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THE EFFICACY OF POLYDIMETHYLSILOXANE (AQUATAIN) MOSQUITO FORMULATION ON THE IMMATURE STAGES OF *Aedes aegypti* (PRIMARY VECTOR OF DENGUE) AND NON-TARGET ORGANISM *Poecilia reticulata* (GUPPY)

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Polydimethylsiloxane (Aquatain), a silicon based compound which produces a monomolecular surface film has been proposed and investigated as a potential mosquito control agent, reducing water surface tension and restricting the ability of mosquito larvae to attach respiratory tube to the water surface. The main objective of this study was to evaluate the efficacy of Aquatrain Mosquito Formulation (AMF) on immature stages of primary vector of dengue, *Aedes aegypti* and the fish *Poecilia reticulata* (guppy) under laboratory conditions.

Several replicates of different immature stages of field collected *Ae.aegypti* were exposed to 1ml/m² and 2ml/m² AMF and the mortalities were observed for 5-7 days. Early stages of *Aedes aegypti* larvae obtained from eggs collected using ovitraps were introduced to 2ml/m² AMF to determine the mortality and further development for 15 days. Six experimental tanks with ten healthy guppies were also treated with 2ml/m²AMF and monitored daily for a month to assess the toxicity effect on guppy. All these experiments were carried out as case-control studies.

Mortalities on day 1 for late and early larvae with 1ml/m² concentration were 75% (n=100) and 0% (n=50) while day 5 mortalities were 84% and 14% respectively. Mortalities on day 1 for late and early larvae with 2ml/m² concentration were 59% (n=100) and 64% (n=50) while the day 5 mortalities were 71% and 74% respectively. 100% pupal mortality was observed within 24 hours of exposure to 2ml/m² AMF. The experiment with early larvae exposed to 2ml/m² for 15 days duration (n=80) verified the mortality of 3.8% on day 1 and 98.8% on day 15. In control experiments, pupation was initiated on day 5 and adults emerged on day 6 onwards. None of the treated larvae were pupated within 15 days, however only one larva (1.25%) developed into mature larvae after 8 days of exposure. None of the fish exposed to 2ml/m² AMF or in control tanks were dead even after one month.

While 100% immediate pupal mortality of *Aedes aegypti* was achieved the larval mortality was 71 -74% after one week of exposure. A significant retardation of larval development and delayed mortality of early stage larvae after exposure to 2ml/m² AMF show that polydimethylsiloxane can be used as an effective control agent against the primary vector of dengue under laboratory conditions. 2 ml/m² AMF can be recommended as the effective dosage on all immature stages of *Aedes aegypti*.

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