultry sheds and burning of crevices and cracks, water and drainage pipelines and cages completely destroyed the bedbugs.

The infestation with bedbugs, *C. lecturalis* in this particular poultry sheds could be attributed to the type of farming systems such as maintenance of sheds under open farm system which has facilitated the dispersion of bugs from the surrounding environment. Since, it is well known that *C. lecturalis* can travel long distances from their cracks and crevices of wood near the sleeping places of their hosts. In addition, they live long and can survive for long periods of starvation^[7]. During this incidence, the birds also did not show scratching because they do not usually cause any pain while feeding. The working personnel also did not evinced any symptoms like raised red papules at the feeding sites and itching. Because they sensitize the host to their saliva over a period of time and some individuals may not develop skin reactions^[8]. However, the control of cimicids either in human settlement areas or poultry sheds requires their identification and removal of the source of the bedbugs.

Conclusion

The *C. lecturalis* bedbugs were found to be commonly associated with birds reared under open type of cage system in a poultry farms. Further, the control of bedbugs in a poultry farm depends on exact identification, removal of source of infestation and implementation of appropriate control measures.

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References

1. Mullen G, Durden L. Medical and Veterinary Entomology. Academic Press, San Diego, California, USA and London NW1 7BY, UK, 2002, 80-84.
2. Kettle DS. Medical and Veterinary Entomology: Blood sucking Hemiptera (Bugs). 2nd Edition. CAB International Wallingford Oxon OX10 8DE UK, 1995, 344-360.
3. Patton WS, Cragg FW. A text book of Medical Entomology: International Books and periodicals supply Service. New Delhi 110005, 1984, 506.
4. Omudu EA, Kuse CN. Bedbug infestation and its control practices in Gbajimba: a rural settlement in Benue state, Nigeria. Journal of Vector Borne Diseases. 2010; 47:222-227.
5. Vaca AZ, Silva-Medina MM, Escandón-Vargas K. Bedbugs, *Cimex* spp.: their current world resurgence and healthcare impact. Asian Pacific Journal of Tropical Diseases. 2015; 5(5):342-352.
6. Kaushik S. A Small History of Bedbugs in India. Indian Journal of History of Science. 2018; 53:65-75.

7. Soulsby EJJ. Helminths, Arthropods and Protozoa of domestic animals. 7th Edition, 1982, 377.
8. Marquardt W, Demaree SR, Grieve BR. Parasitology Vector Biology: The Bugs: Order Hemiptera. 2nd Edition. Harcourt Academic Press. London NW1 7DX UK, 2000, 567.