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Isolation and Identification of Potential Antibiotic Producing Rare Actinomycetes from Rhizospheric Soils

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ABSTRACT The search for novel antibiotics producers and their characterization continues to be an important objective in the discovery of novel bioactive compounds. This work was carried out to isolate and identify bioactive secondary metabolite producing rare actinomycetes and to analyse the phylogenetic relationship. The rhizospheric soil samples were collected from different localities of Ngaka Modiri Molema district of North West Province, South Africa and screened for antibacterial potential. Molecular identification of the bacterial isolates by analysis of the 16S rDNA nucleotides sequences showed that the isolates were as follows: *Actinomadura, Nocardiopsis, Promicromonospora, Nocardia, Arthrobacter, Pseudonocardia, Micrococcus, Nonomuraea, Rhodococcus, Streptosporangium* and *Saccharothrix* spp. Nineteen (21.6%) of the 88 isolates exhibited antibacterial activity against at least one of the test organisms. Phylogenetic analysis revealed that the bacterial isolates are the members of rare actinomycetes which are associated with the rhizosphere. Results from the phylogenetic analysis indicate that the 19 isolates could be sorted into 11 phylotypes. It was also inferred from the tree that the potent bacterial isolates clustered with other antibiotic producing rare actinomycetes reference strains retrieved from the GenBank. This study corroborates that rhizospheric soil harbours diverse actinomycetes which can be explored for antibacterial secondary metabolites.