Poster journal

Antibacterial nanoparticles: A new horizon

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Commentary:

A massive hardship in endodontic treatment is the failure to eliminate bacterial biofilms during cleaning and shaping procedures, enduring within the anatomic intricacies and unreached areas of the canal[1]. Rapid development of nanotechnology in the field science and technology, is creating numerous biomedical applications like drug delivery, tissue regeneration, anti-microbial application[2]. Nano-dentistry implies to the application of nanomaterials for the diagnosis of oral ailment, treatment of the same with the aim of enhancing extensive oral health[3].

Antibacterial nanoparticles have been pioneered at primitive levels with significant potential for eradication of oral biofilms. The efficacy of nanoparticles to eradicate microorganisms is ascribed to different mechanisms. First mechanism being attachment of nanoparticles to the targeted cell membrane of bacteria through electrostatic forces causing the alteration of membrane potential, depolarization leading to loss of membrane integrity. The second mechanism includes bacterial cell death by the production of free radicals like reactive-oxygen species it influences the bacterial cell endurance by protein function blockage, destruction of DNA this results in excess radical production. This leads to the bacterial cell death[4].

It is anticipated that nanotechnology will improve healthcare with the development of novel methods for disease diagnosis and it's prevention[5]. Enhancement of antibacterial efficacy in endodontics is the potential of nanoparticle based strategies[6]. Thus, this poster reviews antibacterial nanoparticles in endodontics, as the promising future in development of better techniques to achieve efficient disinfection.

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Keywords: Antibacterial; Bioactive Glass; Chitosan; Nanodentistry; Nanoparticles; Silver
How to cite this article: Gore A, Pandey S, Patel S, Gulve M. Antibacterial nanoparticles: A new horizon-Dent PosterJ 2020; 9(1):2.
Source of support: Nil.
DOI: 10.15713/ins.dpj.024
Conflict of interest: None declared

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