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Synthesis and characterization of Zirconium nanoparticles and its anti-microbial activities against oral pathogens

Sri Janani J Karunya University, India

Nanotechnology is the manipulation of any matter on atomic, molecular and supramolecular scale. Treating the anti-microbial activities against oral pathogens using nanotechnology is a well known techniquebut treating them with Zirconyl nitrate along with *Curcuma longa* has not been reported earlier. It is a unique combination where most scrutinized literature was collected after meticulous research. A comparative study of Zirconyl nitrate and zirconium oxychloride has been carried out by synthesizing them chemically by a certain process to know a better result. Zirconyl nitrate showed a better and also a clearer result in different parameters. So it has been chosen for further synthesis. A green synthesis has been carried out using *Curcuma longa* by extracting the longa. The extract was then treated with Zirconyl nitrate solution and later heated. After removing the impurities, the obtained product has been calcinated where a powder is procured. Subsequently the obtained powder is analyzed by Scanning Electron Microscope (SEM), X-Ray Diffraction (XRD), UltraViolet (UV) and Particle size analyzer methods where it confirmed the crystalline nature and morphology of the synthesized products. *Streptococcus* mutans and *Escherichia coli* has been selected to test the anti-microbial activities in the oral pathogens. It is selected to treat Oral thrush caused by fungus *Candida albicans* which accumulates on the lining of the human mouth. Zirconyl nitrate was studied on bacterial strains of *E.coli* and *Streptococcus* mutans. On the basis of the study, it could be speculated that the Zr (NO3)4 nanoparticles with the different active facets will show different antimicrobial activity.

Biography

Sri Janani J is currently pursuing her BTech Biotechnology in Karunya University, India. She has got Internship at Ben Gurion University, Israel from July 5th-31st 2015. She has participated in EVOGEN 2013-National Level Technical Symposium. She has also participated in Mindkraft 2K'13-National Level Techno Management Fest. She has been ranked 28th position in Coimbatore city at 10th National Science Olympiad.

jsrijanani@outlook.com

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