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Key review publications

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Nanoformulated antibiotics: the next step for pathogenic bacteria control.
This review describes nanostructures in association with antibiotics as an unconventional and innovative tool for bacterial control.
2013, Current Medicinal Chemistry, IF 3.715, 2 citations

Antibacterial properties of nanoparticles.
This review focuses on the properties and applications of inorganic nanostructured materials and their surface modifications, with good antimicrobial activity. In particular, we discuss the role of different NP materials.
2012, Trends in Biotechnology, IF 10.040, 138 citations

Nano-technology for targeted drug delivery to combat antibiotic resistance.
Here, the authors discuss trends and development of nano-materials and alternative antimicrobials to solve the problem of antibiotic resistance.
2012, Expert Opinion on Drug Delivery, IF 4.116, 6 citations

Nanotechnology and pulmonary delivery to overcome resistance in infectious diseases.
Currently, medicine faces the specter of antibiotic resistance. Nanotechnology-based drug delivery systems (nano-DDS) emerged as a promising approach to circumvent the limitations of conventional formulations and to treat drug resistance, opening the hypothesis for new developments in this area.
2014, Advanced Drug Delivery Reviews, IF 12.707, 17 citations

Nanobiotechnologies for the detection and reduction of pathogens.
Nanobiotechnologies focusing on the key requirements of signal amplification and pre-concentration for the development of sensitive assays for food-borne pathogen detection in food matrices will be described and evaluated. The potential that exists for the use of nanomaterials as antimicrobial agents will also be examined.
2012, Enzyme and Microbial Technology, IF 2.966, 19 citations

Nanotools for the delivery of antimicrobial peptides.
Among the different types of potential antimicrobial peptide-encapsulating structures reviewed here are liposomes, dendritic polymers, solid core nanoparticles, carbon nanotubes, and DNA cages.
2012, Current Drug Targets, IF 3.597, 14 citations

Nano-antibiotics in chronic lung infection therapy against Pseudomonas aeruginosa.
This review details the current state of development and limitations of the two most widely studied forms of nano-antibiotics, i.e. liposomes and polymer nanoparticles. Lastly, future research needs to bring liposome and polymer-based nano-antibiotics closer to their clinical realization are identified.
2014, Colloids and Surfaces B: Biointerfaces, IF 4.287, 4 citations

Drug delivery approaches to overcome bacterial resistance to beta-lactam antibiotics.
This review provides a descriptive overview of the various published ways to enhance the clinical effectiveness of β-lactam antibiotics, beginning with the early and ongoing search for more powerful β-lactam derivatives, penicillinase-stable variants, β-lactam prodrugs, intracellular delivery approaches, nanocarrier-based strategies, and new β-lactams with an alternative mechanism of action.
2008, Expert Opinion on Drug Delivery, IF 4.116, 3 citations

Antimicrobial applications of nanotechnology: methods and literature.
A variety of techniques to evaluate bacteria viability, each with unique advantages and disadvantages, has been established and must be understood in order to determine the effectiveness of nanoparticles (diameter ≤100 nm) as antimicrobial agents. In addition to addressing those techniques, a review of select literature and a summary of bacteriostatic and bactericidal mechanisms are covered in this manuscript.
2012, International Journal of Nanomedicine, IF 4.195, 71 citations

The growing role of nanotechnology in combating infectious disease.
This review focuses of the potential therapeutic and preventative applications of nanotechnology-based drug delivery systems in infectious disease.
2011, Virulence, IF 3.319, 27 citations

Reducing infections through nanotechnology and nanoparticles.
Various nanoparticles have been explored for improving bacteria and biofilm penetration, generating reactive oxygen species, and killing bacteria, potentially providing a novel method for fighting infections that is nondrug related. This review article will first examine in detail the mechanisms and applications of some of these nanoparticles, then follow with some recent material designs utilizing nanotechnology that are centered on fighting medical device infections.
2011, International Journal of Nanomedicine, IF 4.195, 55 citations

Antibacterial nanomedicine.
We review some of these pioneering studies in which nanomaterials have been evaluated as potential therapeutics, antiseptics or disinfectants. We will discuss the physicochemical and antibacterial highlights of each material and present the future perspectives of this emerging field.
2008, Nanomedicine (UK), IF 5.824, 24 citations

Clinical experimentation with aerosol antibiotics: current and future methods of administration.
In the current review, we discuss the efficiency of aerosol antibiotic studies along with aerosol production systems. The different parts of the aerosol antibiotic methodology are presented. Additionally, information regarding the drug molecules used is presented and future applications of this method are discussed.
2013, Drug Design Development and Therapy, IF 3.026, 16 citations

Nanotechnology as a therapeutic tool to combat microbial resistance.
The first part discusses the epidemiology of microbial drug resistance. The second part describes mechanisms of drug resistance used by microbes. The third part explains how nanoparticles can overcome this resistance.
2013, Advanced Drug Delivery Reviews, IF 12.707, 30 citations

Nanoparticles as antimicrobial agents: their toxicity and mechanisms of action.
This review is focused on the unique properties of nanoparticles and their mechanism of action as antibacterial agents. The activities of nanoparticles on drug-resistant bacteria and risks of using them as antibacterial agents also have been documented.
2014, Journal of Nanoscience and Nanotechnology, IF 1.339, 2 citations

Nanomedicines for antimicrobial interventions.
In this review, we identify a set of organic, inorganic, and hybrid materials that might be used for prevention and control of healthcare-associated infections. We report the current

knowledge on nano- and microparticle-based antimicrobial agents and describe the possible mode of their action.
2014, Journal of Hospital Infection, IF 2.782, 0 citations

Nanostructures as Promising Tools for Delivery of Antimicrobial Peptides
This article reviews the most important nanostructures as promising tools for peptide delivery systems.
2012, Mini Reviews of Medicinal Chemistry, IF 2.865, 10 citations

Development of Nanoparticles for Antimicrobial Drug Delivery
Here the current progress and challenges in synthesizing nanoparticle platforms for delivering various antimicrobial drugs are reviewed. We also call attention to the need to unite the shared interest between nanoengineers and microbiologists in developing nanotechnology for the treatment of microbial diseases.
2010, Current Medicinal Chemistry, IF 3.715, 163 citations

Multidrug resistance: Physiological principles and nanomedical solutions.
In the present manuscript, after introducing the most important physiological principles of MDR, we summarize prototypic nanomedical strategies to overcome multidrug resistance, including the use of carrier materials with intrinsic anti-MDR properties, the use of nanomedicines to modify the mode of cellular uptake, and the co-formulation of chemotherapeutic drugs together with low- and high-molecular-weight MDR inhibitors within a single drug delivery system.
2013, Advanced Drug Delivery Reviews, IF 12.707, 13 citations

Antimicrobial nanotechnology: its potential for the effective management of microbial drug resistance and implications for research needs in microbial nanotoxicology.
In the context of current microbial nanotoxicology studies, particularly reductionist laboratory studies, we offer suggestions and considerations for future research, using an illustrative example from our work with silver nanoparticles.
2013, Environmental Science: Process and Impacts, 2.085, 10 citations