ABSTRACT

Antibacterial activity of extracts of Zanthoxylum gilletii, Markhamia lutea and their fungal endophytes were evaluated against bacterial pathogens of common bean: Xanthomonus axonopodis pv. phaseoli and Pseudomonus syringae pv. phaseolicola. The leaves of both plants were dried under shade, ground to fine powder and extracted using methanol. The methanol extracts were fractionated sequentially using ethylacetate and hexane to produce various fractions. Endophytic fungi were isolated from fresh leaves and identified by ITS-rDNA sequence analysis. Antibacterial screening of the fungal endophytes was done by dual culture assay. The most active endophytic fungi were fermented on rice media and extracted using methanol. Pure compounds were analyzed by a combination of mass spectrometry and spectroscopic techniques which included 1D and 2D NMR. Antibacterial activity of all the extracts was determined by disc agar diffusion assay against the test organisms. Twenty-four (24) fungal endophytes were isolated which included: Fusarium, Chaetomium, Scopulariopsis and Trametes. Endophytic Fusarium solani was the most active against X. axonopodis pv. phaseoli (20.3 mm inhibition zone) and P. syringae pv. phaseolicola (18.6 mm inhibition zone). The plant extracts were active against X. axonopodis pv. phaseoli with an inhibition zone ranging between 8-12 mm except the methanol extract from Z. gilletii which did not show any activity. The endophytic extracts were active against both test organisms with a zone of inhibition ranging from 9.3-14 mm. Phenolic compounds present in Fusarium species may have contributed to the antibacterial activity of this strain against the test organisms. Key words: Common bean, medicinal plants, fungal endophytes, antibacterial activity, Xanthomonus axonopodis pv phaseoli, Pseudomonus syringae pv phaseolicola.