

Morphology and distribution of antennal sensilla in a mealybug parasitoid, *Anagyrus* sp. near *pseudococci* (Hymenoptera, Encyrtidae)

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The antennae of adult insects have various types of sensilla with different functions in the various behaviors of adult life. Parasitoid females are known to rely on these important sensory receptors in their antennae to locate and select the host [1-3]. *Anagyrus* sp. near *pseudococci* (4) is a solitary endoparasitoid of pest mealybugs (Hemiptera, Pseudococcidae), such as *Planococcus ficus* (Signoret) and *P. citri* (Risso) [5]. The females of *A. sp. near pseudococci* were recently shown to respond to the sex pheromone of *P. ficus* and use this kairomonal cue in host location [5, 6]. However, little is still known about the antennal receptors that might be involved in the parasitoid host selection behavior.

In this study, using SEM (JEOL JSM 5200 LV), we describe the morphology and distribution of sensilla on the antenna of 18 females and 2 males of *A. sp. near pseudococci*.

Eight types of antennal sensilla were found on adult wasps. *Trichodea*, *placodea*, *basiconica*, and *chaetica* (type 1, type 3 and type 4) sensilla were observed in both sexes, while *chaetica* type 2 sensilla were present only in female wasps, and tridentate scale-shaped type sensilla were present only in males.

Detailed examination of sensilla morphological features, such as pore presence and numbers suggests that the multiporous sensilla, including *chaetica* type 3 and 4, *basiconica* and *placodea* may play a role in olfaction, whereas the uniporous *chaetica* sensilla of type 1 and 2 may act as contact chemoreceptors. The abundant and widely distributed *trichodea* sensilla are presumably mechanoreceptors. The females of *A. sp. near pseudococci* showed higher density of chemoreceptor sensilla than males, and these receptors were mainly distributed in the ventral side of the antenna club (tip). These differences may be related to infochemical detection (e.g. antennation) during the host selection behavior of female wasps, particularly the presence and distribution of *chaetica* sensilla of type 2, which are only present on females, and type 4.

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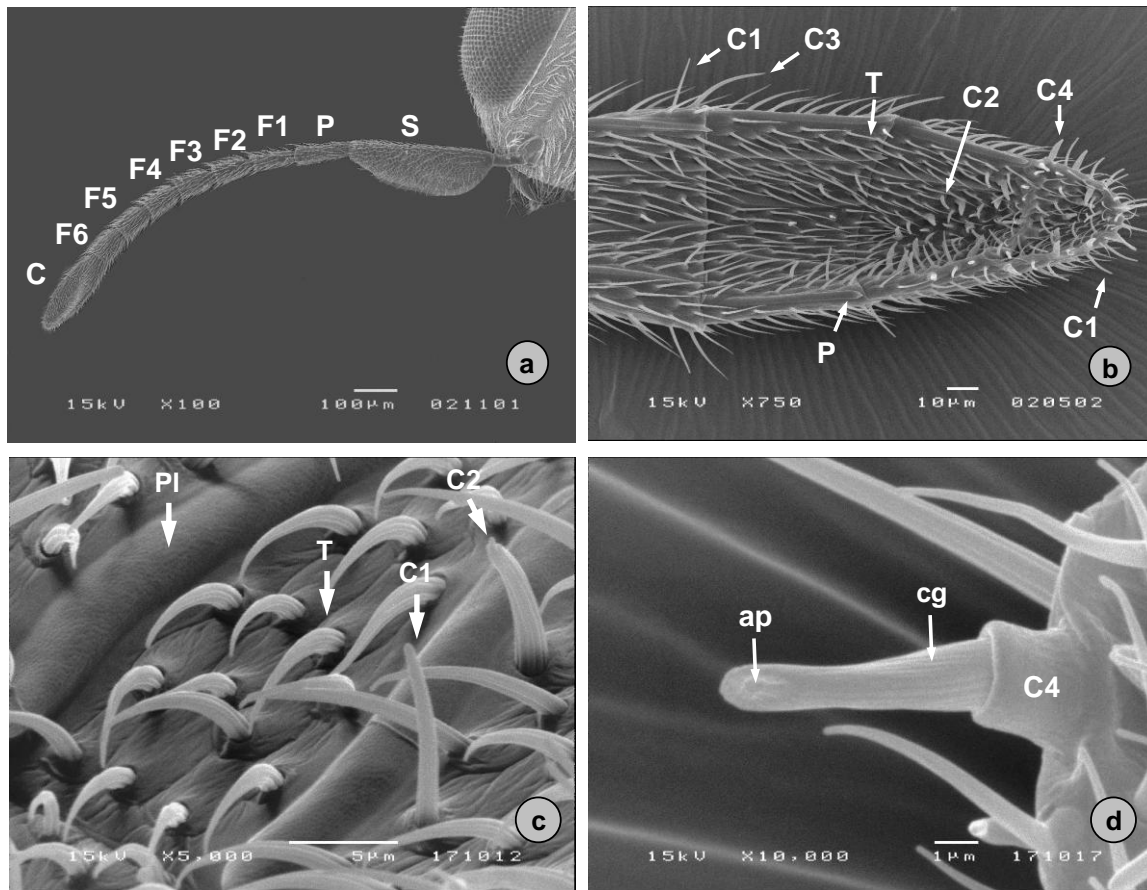


Figure 1. Antenna of *Anagyrus* sp. near *pseudococci* females.

a) Different antennal segments. S, scape; P, pedicel; F1-F6, funicle 1 to 6; C, club. SEM $\times 100$. Scale bar = 100 μm . **b)** Ventral side of the antennal club showing some types of sensilla. T, *trichodea* sensilla; PI, *placodea* sensilla; C1, *chaetica* sensilla type 1; C2, *chaetica* sensilla type 2; C3, *chaetica* sensilla type 3; C4, *chaetica* sensilla type 4. SEM $\times 750$. Scale bar = 10 μm . **c)** Detail of sensilla in the ventral side of the club. P, *placodea* sensillum showing multiple pores; T, *trichodea* sensillum with helicoidal cuticular grooves; C1, *chaetica* sensillum type 1; C2, *chaetica* sensillum type 2 showing longitudinal cuticular grooves and a sensillum projection with potential pore. SEM $\times 5000$. Scale bar = 5 μm . **d)** Detail of a *chaetica* sensillum type 4 with apical pore (ap) and cuticular grooves (cg). SEM $\times 10000$. Scale bar = 1 μm .