HP-32: Rhizospheric soil as source of bioactive compounds

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Streptomycetes from the semi arid rhizospheric soils are a rich resource of novel secondary metabolites with various biological activities.

The aims of the present study are to identify culturable streptomycetes from the rhizospheric soil by 16S rRNA gene, evaluate the antimicrobial activities of isolates and detect the bioactive secondary metabolites from selected streptomycetes, extraction and identification of the bioactive compounds.

A total of 65 strains were isolated from rhizospheric soil sample. Two of themes (SFKH10 and SFKH4) were analyzed by 16S rRNA gene sequencing. The crude cell extracts out of the two strains showed antibacterial and antifungal activities. Ethyl acetate crude extract of cultured SFKH10 strain was subjected to online high-performance liquid chromatography (HPLC)-electrospray mass spectrometry (ESI-MS) for metabolite profile analyses as well as molecular weight determination. The extract was dissolved in methanol (1 mg/ ml) and then analysed by a Hewlett–Packard HP1100 HPLC-UV Diode Array detector (DAD), online coupled to an Esquire-Bruker–Daltonics ion trap mass spectrometer using a reversed-phase column on the analytical scal. Finally, a compound dinactine was isolated from *Streptomyces coeruleorubidus* SFKH10 strain by using chromatography techniques, UV, HR-ESI-MS and NMR, and their antimicrobial activities against the test bacteria and fungus were also evaluated. In addition, the partial characterization of the molecules secreted by *S. spororaveus* SFKH4 strain has shown its capacity to produce a large variety of complexes compounds having high molecular weight.

In conclusion, the present study has revealed the potential of semi-arid Algerian ecosystems as a good source for bioactives molecules-producing actinobacteria.

Keywords : rhizospheric soil, Streptomyces, bioactive compounds.