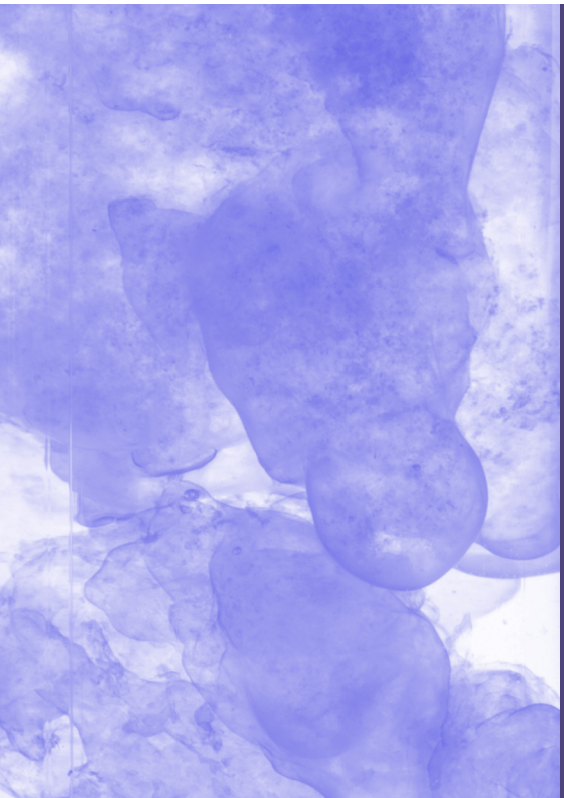
Applied Sciences
an Open Access Journal by MDPI

Impact Factor 2.9
CiteScore 6.1

Section
Applied Microbiology



mdpi.com/
journal/
applsci

MDPI

Journal Information

Applied Sciences (ISSN 2076-3417) provides an advanced forum on all aspects of applied natural sciences. It publishes reviews, research papers and communications. Our aim is to encourage scientists to publish their experimental and theoretical results in as much detail as possible. There is no restriction on the maximum length of the papers. The full experimental details must be provided so that the results can be reproduced. Electronic files and software regarding the full details of the calculation or experimental procedure, if unable to be published in a normal way, can be deposited as supplementary electronic material.

Editorial Board Members

Dr. Francesco Broccolo
Dr. Alessandro D'Annibale
Dr. António Manuel Santos Carriço Portugal
Prof. Dr. Rajaraman Eri
Prof. Dr Jose Paulo Mota

Author Benefits

Open Access

Unlimited and free access for readers

No Copyright Constraints

Retain copyright of your work and free use of your article

Thorough Peer-Review

2025 Impact Factor: 2.9

(*Journal Citation Reports* - Clarivate, 2026)

Discounts on Article Processing Charges (APC)

If you belong to an institute that participates with the MDPI Institutional Open Access Program

No Space Constraints, No Extra Space or Color Charges

No restriction on the maximum length of the papers, number of figures or colors

Journal Rank

JCR - Q2 (Engineering, Multidisciplinary) / CiteScore - Q1 (General Engineering)

Coverage by Leading Indexing Services

Scopus, SCIE (Web of Science), Ei Compendex, Inspec, CAPlus / SciFinder, and other databases

Rapid Publication

A first decision is provided to authors approximately 15 days after submission; acceptance to publication is undertaken in 2.9 days (median values for papers published in this journal in the first half of 2026).

Selected Papers



The Applications of MALDI-TOF MS in the Diagnosis of Microbiological Food Contamination

Authors: Maciej Ireneusz Kluz, Bożena Waszkiewicz-Robak and Miroslava Kačániová

Abstract: Microbiological contamination of food remains a critical global public health concern, contributing to millions of foodborne illness cases each year. Traditional diagnostic methods, particularly culture-based techniques, have been widely employed but are often limited by low sensitivity, insufficient specificity, and lengthy turnaround times. Recent advances in molecular biology, biosensor technology, and analytical chemistry have enabled the development of more rapid and precise diagnostic tools. Among these, Matrix-Assisted Laser Desorption/Ionization Time-of-Flight Mass Spectrometry (MALDI-TOF MS) has emerged as a transformative method for microbial identification. This review provides a comprehensive overview of the current applications of MALDI-TOF MS in the diagnosis of microbiological contamination in food. The method offers rapid, accurate, and cost-effective identification of microorganisms and is increasingly used in food safety laboratories for the detection of foodborne pathogens, ensuring the safety and quality of food products. We highlight the fundamental principles of MALDI-TOF MS, discuss its methodologies, and examine its advantages, limitations, and future prospects in food microbiology and quality assurance.

https://doi.org/10.3390/app15147863



Plant-Derived Phytobiotics as Emerging Alternatives to Antibiotics Against Foodborne Pathogens

