HP-41: Antimicrobial activity of marine and telluric actinobacteria identified in eastern Algeria

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Subject description: Extreme ecosystems can be a source of untapped microorganisms to produce new bioactive compounds of industrial interest. Actinobacteria are at the forefront due to their versatile production of secondary metabolites that exhibit various biological activities. Algerian marine and terrestrial environments remain largely unexplored and may represent an important source for the discovery of bioactive molecules.

Objectives: The aim of this research is to study the identification and antimicrobial activity of actinobacteria isolated from various samples of forest (Constantine) and thermal soils (Guelma), marine sediments and seawater (Skikda and El-Kala).

Methods: Actinobacteria were isolated using the suspension-dilution method on different culture media: Benett, CSPY-ME, SCA and ISP2. Morphological identification (macroscopic and microscopic) of isolates was carried out on ISP2 medium by the slide culture technique. All isolates were then subjected to antimicrobial screening using the agar plug technique against five bacteria and three pathogenic fungi: *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Bacillus subtilis*, *Aspergillus niger*, *Fusarium oxysporum* and *Candida albicans*.

Results and discussion: Consequently, in this work, 18 phenotypically different actinobacterial isolates were collected from the various ecosystems studied. On the basis of morphological characteristics, the isolates were assigned to the genera *Streptomycs*, *Saccharopolyspora*, *Nocardiopsis*, *Oerskovia*, *Jonesia*, *Streptoalloteichus* and *Dactylosporangium*. The antibacterial activity of actinobacteria showed that around 61% of isolates possessed strong activity against at least one of the test bacteria. Antifungal activity revealed that 55.55% of isolates were active on at least one of the test fungi. In addition, three isolates from forest soil (SF_2^2, SF_6^2 et SF_9^2) possess a broad spectrum of inhibition against the majority of test microorganisms (Garm+ bacteria and fungi).

Conclusion: Most of actinobacterial isolates studied of marine and terrestrial origin are very useful microorganisms for the production of bioactive natural products of industrial and biotechnological interest.

Keywords: Actinobacteria, sea, soil, antimicrobial activity.