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DORSAL PROCESS OF AEDEAGUS OF *CHREMISTICA* STAL (HOMOPTERA: CICADIDAE) FROM MALAYSIA

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ABSTRACT

Dorsal process of aedeagus or aedeagal process in four species of *Chremistica* Stal from Malaysia viz. *Chremistica umbrosa* (Distant), *Chremistica biloba* Bregman, *C. siamensis* Bregman and *Chremistica tridentigera* (Breddin) has been found and described. Location and position for dorsal process of aedeagus only for three species were illustrated.

ABSTRAK

Proses dorsal aedeagus atau aedeagal bagi empat spesies dari *Chremistica* Stal dari Malaysia iaitu *Chremistica umbrosa* (Distant), *Chremistica biloba* Bregman, *C. siamensis* Bregman dan *Chremistica tridentigera* (Breddin) telah ditemui dan diperihalkan. Lokasi dan posisi proses dorsal aedeagus telah dilutasikan hanya untuk tiga spesies.

INTRODUCTION

Aedeagus is a specific part that only occur in male insects. It is also recognized as penis or intromitten organ that is situated below the scaphium and enclosed in a sheath. In cicada, this part was first illustrated by Singh Pruthi in 1925 for *Chremistica pontianaka* (Distant). At that time, it was known as *Cicada pontianaka*. Generally, the function of the aedeagus is determined for reproduction process as a copulatory organ, but not specifically for dorsal process of aedeagus. For this moment, this dorsal process is recognized only as a special appendage for aedeagus, which only exist in a small number of species under *Chremistica* genus (Bregman 1985). However, function for this dorsal process is not studied yet.

This special process has been used as one of the important character since this aedeagal process or dorsal process of aedeagus absent in some species, in showing the phylogenetic relationships under *tridentigera* group (Bregman 1985). This special process also must be used as one character to differentiate among species in identification process, besides of other established characters in male genitalia of cicadas such as structure of medial and lateral clasper lobe, lateral pygofer lobe, uncus, aedeagus and basal pygofer lobe.

In Malaysia, 13 species of *Chremistic*a have been recorded earlier (Bregman 1985; Duffels & van der Laan 1985; Metcalf 1963; Salmah and Zaidi 2002), and out of these species, Bregmen (1985) only described four species which originated from Malaysia, i.e. *Chremistica umbrosa* (Distant), *Chremistica biloba* Bregman, *Chremistica siamensis* Bregman and *Chremistica tridentigera* (Breddin) with having dorsal process of aedeagus, that was known and referred to aedeagal process. However, this special process were observed in *Chremistica mixta* (Kirby), but then this species distributed in Sri Langka (Ceylon).

MATERIALS AND METHODS

Male genitalia for only ten species of *Chremistica* have been peer-checked i.e *Chremistica*. *pontianaka* (Distant), *Chremistica*

guamusangensis Salmah & Zaidi, *Chremistica nesiotes* Breddin, *Chremistica kecil* Salmah & Zaidi, *Chremistica bimaculata* Olivier (two males specimens donated from Zoological Museum Amsterdam (ZMA), *Chremistica tridentigera* Breddin, *Chremistica biloba* Bregman, *Chremistica umbrosa* (Distant), *Chremistica minor* Bregman and *Chremistica germana* (Distant) (was loaned from Museo Civico di Storia Naturale (MCSN) (Salmah et al. 2004). However, male genitalia for another three species (*Chremistica ochracea* (Walker), *Chremistica siamensis* (Bregman) and *Chremistica viridis* (Fabricius) were not checked because these were not kept under UKM repository. Eventhough, description for these special process was done based on the previous paper that was written by Bregman in 1985. Male genitalia for each species have been seen with using Image Analyzer program with Axiovision software. *C. tridentigera* (Breddin), *C. biloba* Bregman and *C. umbrosa* (Distant) have been detected with special appendage on the aedeagus, that was known as aedeagus dorsal process. Male genitalia of that species has been illustrated with using microscope camera lucida, and the dorsal process of aedeagus has been labeled. Description for this process in each species also should added.