Authors: Kamila Rachwał and Klaudia Gustaw

Abstract: Growing consumer awareness of clean labels is driving demand for preservative-free products yet concerns about foodborne pathogens and microbiological safety remain significant. Plant-derived compounds with bioactive properties—phytobiotics—have emerged as promising alternatives or complements to conventional antimicrobial agents. This review discusses phytobiotics, including essential oils, polyphenols, alkaloids, and organosulfur compounds, highlighting their structural diversity and antimicrobial potential. Phytobiotics combat foodborne pathogens by disrupting cell structures, inhibiting biofilms and quorum sensing, and interfering with genetic and protein synthesis. Importantly, some phytobiotics exhibit synergistic effects when combined with antibiotics or other natural agents, enhancing overall antimicrobial efficacy. The impact of phytobiotics on the microbiota of food products and the gastrointestinal tract is also addressed, with attention to both beneficial modulation and possible unintended effects. Practical applications in food preservation and supplementation are analyzed, as well as challenges related to composition variability, stability, and interactions with food matrices. Nevertheless, modern technologies such as nanoencapsulation, complexation with polysaccharides, and advanced extraction methods are being developed to address these challenges and enhance the stability and bioavailability of phytobiotics...

https://doi.org/10.3390/app15126774

Optimizing Bioremediation of β-Blockers: Cometabolic Transformation of Propranolol and Metoprolol by *Raoultella terrigena* BB2 and *Stenotrophomonas terrae* BB3

Authors: Anna Dzionek, Cansel Taskin and Piotr Siupka

Abstract: β-blockers are among the most widely prescribed cardiovascular drugs and are increasingly recognised as emerging pollutants due to their persistence, continuous release into aquatic environments, and potential toxicological effects on aquatic organisms. Their removal in conventional wastewater treatment plants is often inefficient, highlighting the need for biological remediation strategies. This study aimed to identify bacterial strains with the highest potential for the biotransformation of β-blockers. Therefore, we isolated and characterised bacterial strains capable of transforming two commonly used β-blockers—propranolol and metoprolol. The strains BB2 and BB3, which were able to transform propranolol and metoprolol, respectively, were identified as *Raoultella terrigena* and *Stenotrophomonas terrae*, respectively. BB2 showed broad metabolic versatility, utilising a wide range of carbon sources, whereas BB3 exhibited limited substrate utilisation. Antibiotic resistance profiling further distinguished the strains, with BB2 resistant across multiple antibiotic classes and BB3 largely sensitive. Co-metabolic assays demonstrated that supplementation with specific carbon and nitrogen sources markedly enhanced β-blocker removal, increasing propranolol biotransformation from 5% to 50% and metoprolol from 4% to 36%...

https://doi.org/10.3390/app152212052

Silver Nanoparticle-Infused Pullulan Films for the Inhibition of Foodborne Bacteria

Authors: Karolina Kraśniewska and Małgorzata Gniewosz

Abstract: The aim of this research was to examine the antibacterial activity of commercially available silver nanoparticles against foodborne bacteria and to evaluate the properties of pullulan films incorporating these nanoparticles, including their antibacterial activity and selected physical properties. First, the antibacterial activity of silver nanoparticles against foodborne bacteria was investigated. The following parameters were assessed to evaluate the antibacterial activity of silver nanoparticles: minimum inhibitory concentration (MIC), minimum bactericidal concentration (MBC), percentage antibacterial activity, bacterial survival based on time–kill curves, leakage of DNA and intracellular proteins using spectrophotometric measurements, and changes in bacterial cell morphology using scanning and transmission electron microscopy (SEM and TEM). Pullulan films with silver nanoparticle content ranging from 2 to 32 μg/cm² were obtained. The films were evaluated for antibacterial activity and physical properties, including macroscopic and microstructural (SEM) observations, thickness, light barrier, and color...

https://doi.org/10.3390/app152011297

Invitation to Submit

Advances in Food Safety and Microbial Control, 2nd Edition

Guest Editors: Dr. Ramona Iseppi, Dr. Patrizia Messi and Dr. Carla Sabia
Deadline: 20 December 2026



Bacteriophages as Precision Tools for Microbiome Modulation

Guest Editors: Dr. Michał Wójcicki, Dr. Iwona Gientka and Dr. Paulina Średnicka
Deadline: 31 December 2026



Microorganisms and Their Use in Biotechnological Production, 2nd Edition

Guest Editors: Prof. Dr. Dirk Tischler and Dr. Giovanni Baron
Deadline: 30 January 2027



MDPI is a member of, or collaborates with, the following organizations

Affiliated Society:
International Society for Plasma Medicine (ISPM)
Polish Society of Applied Electromagnetics (PTZE)

Editorial Office
applsci@mdpi.com

MDPI
Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
mdpi.com