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4th International Congress on

Bacteriology and Infectious Diseases

May 16-18, 2016 San Antonio, USA

AucoreAgshell nanoparticles with potent antibiofilm activity as novel nanomedicine

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Medicinal plants serve as a rich source of diverse bioactive phytochemicals that might even take part in bioreduction and Stabilization of phytogenic nanoparticles with immense therapeutic properties. *Dioscorea bulbifera* is a potent medicinal plant used in both Indian and Chinese traditional medicine owing to its rich phytochemical diversity. Herein, we report the rapid synthesis of novel AucoreAgshell DBTE). AucoreAgshell NPs synthesis was completed within 5 hours showing a prominent peak at 540 nm. The bioreduced nanoparticles were characterized using high resolution transmission electron microscopy (HRTEM), energy dispersive spectroscopy (EDS), dynamic light scattering (DLS), X-ray diffraction spectroscopy (XRD) and Fourier transform infrared spectroscopy (FTIR). The particles were further checked for antibiofilm activity against bacterial pathogens. Scanning electron microscopy (SEM) and atomic force microscopy (AFM) was employed to study the mechanism behind antibiofilm activity. HRTEM analysis revealed 9 nm inner core of elemental gold covered by a silver shell giving a total particle diameter up to 15 nm. AucoreAgshell NPs were comprised of 57.34 \pm 1.01% gold and 42.66 \pm 0.97% silver of the total mass. AucoreAgshell NPs showed highest biofilm inhibition up to 83.68 \pm 0.09% against *Acinetobacter baumannii. Biofilms of Pseudomonas aeruginosa, Escherichia coli* and *Staphylococcus aureus* were inhibited up to 18.93 \pm 1.94%, 22.33 \pm 0.56% and 30.70 \pm 1.33%, respectively. Scanning electron microscopy (SEM) and atomic force microscopy (AFM) confirmed unregulated cellular efflux through pore formation leading to cell death. This is the first report of synthesis, characterization, antibiofilm and antileishmanial activity of AucoreAgshell NPs synthesized by *D. bulbifera*.

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Optimized formulation, preformulary characterization and evaluation and of diethylcarbamazine citrate medicated chewing gum

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Truncate infections caused by Helminths or parasitic worms affect more than two billion people worldwide. Looking at this situation, an attempt has been made to formulate a novel drug delivery system known as medicated chewing gum containing masticatory gum base with pharmacologically active ingredient diethylcarbamazine citrate (used as a first-line agent for control and treatment of lymphatic filariasis and for therapy of tropical pulmonary eosinophilia caused by *Wuchereria bancrofti* and *Brugia malayi*). Optimized formulations of medicated chewing gum with varying concentration of gum base were formulated. Evaluation parameter like texture analysis (Hardness, Firmness and Springiness test) is carried out by Texture Analyzer Apparatus (TAXT plus). Improved essentials of casting and *in vitro* release profile of drug in saliva was obtained by formulation Fc3 (96.2%). Buccal absorption studies showed that 39.2% of drug absorbed within one minute when available to buccal mucosa at pH 5.5, commensurate with explain diethylcarbamazine citrate-medicated chewing gum (DEC-MCG) can be considered as better formulation for buccal drug delivery system in which drug is absorbed buccally and reaches the systemic circulation via jugular vein.

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