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Effectiveness of the aqueous extract of Crimson Bottlebrush (*Melaleuca citrina*) Modified mosquito trap as an attractant to adult *Aedes aegypti*

Introduction

Aedes aegypti is the primary vector of some emerging and neglected tropical diseases in low- and lower-middle-income countries. These includes dengue fever, Zika virus disease, chikungunya, and yellow fever. Philippines currently suffers from increasing morbidity and mortality, particularly due to dengue virus. Thus, the development of effective vector-control programs is warranted since it poses a growing challenge in public health and infectious diseases, not only in the Philippines but globally.

Methods

The use of modified mosquito trap can provide a primary intervention for vector-control and to maximize the capture ability towards *Aedes aegypti*. This is done by the addition of black, sticky material and an attractants. The Crimson Bottlebrush is known for its antibacterial, anti-helminthic, anti-fungal, and antioxidant effects. The study aimed to formulate a new attractant using the aqueous extract of Crimson Bottlebrush leaves in a modified mosquito trap. Disposable bottles were transformed into modified mosquito traps with the Crimson Bottlebrush leaves aqueous extract as an attractant to *Aedes aegypti*.

Results

A total of forty (40) adult *Aedes aegypti* were used and released in the experimental cage. It was observed that *Aedes* mosquitos flew towards the attractant and were simultaneously trapped using the modified mosquito trap. There was no statistically significant difference in the mean mosquito responses ($p=0.2729>0.05$) between the attractant concentrations (10%,30% and 60%) against the number of mosquitoes caught in the trap. Statistical analysis of the average mosquitoes trapped showed that among all the attractant concentration used, the 60% was the best concentration CBAE attractant in the modified mosquito trap. Probit analysis determined $AC_{50}=145.48\%$ as the median attractant concentration and $AC_{90}=266.7\%$ needed extract in controlling 90% of the *Aedes* mosquito.

Conclusion

Results showed that the CBAE exhibited potential in effectively attracting *Aedes aegypti* mosquito.

Keywords: *Aedes aegypti*, dengue fever, Zika virus, Chikungunya, yellow fever, AC_{50} , AC_{90}