ABSTRACT

Infectious diseases are major threat to public health; a problem that has been exacerbated by emergence of multi-drug resistant (MDR) strains. Finding alternative antimicrobial compounds from natural sources such as fungal endophytes and medicinal plants is crucial for addressing antimicrobial resistance. Thus, in this study search for endophytes with antibacterial activities from leaves of medicinal plant *Leucas martinicensis* was undertaken. Three fungal endophytes were isolated from fresh leaves and characterized using ribosomal Internal Transcribed Spacer (ITS) DNA. Antibacterial activities against five bacterial pathogens were determined using dual cultures and, disc diffusion assay for ethyl acetate extracts and pure compounds. Fungal endophytes isolated were LM-L(1), AD-L(1) and LM-S(6) belonging to genera *Nigrospora*, *Diaporthe* and *Epicoccum,* respectively. Axenic cultures and ethyl acetate extracts displayed antagonistic activity against *Escherichia coli, Staphylococcus aureus*, *Proteus vulgaris, Klebsiella pneumoniae* and *Salmonella typhi* unlike pure compounds. Irrespective of endophyte isolate, increasing the concentration of ethyl acetate fractions from 0.625 to 5.0 mg/ml during minimum inhibitory concentration (MIC) assay increased antibacterial activity; although 2 to 3 folds lower than chloramphenicol at 30 µg/disc. However, ethyl acetate fraction F3 at 5.0 mg/ml obtained from isolate LM-L(1) isolate belonging to genus *Nigrospora* produced activity that was not significantly ($p \geq 0.05$) different from chloramphenicol discs. Failure of pure compounds unlike ethyl acetate and axenic endophyte cultures suggests antibacterial activity observed was due to synergistic interactions of compounds. Nonetheless, the results demonstrate that fungal endophytes isolated from *L. martinicensis* possess antibacterial compounds which can be exploited further as lead compounds towards addressing antimicrobial drug resistance.

Key words: Fungal endophytes, antimicrobial activity, drug resistance, *Leucas martinicensis*