



# Plants traditionally used as mosquito repellents and the implication for their use in vector control



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## ABSTRACT

Numerous plants with insect repelling properties are native to the tropics where they are produced for a wide range of medicinal purposes. In Thailand, these native plant species have a history of use for personal protection against biting insects. From our investigation we identified 37 plant species within 14 plant families that showed some mosquito repellent properties. Of these, 9 plant species were characterized using an excito-repellency test system against several Thai mosquito species. Results from these studies revealed that five essential oils extracted from plants demonstrated promising insect repellent activity. These active ingredients show promise for further development into formulations that may serve as alternatives to DEET or possibly be used as natural bio-pesticides to kill mosquitoes.

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## Contents

1. Background .....	136
2. Plants with mosquito repellent activity in Thailand .....	137
3. Botanical essential oils with natural repellent activity against a range of arthropods .....	140
4. Excito-repellent properties of essential oils against mosquito populations in Thailand .....	140
5. Conclusion .....	142
Competing interests .....	143
Authors' contributions .....	143
Acknowledgements .....	143
References .....	143

## 1. Background

Repellents play an important role in vector control and prevention, particularly in those areas where the biology and feeding behavior of mosquito vectors are less favorable to existing or available methods. Prior to the arrival of synthetic chemicals, people used plant-derived materials to repel or kill medically impor-

tant arthropods, including mosquitoes (Curtis et al., 1990). Local knowledge and practices of indigenous peoples demonstrated the extensive information available associated with native plants with such potential usages. Traditionally, these plants are used by bruising freshly picked sprigs that are then hung inside houses or burned outdoors on the evening fire. Such methods are extensively used but unfairly dismissed or overlooked. Natural plants have also been used in the form of crude fumigants where plants are burned to drive away blood sucking arthropods or as essential oil formulations applied tropically onto the skin or clothes. This latter application was first reported by ancient Greek (Herodotus,

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