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FIELD AND TOXICITY STUDIES USING HAEMATOPORPHYRIN AS A PHOTOPESTICIDE FOR THE CONTROL OF AEDES AEGYPTI, VECTOR OF DENGUE FEVER

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Different porphyrin derivatives, at varying concentrations, have been tested for their larvicidal activity. Of these, haematoporphyrin (HP) at 2.5 ppm showed the highest phototoxic effect in laboratory experiments using clear plastic containers. Field experiments (at Nagastenna, Kandy District) set up inside and outside houses also revealed that the larvicidal activity was high (100% mortality in 4 days) when HP was exposed to direct sunlight. In contrast, the mortality was less (32.14% - outside, 42.14% - inside) in the control experiments and in the experiments that were carried out inside the houses with HP (36.79%).

In experiments carried out in opaque plastic gutters, HP showed lower larvicidal activity (68.3%) than that seen with plastic containers for the same time period. However, in comparison with the time matched control experiments the percentage mortality was higher (39%).

The overall results show that although there is a certain degree of natural mortality, HP can be used effectively in the presence of sunlight, to hasten the larval killing process. The type of container also affects the degree of larval killing, which could be associated with the amount of light reaching the photopesticide in the case of gutters. To maximize the effect of HP in such containers further investigations are required.

Phototoxic effects of porphyrin derivatives on fish (using guppy, *Poecilia reticulata*) and on May fly larvae were investigated and all the porphyrin derivatives tested did not show any apparent effect, even after seven days, at 100 ppm concentration. It is noteworthy that this concentration is 40 times higher than that used in bringing about effective killing of *Aedes aegypti* larvae. Toxicity studies show that HP could be safely used in the field.

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