

Abstract

Use of nanotechnology for the biomedical application has emerged in recent years rapidly, where as their accumulation in the environment has raised concern for their Eco toxicological profile. There is need to develop safe nanoparticles. Recently use of plants has been introduced for the synthesis of nanoparticles termed as green synthesis. The current study has been designed to synthesize Zinc Oxide nanoparticles (ZNO) by using leaves extract of *Hibiscus rosa-sinensis* to test their efficacy and toxicity using a mice model. Nanotechnology is one of most advanced technology provide us more reliable means of diagnosing and treating diabetes mellitus.

Characterization of the green synthesized ZNO Nps was performed, UV-visible confirmed the optical absorption peak at 229nm. FTIR spectra confirmed the presences of alkynes and aldehydes compounds. The formation of the synthesized ZnO NPs was also confirmed by SEM, XRD and PL analysis.

Albino mice were used as the model animal to test the antidiabetic activity of ZnO NPs. Three groups Group 1 non diabetic, Group 2 diabetic and Group 3 which is treated with ZnO NPs 10mg/kg oral dose for 21days. Blood samples were collected for serum test and then mice were slaughtered obtain the kidney and liver tissues at 7, 14 and 21 days respectively.

In the samples the blood glucose level decreased 190 ± 12.7 to 113 ± 10.8 at 0 to 21 day. The Serum urea level 31.4 ± 1.5 to 45.2 ± 3.7 , bilirubin level 0.53 ± 0.22 to 1.00 ± 0.28 mg/dl and creatinine level also decreased 0.44 ± 0.23 to 1.50 ± 0.58 mg/dl at 0 to 21 day and maintained by the use of ZnO NPs towards the normal values in the diabetic mice . AST and ALT values also decreased this was clear indication of the antidiabetic activity in response to green ZnO NPs with *Hibiscus rosa sinensis*. This fact indicates that green synthesized ZnO NPs were less toxic than chemical synthesized one. Additionally the micrographs of liver and kidney also showed the antidiabetic effect of ZnO NPs.

Keywords : ZnO NPs , *Hibiscus rosa sinensis*, antidiabetic activity, albino mice