

EDITORIAL

The Era of Natural Antibiotics Toward 2050: First Part

Since their discovery, antibiotics have greatly contributed to saving millions of people. However, overdose and misuse of antibiotics have led to the emergence of multi-drug resistant bacteria, the so-called antimicrobial resistance (AMR). AMR has become a serious public health problem, and it is predicted to cause 10 million deaths per year by 2050. Therefore, alternative treatments to overcome antibiotic resistance are under current investigation.

On these grounds, this special issue, entitled: “The era of natural antibiotics toward 2050: first part”, will highlight current research on novel antimicrobials.

Sing and associates [1] emphasize the ability of acarbose, an alpha-glucosidase inhibitor of microbial origin, to inhibit bacterial growth. *In silico* and *in vitro* studies demonstrate that acarbose generates conformational and thermodynamically stable interactions with *Escherichia coli* peptide deformylase catalytic site. These results open a new avenue for the antimicrobial effects of acarbose on drug-resistant and non-resistant bacteria.

Moretta and associates [2] illustrate the applications for new antimicrobial peptides (AMPs), which are small molecules produced by innate immune cells. Nowadays, several tools have been developed to identify sequences with potential antimicrobial activity, thus predicting their biological effects. In the present review, an online available AMP database will be discussed in order to predict the biological activity and tertiary structure for the identification of new sequences endowed with antimicrobial activity.

Kontogiannis and associates [3] report the antibacterial and antibiotic activity of honeybee products. Special emphasis will be placed on the antiviral activity of honeybee derivatives, even including their effects against SARS-COV-2.

Santacroce and associates [4] discuss the use of antibiotics in dental practice, which may result in resistance to certain bacterial strains, as well as in the risk for general health and damage to the neck district. In this regard, new classes of antibiotics will be illustrated.

REFERENCES

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