EDITORIAL

The Era of Natural Antibiotics Toward 2050 (Part II)

Antibiotics represent essential drugs to combat bacterial infections and save human life. However, overdose and frequent abuse of antibiotics lead to antibiotic resistance with the emergence of so-called multi-drug resistant bacteria.

In the present special issue, the phenomenon of antibiotic resistance will be discussed from different angles.

De Morais Oliveira-Tintino and associates [1] describe the effects of efflux pumps as a major mechanism of antibiotic extrusion. Then, bacterial efflux inhibitors, including 1,8-naphthyridine sulfonamide derivatives, are illustrated as a remedy against antibiotic resistance.

Santacroce and Jirillo [2] point out that antibiotic treatment alters the diversity of gut microbiota species, with increased susceptibility to colonization and a decrease in antimicrobial peptide secretion. This review provides information on using microcins, prebiotics, and postbiotics to overcome antibiotic resistance.

Rizzo and associates [3] highlight the emergency of antibiotic resistance in veterinary medicine and the passage of antibiotic residue to humans through food. Alternative treatments to overcome antibiotic resistance in animals are represented using bacteriophages, bacteriocins, antimicrobial photodynamic therapy, phytochemicals, and ozone therapy.

REFERENCES

[1] de Morais Oliveira-Tintino CD, Muniz OB, dos Santos Barbosa CR, Pereira LS, Benigni IM, Rebelo RA, da Silva LE, Mireski SL, Nasato MC, Lacowicz Krautler MI, Barros Oliveira AM, Tintino JR, Alengar De Menes IR, Coutinho HDM, Goncalves da Silva T. The NorA, Tet (k), MepA, and MSrA efflux pumps in *Staphylococcus aureus*, its inhibitors, and 1,8-naphthyridine sulphonamides. Curr Pharm Des 2023; 29(5): 323-55.

[2] Santacroce L, Di Domenico MI, Montagnani M, Jirillo E. Antibiotic resistance and microbiota response. Curr Pharm Dec 2023; 29(5): 356-64.

[3] Rizzo A, Piccinno M, Lillo E, Carbonari A, Jirillo F, Sciorsci RL. Antimicrobial resistance and current alternatives in veterinary practice: A review. Cur Pharm Des 2023; 29(5): 312-22.

Prof. Luigi Santacroce and
Prof. Emilio Jirillo
Guest Editors:
Interdisciplinary Department of Medicine,
University of Bari,
"Aldo Moro", Bari, Italy
E-mails: emilio.jirillo@gmail.com;
luigi.santacroce@uniba.it

1381-6128/23