

2nd World Congress and Expo on Nanotechnology and Material Science

April 04-06, 2016 at Dubai, UAE

Nanomaterials for alternative antibacterial therapy

Hassan A. Hemeg

Taibah University, Kingdom of Saudi Arabia

Despite numerous potent antibiotics, bacterial infections, particularly those caused by nosocomial pathogens are a major cause of morbidity and mortality around the globe. These affect the severely ill, hospitalized and immunocompromised patients who are vulnerable to infections. The option for treatment with antimicrobials is mostly empirical and not bereft of toxicity, teratogenicity and/or mutagenicity, hypersensitivity. The appearance of multi-drug resistant bacterial strains further aggravates the clinical problem as the microorganisms spread epidemically among the patients. Moreover, there is a growing concern regarding biofilm-associated infections that are refractory to the currently available antimicrobial armory, leaving almost no treatment option. Thus, there is an urgent need to develop additional bactericidal agents. The attention has been especially devoted to new and emerging nanoparticle-based materials in the field of antimicrobial chemotherapy.

The past decade has witnessed a substantial surge in the global use of nanomedicines as antimicrobials. Several metal and metal oxide nanoparticles have been reported for their antibacterial activity. The microbes are eradicated either by the microbicidal effects of the nanoparticles itself, or by microbistatic effects followed by killing potentiated by the host's immune system. The effect of nanoparticles on the microbial biofilms along with the molecular mechanisms by which the nanoparticles annihilate multidrug-resistant bacteria will be discussed. Combinatorial therapeutic approach with the metallic nanoparticles may serve as adjunct to the existing antibiotics and may help to curb the mounting menace of bacterial resistance and nosocomial threat.

Biography:

Dr. Hassan A. Hemeg pursued Masters in Pathological Science from Sheffield University, UK and received his Ph.D. from King Abdulaziz University, Saudi Arabia. He also completed Diploma in National Association of Safety Professionals from USA. He has earned several honors such as Fellow of the Institute of Biomedical Science, UK and Certified Canadian Accreditation Specialist for Health Care Facilities. He also acquired training in Microbiology from Sheffield University and Bristol University, UK and, U.S Department of Labor Occupational Safety and Health Administration. He has also worked as Educational Instructor and Supervisor in Clinical Molecular Microbiology Laboratories at King Abdulaziz University Hospital, Jeddah and as Head of Environmental Health and Safety Unit at King Abdulaziz University Hospital. He has served as a member, Secretary and Chairman of several Committees and is a permanent representative of Ministry of Higher Education in Safety Traffic Committee. Presently, he is also the Vice Dean of Medical Applied Science College at Taibah University. His research interest is antimicrobial. He has published several papers in Journals of International repute.