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Scanning Electron Microscopic study of Cibarial sense organs of *Verrallina* (*Neomacleaya*) *indica* (Theobald)

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Abstract
A detailed description of cibarium and its sense organs or papillae of *Verrallina* (*Neomacleaya*) *indica* (Theobald) have been illustrated for the first time with the aid of Scanning Electron Microscope. Ventral papillae are found to be absent. Rest of the other papillae i.e. palatal papillae, companiform papillae, dorsal papillae and trichoid papillae are explained along with their number and location.

Keywords: SEM, cibarium, papillae and species

Introduction
Genus *Verralllina* is reported from oriental region. Species of this genus are dark and without any kind of ornamentation. *Verralllina* and *Neomacleaya* originally described by Theobald in 1903. But Edwards (1913) [6] synonymized *Verralllina* and *Neomacleaya* under genus *Aedes* Meigen. Subsequently, Belkin (1962) [2] resurrected *Verrallina* as a distinct subgenus of *Aedes* and considered *Neomacleaya* as a synonym of *Verrallina.* However, Delfinado (1967, 1968) [4, 5] later resurrected *Neomacleaya* from *Aedes* and *Verrallina* and recognized it as a distinct subgenus of *Aedes*. Reinert restored *Verrallina* to generic rank and included *Neomacleaya* as a subgenus (Bhattacharyya *et al*., 2004) [3]. Adults of this species are found throughout India. The prevalence of this species is mainly climate dependent. Adult representatives of this species were reported first in the month of April and then followed by June. By the end of month October, the population goes on decreasing (Barraud, 1934) [1]. The immature stages are mostly collected from open pools and rain-filled ditches. Females of studied species are distinguished from those of other species by the following features: paratergite and postspiracular area with scales; postpronotum and mesokatepisternum without setae; mesepimeron with only 2-4 short fine setae posterior to the scale patch; abdominal terga II-IV each with a dorso-median transverse white scaled band, tergum V also occasionally with a similar band (Reinert, 1984) [7]. Studies of cibarial sense organs are the new additional characters to update its taxonomic status.

Materials and Methods
This study is based on specimens that were collected from district Punjab with the help of torch, test tube and oral aspirator. Then the specimens anesthetize, pinned on triangular edge with fevicol and preserved in insect boxes. The collected specimens were identified authentically and dissected for cibarial studies. For this purpose, the method given by Lee and Craig (1983) [8] with slight modification has been followed. The adult head was cut off from the body and boiled in 10% KOH solution till clearance. Dissected material washed several times. The head was placed on glass slide and dissection was completed under binocular microscope, cibarium is exposed by slowly apart the compound eyes and is located behind the clypeus. After washing with water, the dissected material dehydrated by ascending grades of alcohol and air dried. The specimen placed on stub in dorsal position coated with gold and scanned under (JSM-6510 LV) scanning electron microscope at Sophisticated Instrumentation Centre (SIC), Punjabi University, Patiala.

Fig 1: Cibarial Armature

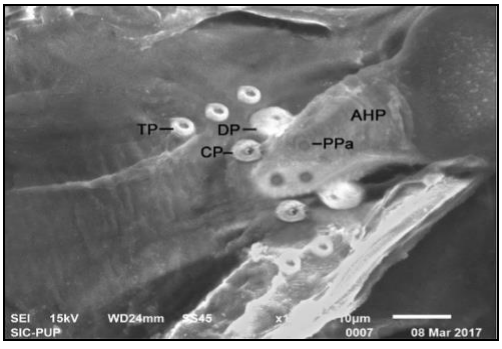

Fig 2: Antero-dorsal Membrane

Results and Discussions

The structure of cibarium is highly complex with the absence of cibarial teeth on the posterior margin. Cibarial sense organs showing the following details:

Palatal papillae: Deep sunken type, faded structures, 4 in number (all are apart from each other) on anterior dorsal hard palate.

Dorsal papillae: Located on the membranous dorsal wall of cibarium, 2 in number.

Campaniform papillae: These papillae were found in almost all mosquito species. The number of campaniform papillae is 2 and located one on each side of the posterior half of the hard palate of cibarium.

Trichoid papillae: These are 6 in number (3 on each side of the palate), socketed, rounded and are located lateral to campaniform papillae on anterior membranous dorsal wall of cibarium.

Ventral papillae: Absent.

From the above said findings, it seems possible that the study of cibarium will become satisfactory for identification purposes of culicine species.

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