Bioassay of Some Forest Plantation Soil Fungi on Coptotermes curvignathus Holmgren (Isoptera: Rhinotermitidae)

Abstract

Four isolates of soil fungi with different concentrations (1.0 x 106 conidia/ml, 1.0 x 107 conidia/ml, and 1.0 x 108 conidia/ml) were tested on Subterranean termites, Coptotermes curvignathus that colonized the stems of Acacia mangium stands in Sabah Softwood Berhad (SSB) and Sabah Forest Development Authority (SAFODA) in Sabah, Malaysia. Determination of LT50 found that Trichosporonoides sp. and Helicocephalum sp. recorded the earliest LT50 which is at Day-3 for concentration of 1.0 x 106 conidia/ml. Rhopalomyces sp. was the earliest for concentration of 1.0 x 107 conidia/ml which is at Day-2, whilst, Trichosporonoides sp. and Rhopalomyces sp. were the earliest for concentration of 1.0 x 108 conidia/ml which is at Day-2. LC50 indicated that only Rhopalomyces sp. was capable of causing 50% death at 1.0 x 107 conidia/ml. Extrapolation of curve for Helicocephalum sp., MSK B and Trichosporonoides sp. gave estimate for LC50 at concentration of 1.5 x 1011 conidia/ml, 6.3 x 1018 conidia/ml and 2.0 x 109 conidia/ml. All concentrations used (1.0 x 106, 1.0 x 107 and 1.0 x 108 conidia/ml) showed capability by fungi to caused mortality on C. curvignathus that differ significantly (t=4.508; df=270; P=0.000) between isolates and control. In this study, Trichosporonoides sp., Rhopalomyces sp., Helicocephalum sp. and MSK B have shown entomopathogenic activity against C. curvignathus. Accordingly, Trichosporonoides sp. and Rhopalomyces sp. have the potential based on their LT50 and LC50 to be used as effective biological control against C. curvignathus.