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# Nanotech 2018: Updated trends on antimicrobial action of silver nanoparticles- Hind AA Al Zahrani, University of Jeddah, Saudi Arabia

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Silver nanoparticles (AgNPs) are widely spread worldwide for several centuries and are extremely utilized in industry, cosmetics, food packaging for its proposed antimicrobial activities. Many reports mentioned the good value of AgNPs in many faces. This review focused on antimicrobial activities of AgNPs, subjecting briefly to their synthesis, with a special specialise in different mechanisms of action and factors affecting these activities as an antimicrobial agent.

Nanotechnology has recently emerged as a rapidly growing field with numerous life science applications. At an equivalent time, silver has been adopted as an antimicrobial material and disinfectant that's relatively freed from adverse effects. Silver nanoparticles possess a broad spectrum of antibacterial, antifungal and antiviral properties. Silver nanoparticles have the power to penetrate bacterial cell walls, changing the structure of cell membranes and even leading to necrobiosis . Their efficacy is due not only to their nanoscale size but also to their large ratio of area to volume. they will increase the permeability of cell membranes, produce reactive oxygen species, and interrupt replication of desoxyribonucleic acid by releasing silver ions. Researchers have studied silver nanoparticles as antimicrobial agents in dentistry. as an example , silver nanoparticles are often incorporated into acrylic resins for fabrication of removable dentures in prosthetic treatment, composite resin in restorative treatment, irrigating solution and obturation material in endodontic treatment, adhesive materials in treatment , membrane for guided tissue regeneration in periodontal treatment, and titanium coating in implant treatment. Although not all authorities have acknowledged the security of silver nanoparticles, no systemic toxicity of ingested silver nanoparticles has been reported. A broad concern is their potential hazard if they're released into the environment. However, the interaction of nanoparticles with toxic materials and organic compounds can either increase or reduce their toxicity. This paper provides an summary of the antibacterial use of silver nanoparticles in dentistry, highlighting their antibacterial mechanism, potential applications and safety in clinical treatment.

Nanotechnology is defined because the design, characterization and application of structures, devices and systems by controlling shape and size at a nanometer scale (1 nm to 100 nm). it's an emerging field of research, with various applications in science and technology, particularly for developing new materials. Nanoparticles are developed with unique properties that make them desirable in materials science and biology. Among various nanoparticles, silver nanoparticles are one among the foremost popular objects of study in recent decades. Silver nanoparticles contain 20 to fifteen ,000 silver atoms, and their diameters are usually smaller than 100 nm. thanks to an outsized surface-to-volume ratio, silver nanoparticles exhibit remarkable antimicrobial activity, even at a coffee concentration. additionally , they're low cost and have shown low cytotoxicity and immunological response. Therefore, silver nanoparticles have multiple potential biomedical applications. they're used for drug delivery, medical imaging and molecular diagnostics. they're also utilized in therapeutics, like surgical mesh, fabrication of implant replacements, wound dressing and medicament for the promotion of wound healing.

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