



Università degli Studi di Napoli Federico II

PhD in Biotechnology - 35th cycle

Dr. Shurooq Ismail

Exploitation of Synergistic Effects between Plant-Derived Compounds and Antimicrobial Peptides for Biotechnological Purposes.

Tutor(s): Prof. Angela Arciello

Department: Department of Chemical Science, Università degli Studi di Napoli Federico II, Monte Sant'Angelo, Via Cinthia 4, Napoli

Plants produce several compounds that are known as secondary metabolites. These metabolites play key roles in plant defence responses and have wide range of biological activities [1]. Due to microbial ability to acquire resistance against conventional antibiotics and the consequent development of multidrug resistant microbes, antimicrobial peptides (AMPs) are reported as promising and effective alternatives to conventional antibiotics [2]. The main aim of this PhD project is the evaluation of synergistic effects between plant-derived compounds and selected Host Defence Peptides (HDPs), in order to identify combinations of compounds able to display multiple biological activities. This would require the screening of several plant extracts and the identification of compounds endowed with interesting properties. Then, synergistic effects between identified compounds and HDPs will be evaluated. Once identified the most promising combinations, appropriate formulations will be designed to be used for specific applications of biotechnological interest, *i.e.* as novel bio-preservatives in food industry.

References

- 1- Svoboda K., Brooker J. D., Zrustova J. (2006). Antibacterial and Antioxidant Properties of Essential Oils: Their Potential Applications in the Food Industries. *Acta Horticulturae*, (709), 35–44.
- 2- Gordon Y. J., Romanowski E. G., McDermott, A. M. (2005). A Review of Antimicrobial Peptides and Their Therapeutic Potential as Anti-Infective Drugs. *Current Eye Research*, 30(7), 505–515.