

Phylogenetic screening for antibiotic producing actinomycetes from rhizospheric soils

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In this study, we isolated *Streptomyces* from rhizospheric soils collected from Ngaka Modiri Molema district in South Africa. These isolates were screened for antibacterial activity against ten test microorganisms. Six isolates (NWU4, NWU91, NWU100, NWU110, NWU204 and NWU339) which exhibited antibacterial activity against at least six of the test organisms were characterized by conventional and molecular methods. All the isolates exhibited broad spectrum of antibacterial activity against both Gram positive pathogens such as *Staphylococcus aureus*, *Streptococcus pyogenes*, *Bacillus subtilis*, *B. cereus*, and *Enterococcus faecalis* and Gram negative pathogens such as *Shigella boydii*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Campylobacter jejuni* and *Proteus mirabilis*. The results showed that all the isolates were active against *Bacillus subtilis*, *S. aureus*, *S. pyogenes* and *C. jejuni* with a zone of inhibition ranging between 10 to 35 mm.

A 1.5 kb fragment of the 16S rRNA gene of all the six potent isolates was sequenced. The phylogenetic analysis of partial sequence confirmed that all the potent isolates formed closed phylogenetic cluster with known members of *Streptomyces* species with a (97-99%) sequence identity. The results suggest that *Streptomyces* in rhizospheric soils may represent a vast unexplored resource for biotechnology. These isolates may be capable of producing compounds of interest importance to medicine or agriculture. However, further investigation on the isolation and characterization of the antibacterial compounds produced will be necessary to ascertain if its novel and of commercial value.

Biography

Olubukola Oluranti Babalola Principal Scientist Nat is a National Research Foundation (NRF) rated established scientist. Babalola is a Senior lecturer and the leader, Microbial Biotechnology Team, North-West University, South Africa. Her research interest is in Plant-Microbe Interactions. Babalola has > 20 professional certificates, and > 60 research outputs. There are 3 Postdocs, 5 PhD (including Adegboye MF), 8 MSc, and 4 Hons students in her research group. She enjoys international collaboration, and many awards.

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