

The study on antennal sensilla of eight Acrididae species (Orthoptera: Acridoidea) in Northeast China

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Abstract

The types, numbers and distributions of antennal sensilla were studied in both male and female adults of eight Acrididae species in Northeast China using scanning electron microscope (SEM). Totally, there were thirteen types of sensilla found on the antennae. They were identified as trichoid sensilla (I, II), chaetic sensilla (I, II), basiconic sensilla (I, II, III, IV, V), cavity sensilla, coeloconic sensilla, boehm's bristles and paddle-shaped sensilla. The types of antennal sensilla in each Acrididae species ranged from nine to twelve. Each of the species had the same types of antennal sensilla in male and female, and males had more abundant basiconic sensilla, chaetic sensilla, coeloconic sensilla, cavity sensilla than females. *Acrida cinerea* had the largest total numbers of sensilla, and *Euthystria lueifemora* had the fewest. Boehm's bristles had a concentration in the base of the pedicel. Paddle-shaped sensilla had a concentration in the base of the scape. There were significant differences in the distribution of the other eleven types of sensilla.

Key words: Acrididae, antenna, sensilla, scanning electron microscopy

Introduction

Antennae of adult insect bear numerous sensory structures called sensilla, which are important sense organs for detection olfactory, tactile and auditory stimuli. During the 20th century, research on insect antennal sensilla developed rapidly, expanding our knowledge at sensilla types, ultrastructure, functions and the mechanism of sensory cell acceptors. At present, research on antennal sensilla mainly concentrates in Lepidoptera, Hymenoptera, Coleoptera, Homoptera and Diptera. In Orthoptera, research has mainly concentrated in the super family Acridoidea, and in particular, the family Acrididae.

Acrididae consists of 1700 genera, 7600 species. There are about 9 genera in Northeast China (Ren 2001), of which, *Chrysacris* is a unique genus of China in the world, it consists of 14 species, in which, 11 species distribute in Northeast China. In this study, we selected eight species which belong to five genera, and the types, numbers and distributions of antennal sensilla were studied using scanning electron microscopy (SEM). The aim is to find the differences among these eight species in their antennal sensilla.

Materials and Methods

Insects

The eight Acrididae species were all deposited in School of Life Sciences, Northeast Normal University, Changchun, China. The collection date, location and total number of samples are listed in Table 1.