

Characterization of *Bactrocera dorsalis* (fruit fly) emergence inhibitor from neem leaf-empty fruit bunch-based vermicompost using metabolomics approach

ABSTRACT

Neem (*Azadirachta indica*) and oil palm empty fruit bunch have been reported to contain varieties of secondary metabolites in which some possess bioactivities. Through vermicomposting of these plant materials, a useful final product which exerted inhibition activity on the emergence of *Bactrocera dorsalis* may be produced. This study presents the results of chemometric data analysis which describes the fruit fly emergence inhibition activity of neem leaf-empty fruit bunch-based vermicompost. The vermicompost, with neem leaf and empty fruit bunch served as controls, were analyzed by proton nuclear magnetic resonance (¹H NMR) spectroscopy. The chemometric evaluation was performed by principal component analysis (PCA) and partial least square (PLS). The NMR profiles of the chemical constituents of the vermicompost were correlated to the inhibition activity of the fruit flies wherein neem leaf was shown to be the major inhibitor. Based on NMR-metabolomics approach, the metabolites of the neem leaf responsible for the activity were identified as azadirachtin and salannin.

Keyword: Neem leaf; Vermicompost; *Bactrocera dorsalis*; NMR; Multivariate data analysis