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Influence of Vertebrate Excreta on Attraction, Oviposition and Development of the Asian Tiger Mosquito, *Aedes albopictus* (Diptera: Culicidae)

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Simple Summary: Commonly known as the Asian tiger mosquito, *Aedes albopictus* is a vector of dengue worldwide. Knowledge of the behavior of dengue vectors facilitates effective vector control. This is the first comprehensive analysis of selected vertebrate excreta of goat, cow and pig to identify the oviposition attraction and growth performance of *Ae. albopictus* in Sri Lanka. The current study revealed that *Ae. albopictus* gravid females are significantly attracted to goat excreta but are repelled by pig excreta. The oviposition preference was highest for the cow excreta and lowest for the pig excreta. For excreta combinations, the Cow+Goat combination increased the oviposition while the Pig+Goat combination reduced the oviposition. The oviposition preference of *Ae. albopictus* increased with the rate of fermentation. The pig excreta increased the *Ae. albopictus* larval mortality, larval and pupal duration and reduced adult fecundity, whereas the cow excreta positively affected all these aspects. Additionally, our findings suggest that a high abundance of *Ae. albopictus* in rural areas of Sri Lanka is possibly due to its oviposition attraction and the growth performance of the vertebrate excreta.

Abstract: *Aedes albopictus* is an important vector of dengue worldwide. Eliminating dengue in Sri Lanka depends entirely on controlling the vector and human-vector contact. Thus, studying the bionomics and behavior of *Ae. albopictus* is paramount. The objective of this study was to evaluate the effect of the excreta of cow, goat and pig on the attraction, oviposition and development of *Ae. albopictus*. Bioassay chambers determined the mosquito stimulatory response. Ovitraps determined *Ae. albopictus* oviposition preference to excreta singly, in combination and on fermentation. The excreta effect on larval development was also determined. The results revealed that *Ae. albopictus* gravid females were significantly attracted to goat excreta but were repelled by pig excreta. The oviposition preference was highest for cow excreta and lowest for pig excreta. For excreta combinations, the Cow+Goat combination increased the oviposition while the Pig+Goat combination reduced the oviposition. The oviposition preference of *Ae. albopictus* increased with the rate of fermentation. The pig excreta increased the *Ae. albopictus* larval mortality, larval and pupal duration and reduced adult fecundity, whereas the cow excreta positively affected all these aspects. Our findings additionally suggest that a high abundance of *Ae. albopictus* in rural areas of Sri Lanka may be due to its oviposition attraction and growth performance for vertebrate excreta.

Keywords: vertebrate excreta; stimulatory response; *Aedes albopictus*; oviposition

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1. Introduction

Dengue is a hurdle to public health in Sri Lanka, causing high morbidity and mortality [1]. Two *Aedes* species that transmit the dengue virus are well established in the country; *Aedes albopictus* and *Aedes aegypti*. Both belong to family Culicidae and subfamily Culicinae [2]. In Sri Lanka, eliminating dengue depends entirely on vector control or