

2nd World Congress on **Otolaryngology and Wound Care**

August 30, 2021

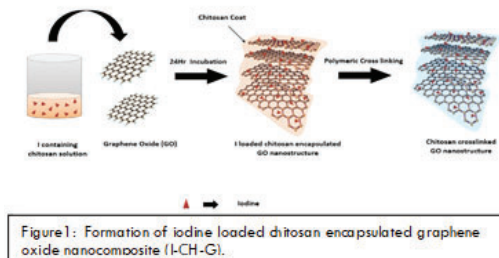
Accelerated antibacterial and wound healing activity in full thickness chronic wounds by iodine loaded chitosan encapsulated graphene oxide nanocomposite

Priyanka Chhabra¹ and Amit Tyagi²

¹Galgotias University, India

²DRDO, India

Nanotechnology has emerged as a novel innovation of the century in different areas of science. The development of different types of nanocarriers offers novel approaches to delivering active drug at the site of injury in a sustained and effective manner which could significantly enhance the wound healing potential of chronic wounds. Given that, the goal of the present study is to develop nanocomposite based on chitosan, graphene oxide, and iodine as an antimicrobial agent for rapid wound healing. The prepared iodine loaded chitosan encapsulated graphene nanocomposites (I-CH-G) were characterized using different techniques, such as SEM, FTIR, AFM, particle size analysis and zeta potential measurement. The average diameter of I-CH-G nanocomposite was found to be 370 ± 1.2 nm and showed sustained release behavior. The optimized I-CH-G nanocomposite was incorporated into carbopol gel and evaluated for drug content, pH, *in vitro* release, texture analysis, and viscosity. In addition to that, they were also evaluated for their antimicrobial activity against *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Escherichia coli*. Further, these nanoparticles were evaluated *in-vivo* for wound healing efficacy in Sprague Dawley rats. Histopathological evaluations demonstrated that I-CH-G-NPOs showed significantly enhanced wound contraction, enhanced cell adhesion, epithelial migration, and high hydroxyproline content leading to faster and more efficient collagen synthesis as compared to plain carbopol, plain iodine and controls. Hence the topical administration of fabricated I-CH-G-nanocomposites appears to be an interesting and suitable strategy for the treatment of chronic wounds.



pchhabara188@gmail.com