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Evaluation of a novel method for the control of Aedes aegypti larvae, using porphyrin derivatives

Phototoxic effects of porphyrin deriviates on 2nd instar larvae of *Aedes aegypti* have been demonstrated. This study investigated the effect of protoporphyrin dimethyl ester (PPDME) and haematoporphyrin dimethyl ester (HPDME) on the 4th instar larvae of *Aedes aegypti* during the period of April to September 1999.Laboratory studies revealed a percentage mortality of 55% (n=50), with 10ppm of PPDME (unit volume per mosquito 2.5ml), after 4 days of exposure to sunlight. Mortality levels increased after seven days, reaching 90-92% levels with 2.5, 5 and 10ppm, during which mortality (18%) among control larvae was observed as well. Mortality of 50% (n=100) was observed with HPDME only after 7 days. In contrast, increased mortality (100%) was observed with 2.5,5 and 10ppm of PPDME after 4,3, and 2 days respectively, when the unit volume per mosquito was increased up to 4 ml/ava. However, field experiments with 5 and 10ppm of PPDM, showed that the percentage mortality was only 12-25% greater than the controls after 5days of exposure. Porphyrin derivatives tested have a toxic effect on 4th instar larvae. However, the effective phototoxic dose (per unit volume) for 2nd and 4th stages is different. Higher mortality rates were observed in the laboratory than in the field. Toxicity effect is affected by the amount of direct sunlight reaching the photosensitizer substance, concentration of the porphyrin derivatives and the density of the mosquito larvae per unit volume of the compound.