

T121 - Antimicrobial and antibiofilm properties of polypeptide-enriched extracts from the Mediterranean seagrass *Posidonia oceanica*

Presenting Author - Domenico Schillaci, University of Palermo, Italy

Author/s – Diletta Punginelli, Valentina Catania, Mirella Vazzana, Manuela Mauro, Vincenzo Arizza, Maria Vitale

Abstract Content

Due to the rapid increase of antimicrobial resistance to conventional antibiotics and the diffusion of multidrug-resistant pathogens worldwide, it is urgent to develop alternative class of therapeutic molecules. Antimicrobial peptides (AMPs) are considered potential therapeutics in the treatment of bacterial and fungal infections. We focused on Mediterranean seagrass *Posidonia oceanica* as a source of new bioactive molecules with antimicrobial and antibiofilm properties. Polypeptide-enriched fractions of rhizomes and green leaves of the seagrass were tested against Gram-positive reference ATCC strains (*Staphylococcus aureus*, *Enterococcus faecalis*) and Gram-negative bacteria (*Pseudomonas aeruginosa*, *Escherichia coli*) and towards the yeast *Candida albicans*. The above mentioned extracts showed MIC values ranging from 1.61 µg/mL to 7.5 µg /mL, against tested pathogens. Peptide fractions were further analyzed through a high-resolution mass spectrometry and database search, identifying twelve novel peptides. Some peptides and their derivatives were chemically synthesized and assessed in vitro against bacterial and yeast strains. In particular, two synthetic peptides, derived from green leaves and rhizomes of *P. oceanica*, revealed an interesting antibiofilm activity towards *E. coli* and *P. aeruginosa* (BIC50 equal to 17.6 µg/mL and 70.7 µg/mL). In conclusion, these results support the potential use of discovered peptides as platform for the development of novel synthetic AMPs with improved pharmaceutical potential against relevant pathogens.