

FEASIBILITY STUDIES ON THE POTENTIAL TO CONTROL *Aedes albopictus* VIA BLOOD-BORNE INSECTICIDES ADMINISTERED TO URBAN RAT POPULATIONS

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Abstract The Asian tiger mosquito (*Aedes albopictus*) poses a significant public health threat as a vector for numerous diseases. Controlling these mosquito populations is crucial, especially in urban environments where they thrive. This study investigated the feasibility of using a novel approach to control both sewer-dwelling Aedes mosquitoes and their primary blood host, the brown rat (*Rattus norvegicus*), through a single intervention. The research focused on incorporating the blood-borne insecticide ivermectin into wax second-generation anticoagulant rodenticide (SGAR) blocks. This bait was designed to be consumed by rats, leading to the death of both the rodents and the mosquitoes that feed on them. Laboratory experiments were conducted to assess the efficacy of this approach. Rats were fed the ivermectin-laced bait, and their mortality and bait consumption were monitored. Mosquitoes were introduced into the rat cages, and their mortality was also tracked. The results demonstrated a high degree of success. Over 90% mosquito mortality and 100% rodent mortality were achieved within five days using a wax bait containing 30.13 ppm ivermectin and 25 ppm brodifacoum. Importantly, the presence of ivermectin did not impact bait palatability or rodent mortality. This innovative approach offers a potential solution for controlling both Aedes mosquito populations and their rodent hosts in urban sewer systems. By targeting the blood source of these mosquitoes, the intervention could significantly reduce their numbers and mitigate the risk of disease transmission. Further research is warranted to explore the feasibility and effectiveness of this method in field settings. This would include quantifying the impact of the intervention on localized mosquito populations and assessing any potential environmental or ecological effects.

Key words *Rattus norvegicus*, ivermectin, SGAR blocks