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### Plant-derived antimicrobials: combination strategies to mitigate antibiotic resistance

Anca Miron<sup>1,\*</sup>, Petruta Aelenei<sup>1</sup>, Simon Vlad Luca<sup>1</sup>, Cristina Mihaela Rîmbu<sup>2</sup>, Cristina Elena Horhoge<sup>2</sup>, Adriana Trifan<sup>1</sup>, Sorin Dan Miron<sup>3</sup> and Ana Clara Aprotosoae<sup>1</sup>

<sup>1</sup> Faculty of Pharmacy, Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania.

<sup>2</sup> Faculty of Veterinary Medicine, Ion Ionescu de la Brad University of Agricultural Sciences and Veterinary Medicine of Iasi, Romania.

<sup>3</sup> Faculty of Medicine, Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania.

\*E-mail: anca.miron@umfiasi.ro

Infectious diseases (lower respiratory infections, diarrhoeal diseases, tuberculosis) are among the top 10 global causes of death. The high mortality rate of infectious diseases is primarily due to antibiotic resistance. Synergistic combinations of natural products with conventional antibiotics represent a promising strategy in overcoming antibiotic resistance. Due to a multitarget activity, synergistic combinations might reverse antibiotic resistance. In our studies, we investigated both volatile and non-volatile plant extractives but also pure phytochemicals regarding their potential to act synergistically with antibiotics and reverse antibiotic resistance. Checkerboard and time kill assays allowed us to identify plant extracts (white mulberry leaf extract, coriander essential oil) and phytochemicals (morusin, kuwanon G, xanthohumol, 8-prenylnaringenin) having the ability to reverse oxacillin resistance of methicillin-resistant *Staphylococcus aureus* and tetracycline resistance of *Staphylococcus epidermidis* [1]. Synergistic interactions between plant extractives/phytochemicals and conventional antibiotics are also described [1-3]. The findings are promising for the development of novel strategies in the treatment of bacterial infections.

#### References

- [1] Aelenei P et al. *Lett Appl Microbiol.* 2018; 68:156-164.
- [2] Gradinaru AC et al. *Lett Appl Microbiol.* 2018; 67:449-457.
- [3] Gradinaru AC et al. *Nat Prod Res.* 2014; 28:2076-2080.