LABORATORY COLONIZATION OF MANSONIA IN MALAYSIA: A PRELIMINARY REPORT

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Mosquitoes of the genus Mansonia are the vectors of filariasis due to Brugia malayi in South and Southeast Asia. Wharton (1962) found that besides B. malayi, various endemic Mansonia species were the natural hosts of Brugia pahangi, Dirofilaria immitis, D. repens, D. magnus and three other unidentified filariae. Yen et al. (1982) recently described the infective larvae of a number of filaria species of animals of Malaysia using Aedes togoi (Theobald) as an experimental host. Further research on the identification of filaria species of the region within their natural Mansonia vectors, and on many aspects of the vector-parasite relationship is needed to better understand important aspects in the epidemiology of human filariasis. These studies await the availability of an adequate supply of suitable laboratory bred colony material.

Colonization of Mansonia species requires the maintenance of aquatic plants or substitutes which act as attachment hosts for the larvae and pupae in the culture medium. Jaywickreme and Niles (1992) reared Mansonia uniformis (Theobald) in small numbers in an infusion of dried powdered guinea pig dung in tap water using Salvinia and Pistia for larval attachment. Wharton (1957) reared larvae in Malaysia with the sand sight and had similar success using Eichornia for larval attachment. Laurence and Smith (1958) used a diluted infusion of guinea pig dung pellets suspended in tap water with a grass sod in the culture and yeast added to rear Mansonia uniformis and Ma. africana (Theobald). They used wet strength brown paper for larval attachment. Wharton (1962) made further improvements in his technique using rabbit dung infusion over a half-inch layer of fine sandy earth. Laurence, Page and Smith (1962) subsequently used a guinea pig diet pellet infusion in large scale colonization.

Mansonia uniformis has been maintained in culture for over 20 generations at the Institute for Medical Research, Malaysia (Cheong 1979) in a guinea pig dung infusion using Eichornia but it has been difficult to obtain adequate numbers of robust adults. Subsequently, Eichornia was replaced with a 'keykoleur' ruf-
Table 1. Percentage pupation and emergence and number of pupae and adults from first instar larvae of *Mansonia* set up in different culture media with 250 larvae in each culture.

<table>
<thead>
<tr>
<th>Type of culture</th>
<th>Species of <em>Mansonia</em></th>
<th>No. of larvae set up</th>
<th>Average percentage pupated</th>
<th>Total number pupated</th>
<th>Average percentage emerged</th>
<th>Total number emerged</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guinea pig dung infusion</td>
<td>uniformis</td>
<td>24</td>
<td>6000</td>
<td>26.8</td>
<td>0-80.0</td>
<td>1608</td>
</tr>
<tr>
<td>+ yeast boneae</td>
<td>10</td>
<td>2500</td>
<td>17.5</td>
<td>0-55.2</td>
<td>458</td>
<td>12.2</td>
</tr>
<tr>
<td>+ paper indiana</td>
<td>7</td>
<td>1750</td>
<td>29.1</td>
<td>18.8-46.8</td>
<td>510</td>
<td>11.4</td>
</tr>
<tr>
<td>Liver + uniformis</td>
<td>25</td>
<td>6250</td>
<td>39.0</td>
<td>1.2-80.0</td>
<td>2440</td>
<td>27.2</td>
</tr>
<tr>
<td>yeast + boneae</td>
<td>11</td>
<td>2750</td>
<td>38.7</td>
<td>22.4-61.6</td>
<td>1064</td>
<td>25.9</td>
</tr>
<tr>
<td>paper indiana</td>
<td>3</td>
<td>750</td>
<td>27.2</td>
<td>10.4-40.4</td>
<td>204</td>
<td>16.3</td>
</tr>
<tr>
<td>Liver + uniformis</td>
<td>9</td>
<td>2250</td>
<td>36.3</td>
<td>7.6-74.4</td>
<td>816</td>
<td>27.6</td>
</tr>
<tr>
<td>yeast + boneae</td>
<td>6</td>
<td>1500</td>
<td>25.3</td>
<td>8.0-48.0</td>
<td>580</td>
<td>19.3</td>
</tr>
<tr>
<td><em>f. repens</em> indiana</td>
<td>8</td>
<td>2000</td>
<td>26.5</td>
<td>2.8-56.6</td>
<td>529</td>
<td>17.0</td>
</tr>
</tbody>
</table>

pupation and emergence among the three species.

The conditions provided in the insectary tend to prolong the life cycle with a consequent increase in the mortality of immature stages. Recently, parallel cultures have been set up in an outdoor insectary with the temperature ranging from 28–30°C. In a preliminary set of outdoor cultures of *Mansonia uniformis* the average pupation was 49% and the average emergence 37%. Adequate numbers of robust adults are being obtained from both indoor and outdoor cultures and experimental transmission studies have commenced. Complete accounts of detail colonization experiments of the five species will be presented later.

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**References Cited**


**A BASIC PROGRAM FOR THE ANALYSIS OF ULV INSECTICIDE DROPLETS**

ROY K. SOFIELD* AND ROBERT KENT**

In order to satisfy labeling requirements, improve application efficiency, and develop a legal historical record of applied droplet sizes, the New Jersey State Airspray Program regularly collects sprayed (airborne) insecticide droplets for microscopic measurement, and

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