

P0328

Poster Session I

New therapeutic alternatives

ISOLATION OF PRODUCING NRPS AND TYPE I PKS STREPTOMYCES STRAINS WITH POTENTIAL ANTIMICROBIAL ACTIVITY FROM LACUSTRINE SEDIMENTS OF THE EL KALA LAKES IN NORTHEASTERN ALGERIA

L. Loucif¹, E.S.M.A. Bendjama¹, D. Gacemi-Kirane¹, **J.M. Rolain¹**

¹IHU Méditerranée Infection, URMITE, Marseille, France

Objective: The recent emergence of multidrug-resistant bacteria over the last decade has led to a renewal in the discovery of new antimicrobial drugs. Aquatic members of streptomycetes are highly potent producers of new antimicrobial compounds as was already shown for their terrestrial counterparts. The aim of this study was to screen *Streptomyces* isolates from lacustrine sediments for new antimicrobial activities and to characterize their nonribosomal peptide synthetase and type I polyketide synthase genes.

Methods: one hundred and twelve *Streptomyces* isolates were recovered from the sediments of three lakes in El Kala northeastern Algeria. Primary screening for the antagonistic activities of *Streptomyces* isolates was done using cylinder plate method on ISP medium 2 against several bacteria and *Candida albicans*. Genomic potential for producing bioactive metabolites by the isolates was evaluated using specific degenerate primers amplifying fragments of polyketide synthetase I (PKS-I) and nonribosomal peptide synthetase (NRPS) genes.

Results: Among the 112 *Streptomyces* strains screened 27 strains (24.1%) showed significant activities against various bacteria and fungi including Methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant *Enterococcus faecium*, multidrug-resistant Gram-negative bacteria, and *Candida albicans*. NRPS gene was detected in all of the active strains tested, and 18 out of 27 strains yielded type I PKS gene. Preliminary analysis revealed that some of these NRPS/PKS has new sequences that are currently under investigation.

Conclusion: The current study reveals that the lacustrine sediments are a potential source of Streptomycetes producing NRPS and PKS-1 metabolites efficient against multidrug resistant bacteria.