

Special Issue

Biomaterial-Based Delivery Systems for Natural Antimicrobials to Overcome Microbial Resistance

Message from the Guest Editors

The global spread of antimicrobial resistance (AMR) poses a critical public health challenge, requiring innovative strategies to combat resistant microorganisms. Phytochemicals, or plant-derived bioactive chemicals, are promising alternatives to traditional antibiotics due to their broad antibacterial activity and minimal side effects. Beyond direct antimicrobial effects, they can modulate microbial virulence and pathogenicity without necessarily killing microorganisms. However, their clinical application is hindered by low stability, limited bioavailability, and rapid degradation. Advanced biomaterials, such as nanoparticles, polymers, and hydrogels, address these challenges by enabling controlled, targeted, and sustained release of phytochemicals. Mechanisms such as membrane rupture, efflux pump inhibition, and biofilm inhibition development are especially important, as are strategies for adjusting release profiles under specific physiological or environmental conditions. This topic emphasizes the exciting potential of biomaterial-based delivery methods in combating AMR, as well as their significance in long-term treatment options.

Guest Editors

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About the Journal

Message from the Editor-in-Chief

There are very few fields that attract as much attention as scientific endeavor related to antibiotic discovery, use and preservation. The public, patients, scientists, clinicians, policy-makers, NGOs, governments, and supra-governmental organizations are all focusing intensively on it: all are concerned that we use our existing agents more effectively, and develop and evaluate new interventions in time to face emerging challenges for the benefit of present and future generations. We need every discipline to contribute and collaborate: molecular, microbiological, clinical, epidemiological, geographic, economic, social scientific and policy disciplines are all key. *Antibiotics* is a nimble, inclusive and rigorous indexed journal as an enabling platform for all who can contribute to solving the greatest broad concerns of the modern world.

Editor-in-Chief

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