Egg shell morphology of an amblyceran louse, Hohorstiella rampurensis (Phthiraptera) infesting ring dove, Streptopelia decaocta

Padam Singh, J agirti M adan and Nidhi Gupta*

Department of Zoology, Govt. Raza P. G. College, Rampur -244901 (U.P.), INDIA
*Corresponding author. E-mail: dnmidhigpta@gmail.com

Received: July 28, 2013; Revised received: December 17, 2015; Accepted: March 21, 2016

Abstract: Scanning electron microscopy (SEM) study showed that miniature rice grain like egg shell of Hohorstiella rampurensis was covered by obliquely placed opercular disc. The apophyses were present only on one side of the egg shell. There were 25-35 long elongated rod like apophyses (apically turned), which were arranged in 3-4 rows and occurred in pair. The nature of egg shell of H. rampurensis characteristically differed from that of H. lata (the only species of Hohorstiella studied, so far). The study further indicates about the role of egg morphology as a guide to louse taxonomy.

Keywords: Amblycera, Egg shell morphology, Lice, Microtopography, Phthiraptera

INTRODUCTION
The markings/ projections present on the egg cases of Phthiraptera are often species specific and can be used to differentiate the species (Balter, 1968 a, b). Selected workers have made attempts to record the microtopography of certain avian lice with the help of SEM (Bilinski and Jankowska, 1987, Castro et al., 1996, Zawadzka et al., 1997, Saxena et al., 2000, Kumar et al., 2003, 2007, Beg et al., 2004, Gupta et al., 2004, 2009, Rajput et al., 2010). The present report furnishes information on the egg shell morphology of an amblyceran louse, Hohorstiella rampurensis infesting ring dove, Streptopelia decaocta.

MATERIALS AND METHODS
Feathers bearing egg of H. rampurensis were gently cut form host body and teased out with the help of extremely sharpened entomological pins. Eggs were subjected to Scanning Electron Microscopy (SEM) studies following the method adopted by Gupta et al., (2009).

RESULTS
Eggs of H. rampurensis are generally found laid on the feathers belonging to nape, neck and head (fore parts) of the body. This louse lays eggs on the basal portion of the feathers on either side of calamus. Generally 1-2 eggs were observed on feathers. The eggs were glued medio-laterally. Thus, they lay straight and were inclined at 0-5o, with respect to rachis. The egg shells of H. rampurensis is a miniature rice grain (measuring 0.74-0.76 mm in length and 0.18-0.19 mm in width) (Plate I, Photo 1) like in appearance. The egg shell of H. rampurensis was quite smooth and devoid of sculpturing/ polar thread. Twelve to fourteen small button shaped micropyles (7 mm in diameter) were found arranged along the opercular rim (Plate I, Photo 3). The egg mouth was covered by a conical obliquely placed opercular disc (Plate I, Photo 2). However, the opercular disc was quite smooth and devoid of sculpturing/ polar thread. Twelve to fourteen small button shaped micropyles (7 mm in diameter) were found arranged along the opercular rim (Plate I, Photo 3). The egg mouth was covered by a conical obliquely placed opercular disc (Plate I, Photo 2). However, the opercular disc was quite smooth and devoid of sculpturing/ polar thread. Twelve to fourteen small button shaped micropyles (7 mm in diameter) were found arranged along the opercular rim (Plate I, Photo 3). The egg mouth was covered by a conical obliquely placed opercular disc (Plate I, Photo 2). However, the opercular disc was quite smooth and devoid of sculpturing/ polar thread. Twelve to fourteen small button shaped micropyles (7 mm in diameter) were found arranged along the opercular rim (Plate I, Photo 3). The egg mouth was covered by a conical obliquely placed opercular disc (Plate I, Photo 2). However, the opercular disc was quite smooth and devoid of sculpturing/ polar thread. Twelve to fourteen small button shaped micropyles (7 mm in diameter) were found arranged along the opercular rim (Plate I, Photo 3). The egg mouth was covered by a conical obliquely placed opercular disc (Plate I, Photo 2). However, the opercular disc was quite smooth and devoid of sculpturing/ polar thread. Twelve to fourteen small button shaped micropyles (7 mm in diameter) were found arranged along the opercular rim (Plate I, Photo 3).
Plate 1. SEM photographs of the eggs of Hohorstiella rampurensis showing: 1. Entire eggshell (x137), 2. Enlarged opercular end showing the nature of apophyses (x240), 3. Enlarged view of the opercular end (x315).

The egg shells of aforesaid species of Menacanthus exhibit differences in the nature of apophyses, polar thread, opercular disc and the micropyles. As far as the egg of genus Hohorstiella is concerned, only one species (pigeon louse, Hohorstiella lata) has been studied so far (Saxena et al., 2000). The egg shells of H. lata bore numerous spine like apophyses which were characteristically different from H. rampurensis. In case of H. rampurensis, the apophyses were present only on one side of the egg shell. The apophyses of apical region were quite long.
Plate II. SEM photographs of the eggs of Hohorstiella rampurensis showing: 1. Enlarged posterior portion showing nature of apophyses X127, 2. Enlarged rear end showing the nature of stigma X460, 3. Enlarged view of apophyses in the middle region of the egg shell X210.
and apically turned; apophyses occurring on the main egg shell occurred in pairs and remained bent. Moreover, the nature of opercular disc of H. rampurensis was also different from that of H. lata. The present study further supported the observations of Balter (1968 a) that egg morphology of avian lice can act as guide to louse taxonomy.

ACKNOWLEDGEMENTS

We thank to the Principal, Govt. Raza P. G. College, Rampur, India and Dr. A.K. Saxena, Department of Zoology, Govt. Raza P. G. College, Rampur, India for laboratory facilities.

REFERENCES