RESULTS AND DISCUSSION

We found the dorsal process of aedeagus in three species from Malaysia under *Chremistica* genus viz. *Chremistica umbrosa* (Distant), *Chremistica biloba* Bregman and *Chremistica tridentigera* (Breddin). However, the special process only for three species were illustrated (Figs. 1-3), because no a single specimen were kept under Centre for Insect Systematics, Universiti Kebangsaan Malaysia (UKM) repository for *Chemistica siamensis* Bregman. Earlier Bregman (1985), reported this dorsal process present in this species, but he only draw but not label the process. We have to draw it clearly to show the location and position clear and description for this species based on previous description (Bregman 1985). Location and position of the dorsal process of aedeagus in *C. umbrosa* and *C. biloba* have been seen clearly after turn downward 80° apically the male genitalia from ventral view

(Figs. 1-2). For *C. tridentigera*, special process cannot be seen in the same direction of *C. umbrosa* and *C. tridentigera*. However, it has been observed after turn 30° laterally the male genitalia from ventral view (Fig. 3). Descriptions for the special process are listed below:

***Chremistica umbrosa* (Distant)** (Fig. 1)
Aedeagus with a subapical dorsal process and relatively short.

***Chremistica biloba* Bregman** (Fig. 2)
Aedegus with a subapical dorsal process and short.

***Chremistica tridentigera* (Breddin)** (Fig. 3)
Aedeagus with a subapical dorsal process and lanceolate.

***Chremistica siamensis* Bregman**
Aedeagus with broad subapical dorsal process.

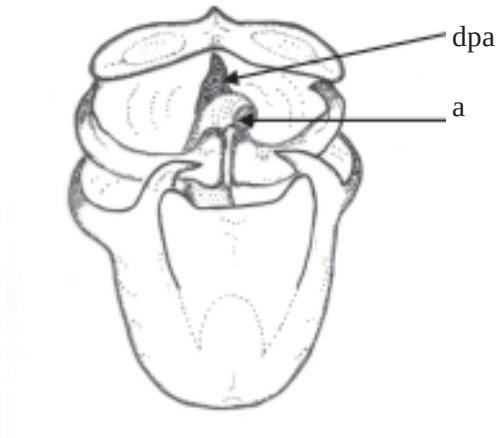

Fig. 1 Male genitalia of *Chremistica umbrosa* (Distant) from ventral view. Legend; dpa, dorsal process of aedeagus; a, aedeagus

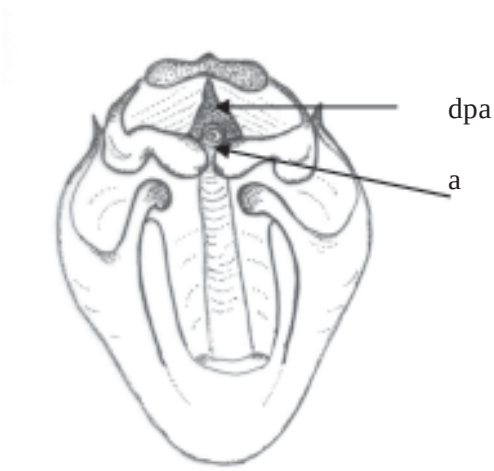

Fig. 2 Male genitalia of *Chremistica biloba* Bregman from ventral view. Legend: dpa, dorsal process of aedeagus; a, aedeagus.

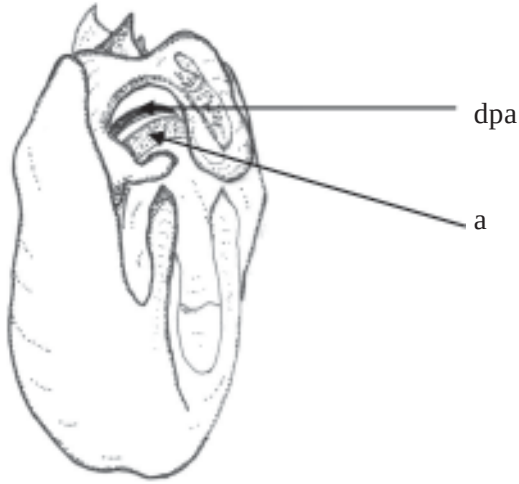

Fig. 3 Male genitalia of *Chremistica tridentigera* (Distant) from ventral view. Legend: dpa, dorsal process of aedeagus; a, aedeagus

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