

Development of Gold Nanoparticles-Antibody System for the Selective Photothermal Destruction of Multidrug Resistant Bacteria

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Abstract : Antimicrobial resistance, which threatens the efficacy of the existing antibiotics represents a worldwide public health issue. At the current time, vancomycin is the only responsive treatment although has significant cytotoxicity, is partially effective and it is poorly retained by infected tissues. From a clinical point of view, attractive alternative approaches for treating such Meticillin-Resistant Staphylococcus Aureus (MRSA) strains would be using agents that cause physical damage to the bacteria. Modular nanopharmaceuticals systems are being designed to address all of these multifunctional capabilities for the ideal bacterial treatment, with the ability to mix and match appropriate functions. Here we present a novel method of selective laser photothermal ablation of MRSA bacteria mediated by gold nanoparticles bound to PBP antibody against PBP protein located on the MRSA surface.

Keywords : MRSA, laser, nanoparticle, antibody

Conference Title : ICBBS 2017 : International Conference on Biotechnology and Biotransformation Studies

Conference Location : Dubai, United Arab Emirates

Conference Dates : November 24-25, 2017