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Antibacterial activity of quantum dots for treatment of wound infection

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Antibiotics are one of the most important drugs in fighting bacterial infection and have a significant role in the maintenance of public health. Wound infection is responsible for a higher percentage of morbidity and contributes to aggravate in health care costs. In recent decades, these drugs become less effective against many bacteria such as methicillin-resistant *Staphylococcus aureus* (MRSA), *E. coli* and *Pseudomonas aeruginosa*. Therefore, to overcome the major disadvantages related to antibiotics resistance pathogenic microorganisms, developments in nanotechnology have opened new areas in nanomedicine that allow for synthesis of nanoparticles, which can be assembled into complex architectures. Using of nanoparticles with novel synthesis has economic and eco-friendly benefits and may give new source of antibacterial agent with the possible novel mechanism of action. In addition to that, inorganic antibacterial agents such as titanium and zinc have advantages over organic compound due to their stability and safety. In this study, quantum dots were synthesized, chemically and physically characterized, and their antibacterial activity were investigated. The nanoparticles were tested in a dose response strategy against three of the most common pathogenic bacteria, methicillin resistance *Staphylococcus aureus* (MRSA), *E. coli* and *Pseudomonas aeruginosa* that cause wound infection. The main finding of this result revealed that the synthesized quantum dots were not only capable to kill the pathogenic bacteria in a short period of time but, they were strain specific in some cases. The impact of this project will give new strategies in treatment of wound infection.

Biography

Aisha Baqasi has completed her Master's in Applied Medical Technology (Clinical Microbiology and Immunology) from King Abdulaziz University. She is the Laboratory Specialist at Ministry of Health.

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