Fighting Antimicrobial Resistance with Natural Products - Current Developments and Future Prospects

Injudicious use of antibiotics in health, hygiene, agriculture, animal husbandry and food industries has led to a rapid emergence and persistence of antimicrobial resistance (AMR), a serious global health threat [1]. The persistence and spread of AMR pathogens versus the slower discovery of new and effective antibiotics has made it extremely difficult to control these drug-resistant ‘superbugs’, necessitating the new alternatives. Natural products (NPs) are considered the key in combating AMR, owing to their wide-spectrum abilities of targeting the major AMR determinants. This special thematic issue was planned to bring together high-quality articles highlighting the antimicrobial potential of NPs in combating AMR. Articles covering current developments and future prospects in isolation, characterization, bioactivity, mechanism-of-action, and toxicity analyses of natural products/synthetic analogues/nanomaterials effective against drug-resistant pathogens are welcome. The first article [2] reviews the naturally bioactive molecules from different medicinal plants belonging to the classes of terpenoids, flavonoids, and phenolic acids, with strong antimicrobial potencies. The authors have discussed in detail the mechanistic insights of bioactive phytantimicrobials along with perspectives on their clinical perspectives and translational success. The second article by Sharma et al. [3] discusses the existing and emerging significance of phytotherapeutics in tackling the AMR menace, and how metabolic engineering approaches can pave the way for the production of potent phytantimicrobials. The article by Rahman et al. [4] presents a detailed and perspective review on bio-functionalized nano-antimicrobials covering the current trends and advances, recent progress and challenges besides the future prospects of materializing in vivo applications of nano-antimicrobials. The last article potently explores the promising plant essential oils and extracts for the prevention and treatment of dandruff pathogenesis [5].

REFERENCES


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