

Actinomycetic Symbionts Inhabiting *Euphorbia hirta* L. with Antimicrobial Potentials

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Abstract: The present study envisions screening of endophytic actinomycetes inhabiting the medicinal plant *Euphorbia hirta* L. for antimicrobial activity against human pathogens. Surface sterilization of plants segments resulted in isolation of 46 endophytic actinomycetes. Recovery of endophytic actinomycetes was higher in root, followed by stem and leaves. Primary screening for antimicrobial activity resulted in five isolates expressing antimicrobial potentials against tested human pathogens during screening via dual culture and cross streaking methods. The strain displaying significant activity was selected as subject of interest and subjected to large scale fermentation. The cell free supernatant was used for solvent extraction with ethyl acetate to obtain organic phase which was reduced to obtain crude ethyl acetate. The crude extract was evaluated to determine antimicrobial activity using disc diffusion assay. The active fraction was partially purified with TLC and HPLC. The results obtained in present investigation displayed significant activity against all the test pathogens. Further partial purification of crude metabolites resulted in separation of active band bearing activity at R_f 0.8 displaying clear zone of inhibition against MRSA strain via bioautography. The HPLC chromatogram revealed elution of active fraction between 4.5 to 5 retention times displaying major peak. The result of present investigation is a preliminary finding which is promising enough for further characterization to reveal novel antimicrobial agent responsible for activity. The study also attributes towards biosynthetic potential of endophytic actinomycetes inhabiting *Euphorbia hirta* L. as repertoire of antimicrobial metabolites.

Key words: Actinomycetic symbionts, Endophytes, *Euphorbia hirta* L. Antimicrobial activity, Bioautography.

Introduction

The ongoing effort to search for novel antimicrobial agents is rapidly expanded owing to the emergence of multi drug resistant microorganisms which has been one of the major research areas

in current scenario. Exploitation of natural resources can be traced down since millennia with medicinal plants being one of the rich sources. But harvesting of endangered species can pose risk and imbalance to plant diversity. Hence in

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