Establishing a Framework for the Introduction of Genetic-based Mosquito Interventions against Dengue in Thailand

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Abstract:

Background: The acceptance of novel and more efficacious genetic-based (GB) vector control strategies, Release of Insects with Dominant Lethality (RIDL) and *Wolbachia*-transformed mosquitoes, against the dengue virus are contingent upon a populations' perception and acceptance of GB approaches. The objectives of this study were (1) to investigate a correlation between mosquito burden and the knowledge, attitudes, and perceptions (KAP) of dengue and GB approaches in rural and urban Thailand and (2) to develop a social framework for the release of GB mosquitoes in Thailand.

Methods: In this observational cohort study, prokopack aspiration was conducted with KAP survey administration in 60 households in urban Sai Yok and 59 in rural Sam Phran. Dengue knowledge was scored as: *Poor, Satisfactory or Excellent*. Perceptions of GB prevention techniques were scored as: *Low, Moderate or High Concern.*

Results: Participants in both Sai Yok and Sam Phran demonstrated a *Satisfactory* level of dengue knowledge ($p=0.906$) and a *Low* to *Moderate Concern* level of GB techniques ($p=0.333$). Sai Yok households had a significantly heavier burden of *Aedes aegypti* mosquitoes compared to Sam Phran counterparts (63.3% vs 15.7%, $p<0.05$). There was no significant correlation between mosquito burden and knowledge of dengue or perceptions on GB techniques in either district

($p>0.05$). Based on KAP survey results, a framework for the release of GB techniques in Thailand should include 4 tenets: communication, education, comprehension and autonomy.

Conclusion: Prior to a GB mosquito release in Thailand, GB pioneers must establish communication with the targeted release community and ensure education, comprehension, and autonomy for all community members involved.