## Int J Biol Macromol. 2019 Feb 1;122:137-148

## Recent advancements in biopolymer and metal nanoparticle-based materials in diabetic wound healing management.

<u>Vijayakumar V</u><sup>1</sup>, <u>Samal SK</u><sup>2</sup>, <u>Mohanty S</u><sup>1</sup>, <u>Nayak SK</u><sup>1</sup>. **Abstract** 

Currently, diabetes mellitus (DM) accelerated diabetic foot ulcer (DFU) remains vivacious health problem related with delayed healing and high amputation rates which leads to enormous clinical obligation. Keeping in view of the foregoing, researchers have been made in their efforts to develop novel materials which accelerate delayed wound healing in the diabetic patient and reduce the adversative influences of DFUs. The most prominent materials used for the wound healing application have biocompatibility, low cytotoxicity, excellent biodegradable properties, and antimicrobial activity properties. Utilization of nanoparticles has emerged as a protruding scientific and technological revolution in controlling DFUs. Biopolymers in combination with bioactive nanoparticles having antimicrobial, antibacterial, and anti-inflammatory properties have great potential in wound care to enhance the healing process of diabetic wound infectious. Combination of antibacterial nanoparticles like silver nanoparticles (AgNPs), gold nanoparticles (AuNPs), copper nanoparticles (CuNPs) etc. with polymeric matrix could efficiently inhibit bacterial growth and at the same time fastens the healing process of a wound. This review briefed the recent development of different natural polymers and antibacterial nanoparticles to mitigate the diabetes mellitus based DFU.

## **KEYWORDS**:

Diabetes; Nanoparticle; Wound healing

PMID: 30342131