

Studies on the two forms of *Anopheles (Cellia) minimus*

Theobald, 1901 in China (Diptera: Culicidae)

by

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ABSTRACT. *Anopheles (Cellia) minimus* forms A and B are reported from China for the first time.

*Anopheles (Cellia) minimus*, is the chief malaria vector in the hilly regions of our country and is distributed up to 25 degrees north latitude. On Hainan Island, Fujian, Yunnan, Guangxi and Guangdong Provinces, there are two forms of *An. (Cel.) minimus* which were collected from various parts of these regions from 1981 to 1985, and earlier during 1950's. Based upon a detailed study of the adult, larval and pupal stages, the author believes that there are at present two forms of *An. (Cel.) minimus*, namely, A and B. The main characteristics of these two forms are given below.

*Anopheles (Cel.) minimus* form A: First branch (vein  $m_{1+2}$ ) of 4th longitudinal wing vein with 1,2 pale median spots or rarely dark except at the base and apex (Table 1.); Cibarium with single cone, anterior view of cibarial armature with filaments bifurcated at the apex; and mental plate with 7, rarely 9 teeth in the larval stages (Table 2.).

*Anopheles (Cel.) minimus* form B: First branch (vein  $m_{1+2}$ ) of 4th longitudinal wing vein entirely dark except at the base and apex; Cibarium with single cone, anterior view of cibarial armature with filaments narrow, without the fimbriated end and not bifurcated at the apex; and mental plate with 9 or 11 teeth in the larval stages.

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On the other hand, also studies of the electrophoretic banding patterns of the esterase isozymes have demonstrated that differences exist between forms A and B. Thus the two forms of *An. (Cel.) minimus* can be easily distinguished on the basis of esterase isozymes banding patterns.

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Table 1. Female characters of Hainan's *Anopheles (Cellia) minimus*

|                       | <i>An. (Cel.) minimus</i> form A  | <i>An. (Cel.) minimus</i> form B   |
|-----------------------|---|--|
| 2nd longitudinal vein | Fork with pale scales (31/31).  | Fork with pale scales (21/31), with dark scales (10/31).   |
| 4th longitudinal vein | Fork with pale scales (31/31), M <sub>1+2</sub> with 1,2 pale spots (29/31) or rarely entirely dark (2/31) except at base and apex. | Fork with pale scales (21/31), with dark scales (10/31), M <sub>1+2</sub> entirely dark (31/31) except at base and apex. |

Table 2. Characters of Hainan's *Anopheles (Cellia) minimus* in the larval stage

|  | <i>An. (Cel.) minimus</i> form A                            | <i>An. (Cel.) minimus</i> form B                               |
|--|---|--|
| Teeth of mental plate (MP) in the larval stage | 7-9 ( $\bar{X}$ =7.125)<br>7 (30/32)=93.8%<br>9 (2/32)=6.2% | 9-11 ( $\bar{X}$ =9.563)<br>9 (24/32)=75.0%<br>11 (8/32)=25.0% |
| Seta of head of larval stage                   |   |  |
| Length of 4-C                                  | 0.052-0.070mm ( $\bar{X}$ =0.060)                           | 0.048-0.067mm ( $\bar{X}$ =0.057)                              |
| Distance between insertions of 2-C and 4-C     | 0.074-0.093mm ( $\bar{X}$ =0.078)                           | 0.059-0.093mm ( $\bar{X}$ =0.057)                              |