



Taxonomy and molecular phylogeny of the *Amiota nagatai* species group (Diptera: Drosophilidae)

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Abstract

Three new species of the *Amiota nagatai* species group were described from southern China: *A. bachlii* Cao and Chen, **sp. nov.**, *A. chengyuuae* Cao and Chen, **sp. nov.** and *A. protuberantis* Cao and Chen, **sp. nov.** A key to all the species of this group was provided. The phylogenetic relationship in this group was investigated based on DNA sequences of the mitochondrial NADH dehydrogenase subunit 2 (*ND2*) gene, with two species of the genus *Amiota* taken as outgroups.

Key words: *Amiota nagatai* group, China, Molecular phylogeny, Taxonomy

Introduction

The *Amiota nagatai* species group was established by Chen & Toda (2001). As one of the smallest group within the genus *Amiota*, it consists of three known Oriental species recorded from Southern China (*A. nagatai* Okada, 1971, *A. okinawana* Okada, 1971), southern Japan (*A. nagatai*, *A. okinawana*, *A. kimurai* Chen & Toda, 2001) and Papua New Guinea (*A. okinawana*, *A. kimurai*) (Chen & Toda 2001; Chen *et al.* 2004, 2005). Species of this group exhibit unusual behavior of feeding on tree sap and attractableness to the eyes of human and other mammals (Chen & Toda 2001). In addition, one of these species, *Amiota nagatai* Okada, 1971 was reported as intermediate host of *Thelazia callipaeda*, which is a small nematode causing eye disease of cattle and dogs eleven years ago (Kamakura *et al.* 1998).

Chen and Toda (2001) regarded the *nagatai* group as monophyletic on the base of the paired, unbifurcated aedeagus shorter than paramere. By cladistic phylogenetic analysis of the subgenus *Amiota* (currently the genus *Amiota*) including all the three species of this group mentioned above, the same authors placed the *nagatai* group as most closely related to the *apodemata* plus *sinuata* groups of the same genus, while the relationship within this group was not resolved at all. In the present study, we describe three new species of the *nagatai* group from southern China, and investigate the relationship among the known and new species based on the DNA sequences of the mitochondrial NADH dehydrogenase subunit 2 (*ND2*) gene, using two species, i.e., *A. planata* Chen & Toda, 2001 from the *apodemata* species group and *A. sinuata* Okada, 1968 from the *sinuata* species group, as outgroups.

Materials and methods

Materials. Most of the specimens examined were collected on tree trunks, and deposited in Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, China (KIZ) and Department of Entomology, South