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# Host feeding patterns and preference of *Anopheles minimus* (Diptera: Culicidae) in a malaria endemic area of western Thailand: baseline site description

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## Abstract

**Background:** Host feeding patterns of *Anopheles minimus* in relation to ambient environmental conditions were observed during a 2-year period at Tum Sua Village, located in Mae Sot District, Tak Province, in western Thailand, where *An. minimus* is found in abundance and regarded as the most predominant malaria vector species. Detailed information on mosquito behavior is important for understanding the epidemiology of disease transmission and developing more effective and efficient vector control methods.

**Methods:** Adult mosquitoes were collected every 2 months for two consecutive nights from 1800 to 0600 hrs. Three collection methods were used; indoor human-landing collections (HLC), outdoor HLC, and outdoor cattle-bait collections (CBC).

**Results:** A total of 7,663 female *Anopheles* mosquitoes were collected of which 5,392 were identified as members of 3 different species complexes, the most prevalent being *Anopheles minimus* complex (50.36%), followed by *Anopheles maculatus* complex (19.68%) and *Anopheles dirus* complex (0.33%). *An. minimus* s.s. comprised virtually all (> 99.8 percent) of Minimus Complex species captured. Blood feeding behavior of *An. minimus* was more pronounced during the second half of the evening, showing a slight preference to blood feed outdoors (~60%) versus inside structures. Significantly ( $P < 0.0001$ ) more *An. minimus* were collected from human-baited methods compared with a tethered cow, indicating a more anthropophilic feeding behavior. Although a significant difference in total number of mosquitoes from the HLC was recorded between the first and second year, the mean biting frequency over the course of the evening hours remained similar.

**Conclusions:** The Human landing activity of *An. minimus* in Tum Sua Village showed a stronger preference/attraction for humans compared to a cow-baited collection method. This study supports the incrimination of *An. minimus* as the primary malaria vector in the area. A better understanding of mosquito behavior related to host preference, and the temporal and spatial blood feeding activity will help facilitate the design of vector control strategies and effectiveness of vector control management programs in Thailand.

**Keywords:** *Anopheles minimus*, Seasonal abundance, Blood feeding behavior, Host preference, Malaria, Thailand

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