

UNIVERSITI TEKNOLOGI MARA

**ENHANCEMENT OF ANTIMICROBIAL
ACTIVITY IN ENDOPHYTES HAB11R3 AND
HAB10R12.**

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ABSTRACT

The effect of culture condition on antimicrobial activity of endophytes HAB11R3 and HAB10R12 were investigated. The parameter that were investigated are incubation period (PDA1; incubated for 1 week, PDA2; incubated for 2 weeks, PDA4; incubated for 4 weeks), different media (solid; PDB2 (incubated in broth media), liquid; PDA2 (incubated in agar media)), different water source (tap water; TPDA and TPDB, deionized water; PDA2 and PDB2) and different strength (1/5 from original strength; 1/5PDA and 1/5PDB). Two different methods were employed to detect the antimicrobial activity; the disc diffusion test and minimum inhibitory concentration (MIC) test. The secondary metabolites of HAB11R3 were showed killing activity towards one or more pathogenic bacteria. Endophytic metabolites that were cultured in broth media showed inhibitory activity against *Bacillus subtilis* (35mm) and *Micrococcus luteus* (38mm). The metabolites cultured in broth media also give the lowest minimum inhibitory concentration (MIC) against *Bacillus subtilis* (0.08mg/ml), *Micrococcus luteus* (0.04mg/ml) and *Escherichia coli* (0.63mg/ml) whereas the mycelium of endophyte that cultured in broth media give lowest MIC against *Staphylococcus aureus* (0.31mg/ml). No activity of antimicrobial activity was reported on endophytic strain HAB10R12.

CHAPTER 1

INTRODUCTION

There is a demand on new antibiotics and chemotherapeutic agents that possess low toxicity but with optimum benefits nowadays. This is due to increase number of resistance microorganisms such as *streptococcus* and *mycobacterium* to the current drug (Strobel and Castillo 2007). The overuse and misuse of antimicrobials by medical practitioner and patient themselves may be the main cause of increase in amount of resistance bacteria (WHO 2002). The documented misused were inappropriate dosage regiments given to the patients such as dose, dose interval and route of administration (Toutain et al., 2002). Thus, new antimicrobial drugs research development is on the rise.

Natural products from plants, marine microorganism and microorganisms are the major source of antimicrobial drugs. Compound from plant *Micromeria nervosa* and *Inula viscose* has shown to have antimicrobial activity especially to *C. albicans* (Ali-Shteyah et al., 1997). Ethanol extracts from *Bidens pilosa L.*, *Piper pulchrum* *C.DC* which were plants used in Columbian folk medicine were active against *Bacillus cereus*, *E.coli* and *Staphylococcus aureus* (Rojas et al., 2006). Marine sponge *Agales oroides* found to produce secondary metabolites that inhibit FabI