
The synthesis and evaluation of methyl eugenol from *Cinnamomum zeylanicum* leaf oil as the *Bactrocera dorsalis* attractant: A value addition

Fernando W.H.I., Lamahewage L.S.N.S., Yapa Y.M.A.L.W.* and Gangabadage C.S.

Department of Chemistry, Faculty of Science, University of Ruhuna, Matara, Sri Lanka.

Eugenol is the major bioactive constituent of cinnamon leaf essential oil (CLO). Among the various types of cinnamon, *Cinnamomum zeylanicum* has been found to contain 70-90% of eugenol. In this study, CLO was extracted from *Cinnamomum zeylanicum* leaves by hydrodistillation method. The extracted oil was analyzed using gas chromatography (GC) and found to contain 90% of eugenol as the major constituent. The eugenol present in the extracted oil was converted to methyl eugenol (ME) by the reaction of eugenolate generated using NaOH with dimethyl sulfate (DMS) as the alkylating agent (eugenol: DMS = 1: 1). The crude ME was analyzed using GC and 93% ME was observed. The functional group conversion was confirmed by using IR spectroscopy. The oil enriched with ME was used for a bioassay against the oriental fruit fly, *Bactrocera dorsalis*, as a sex pheromone to attract male fruit flies by using a trap changing the concentration of ME from 100 – 100,000 ppm. It was observed that the number of fruit flies attracted to the trap increased at higher concentrations of ME. However, the optimum concentration to be used in the field effectively against fruit flies was found to be 1000 ppm of ME. This result shows that ME can be used in agricultural fields as an eco-friendly pest control method against fruit flies and it leads to a value addition to CLO.

Keywords: Methyl eugenol, Eugenol, *Bactrocera dorsalis*, *Cinnamomum zeylanicum*

*Corresponding author: lalithyapa@chem.ruh.ac.lk