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Significance of new taxonomic attributes on Cibarium of *Neomelaniconion lineatopenne* (Ludlow)

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Abstract
Scanning electron microscopic studies have been conducted on the cibarium of *Neomelaniconion lineatopenne* (Ludlow) to find new taxonomic attributes because cibarial characters are highly species specific. The number and location of different papillae i.e. palatal papillae, dorsal papillae, campaniform papillae, trichoid papillae and ventral papillae have been studied in detail in present communication.

Keywords: SEM, papillae, mosquito and cibarium

Introduction
Neomelaniconion lineatopenne (Ludlow) is a widespread species in both the Oriental and Afrotropical regions. Mattingly (1961) [4] stated that *lineatopenne* is capable of mass migration and that is the record for its wide distribution**.** The adult representatives of *lineatopenne* can be easily identified on the basis of broad lines of golden scales on each side of its mesonotum. Descriptions of larva and adult male and female of this species are already known (Tanaka *et al*., 1979) [5]. Huang (1985) published descriptions and illustration of female wing and male genitalia of the present species.
But no such studies, like cibarium have been done on this species. This species is of medical importance because it has been cited as a potential vector of epizootic Rift Valley Fever (RVF) in Kenya (Linthicum *et al*., 1985) [3], a suspected vector of Japanese encephalitis (JE) virus in the Malaysian peninsular (Vythilingam *et al*., 1997) [7], and an efficient laboratory vector of the dog heartworm, *Dirofilaria immitis* (Leidy) (Tippawangkosol *et al*., 1998) [8]. However, nothing is known about the important cibarial structures of this species, so far. During the present study scanning electron microscopic studies have been conducted on the cibarium for the first time.

Materials and Methods
During recent collection surveys conducted in Punjab state. As many as, five adult representative of the present species i.e. *Neomelaniconion lineatopenne* (Ludlow) were collected from the Amritsar district of Punjab. The species was dissected for study of cibarium in detail. For this method given by Lee and Craig (1983) [2] with slight modification has been followed. Before this, the head of female adult representative of this species was removed from the main body and potashed in 10% KOH solution for dissolving keratinized structures. The head was dissected and washed several times to remove the traces of KOH and cibarium was exposed slowly by pulling apart the compound eyes under a zoomed binocular microscope. After proper washing, the material was dehydrated in various grades of alcohol and air dried. After this, the material was 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.

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:

Cibarium of *Neomelaniconion lineatopenne* (Ludlow)

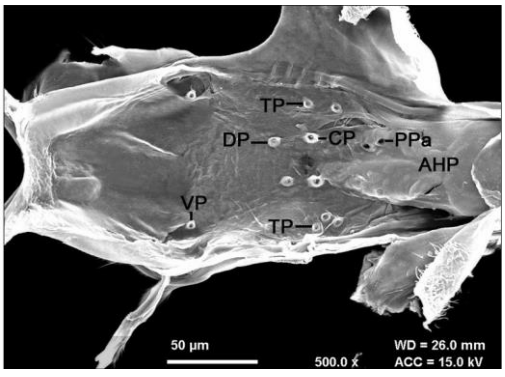

Fig 1: Cibarial amature

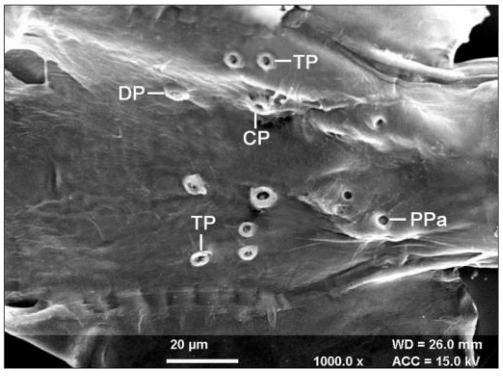

Fig 2: Antero-dorsal membrane

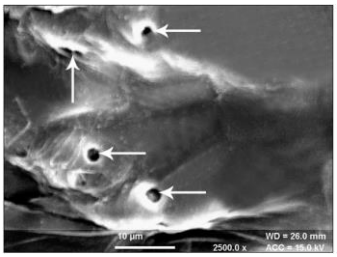

Fig 3: Palatal papillae

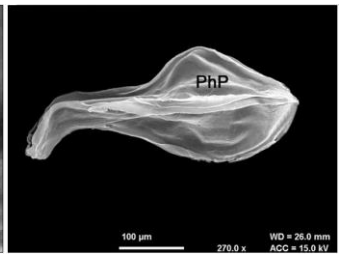

Fig 4: Pharyngeal pump

Palatal papillae: Deep sunken type, 5 in number (all are apart from each other) on anterior dorsal hard palate.

Dorsal papillae: In the present species, the number is 2 and located on the membranous dorsal wall of cibarium.

Campaniform papillae: These papillae were found in almost all mosquito species. But there number is species specific. In the studied 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: Rounded, socketed type and are located lateral to campaniform papillae on cibarium's anterior membranous dorsal wall. These are 5 in number (3 on one side and 2 on another side of the palate).

Ventral papillae: In the studied species, the number is 2 and located on the posteroventral wall of cibarium. These are very hard to locate due to the presence of thick layer of cuticle.
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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