

ABSTRACT

In diabetic patients due to poor blood circulation their wounds are less susceptible to heal. As Bioconjugate (GO_x/ZnONPs) release ROS (reactive oxygen specie) so it proves helpful for the treatment of wound of diabetic patients. The aim of this study is immobilization of glucose oxidase enzyme on to the surface of modified zinc oxide nanoparticles in order to improve the process of wound healing in diabetic mice. Diabetes was induced by using alloxan monohydrate. After the induction of diabetes, by using 6mm biopsy puncture excision wound was created. Wound was treated with zinc oxide nanoparticles (ZnONPs), GO_x/ZnONPs (bioconjugate) and glucose oxidase enzyme and the process of healing was evaluated by calculating percent wound contraction, healing time and histological analysis. The best results were observed in bioconjugate in which 83% of healing of wound observed at day 11 and complete healing at day 15. The ANOVA results between control and treatment was also significant $P < 0.01$. Histological analysis of bioconjugate revealed increase growth of blood vessels, mature epithelium, and reduced inflammation. Thus, it has been concluded that bioconjugate used for the dressing of wound in order to heal chronic wound.