

Comparison of mosquito repellent activity of citric acid treated and untreated samples of the oil of *Eucalyptus citriodora*

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Prevention of insect bites is the first line of defense against Insect borne diseases such as malaria, dengue, and filariasis and use of insect repellents is the most common approach among them. *Eucalyptus citriodora* is an effective plant based insect repellent that is proven to exert minimal risk to environment, wildlife and humans. The oil contains a mixture of monoterpenes out of which citronellal is the major component (84%). Moreover, it has been reported that nerol, limonene and *para*-menthane-3,8-diol in oil of eucalyptus exhibit mosquito repellent activity. Attempts were made to convert citronellal in the oil into components showing repellent activity *via* a simple citric acid catalyzed reaction. The acid treated oil samples were tested for their mosquito repellent ability using a static air repellency apparatus. The reaction was carried out by varying the volume of the acid catalyst (7% acid), temperature and reaction time in order to investigate the optimum reaction conditions. The acid treated oils displayed a significantly high mosquito repellent activity against *Aedes aegypti* mosquitoes compared to the untreated oil. The highest mosquito repellency within a period of 3 hours was observed, when 3.7 g of the oil was reacted with 20 mL of 7% citric acid solution at 50°C for 15 hours. The percentage repellency of 2% of this sample in a neutral lotion was 72% whereas the untreated oil had the repellency of 27% at the 0th hour. The results of this study indicated the success of this simple synthetic approach towards enhancing the mosquito repellency of *Eucalyptus citriodora* oil in an economical and efficient manner.

Keywords: *Eucalyptus citriodora*, Mosquito repellent, *Aedes aegypti*

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