



---

## Abstract

Present research was conducted to evaluate the anti-diabetic application of ZnO nanoparticles immobilized over glucose oxidase enzyme. Basically glucose oxidase enzyme is the member of Oxidoreductase class which causes the Oxidation of glucose to gluconic acid. It is present in all aerobic organisms. Same as glucose oxidase Zinc Oxide Nanoparticles have a potential anti-diabetic behavior. The combination of Glucose oxidase with Zinc Oxide Nanoparticles prepared a Bio-conjugate. Which showed strong Anti-diabetic potential. Anti-diabetic activity was performed over Albino rats with an average weight of  $120 \pm 20$  grams. These rats were divided into groups like Controlled, diabetic, rats treated with Zinc Oxide Nanoparticles only, and in fourth group of rats treated with ZnO/GoX Bio-conjugate. Controlled rats were not given any type of diabetic treatment. While in diabetic rats Diabetes mellitus was introduced through induction of Alloxan injection in peritoneal cavity. And third group received oral dose ZnO/GoX. After four weeks of treatment a very significant reduction in glucose level was seen. And also an improvement of blood insulin was seen. After completion of treatment period Rats were dissected and their pancreas were examined through high density microscope. A significant improvement was seen in the pancreatic cells of rats treated with ZnO/GoX in comparison with diabetic rats.