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**Effect of oviposition-site deprivation on reproductive performance and life history parameters of dengue vector *Aedes aegypti***

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Dengue and dengue hemorrhagic fever is the most important arthropod-borne viral disease that occurs in tropical and subtropical regions in the world. Annually 390 million new dengue cases are being reported from the 128 dengue-endemic countries. *Aedes aegypti* belonging to the family Culicidae is the primary vector that transmits the disease. Since there is no vaccine or a drug to prevent the disease, controlling programs are mainly focused on the vector controlling strategies. The primary vector is a container breeder and the widely used control method, source reduction, interrupts the oviposition of females. This will prevent or delay the oviposition of females leading to oviposition-site deprivation. Therefore, it is hypothesized that oviposition-site deprivation may affect the reproductive performance, life history parameters and longevity of *Ae. aegypti*. Thus, the objective of the study was to determine the effect of oviposition-site deprivation on fecundity, fertility, larval mortality, total larval duration, pupal duration and longevity of *Ae. aegypti*. Oviposition-site deprivation was done by blocking the access to the oviposition substrate. Mosquito batches were allowed to access an oviposition substrate separately on the day of blood feeding, 2, 4, 6 and 8 days after blood feeding. They were regularly fed with a 10% sugar solution as the energy source. According to the results the mean number of eggs laid by the females subjected to different egg retention periods varied significantly. The highest number of eggs ( $99.53 \pm 5.02$ ) were laid by the females subjected to 8-day egg retention period and it was a 69% increase compared with the females who were not subjected to oviposition-site deprivation. However, the fertility ( $84.93 \pm 0.47$ ), percentage larval mortality ( $14.33 \pm 1.16$ ), total larval duration ( $105.60 \pm 2.40$  hours), pupal duration ( $41.60 \pm 0.98$  hours) and longevity ( $19.40 \pm 0.29$  days) did not show any significant difference (One-Way ANOVA,  $DF = 4$ ,  $P > 0.05$ ) with the oviposition-site deprivation. Increase of fecundity leads to an increase of vector population. Therefore, an increase of fecundity will act opposite to the desired goal of source reduction. However, the effect of the oviposition-site deprivation driven increased fecundity to the next gonotrophic cycle is not known. Alternatively, complete elimination of breeding sites in an area may support the mosquitoes to develop adaptations to use alternative breeding habitats such as estuaries. So, from the scientific viewpoint, complete elimination of breeding sites through source reduction may be disadvantageous. Also, oviposition-site deprivation through source reduction alone may not be an effective way to control vector populations of *Ae. aegypti*. Thus, it is important to have a clear knowledge on the effect of oviposition-site deprivation on mosquito physiology, reproductive performance, life history parameters and the longevity of the vector mosquitoes when adopting vector controlling strategies.

**Keywords:** *Aedes aegypti*, Fecundity, Oviposition-site deprivation