

Title: Antidiabetic potential of Silver, Gold nanoparticles and aqueous extract of *Opuntia ficus indica* on Streptozotocin-induced Wistar rats.

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Diabetes mellitus in this present time has become vast and increasingly important public health concerns. This study used *Opuntia ficus indica* (OF) aqueous extract to synthesize silver (AgNPs), gold (AuNPs) and bimetallic alloy (Ag-AuNPs) nanoparticles to evaluate its efficacy as an antidiabetic agent. The nanoparticles were characterized and assessed for their antibacterial, antifungal, antioxidant and antidiabetic properties using standard characterization techniques and methods. The antidiabetic potential of OF, AgNPs, and AuNPs were investigated using sixty -three male wistar rats with seven rats per group (DT_1-DT_9). Diabetes mellitus was induced by single intraperitoneal injection of 65mg/kg b.w. streptozotocin on groups DT_5-DT_9 groups. AgNPs, AuNPs, OF and 0.6 mg/kg b.w glibenclamide were used for treatment for twenty-eight days. The prominent inhibitory concentrations for Ag-AuNPs was against *Aspergillus flavus* and *Candida albican* was 92% while AgNPs against *E. coli (*AT CC 25922) was 82%. A promising scavenging activities using DPPH and ABTS compared favourably with ascorbic acid standard at 20µg/ml. There was significant ($P<0.05$) increased body weight by 35% and 34% in AgNPs and OF treated groups with decreasing fasting blood glucose by 77% and 77% respectively when compared with DT_5. AgNPs and OF treated groups significantly ($P<0.05$) decreased the elevated activities of AST, ALT, ALP and LDH by 54.73%, 35.99%, 98.13% and 41.58% respectively. Histopathological analysis on liver and kidney tissues of AgNPs and OF treated groups showed a regenerative effect. The findings revealed that AgNPs and OF demonstrated

antidiabetic properties in streptozotocin induced diabetic rats with strong antimicrobial and antioxidant effects.

Biography

Ibikunle Jelilat Bukiola is a graduate of Microbiology from the Federal University of Technology, Minna, Niger State, Nigeria. She lectures in the department of Science and Technology, Federal Polytechnic, Offa, Kwara State, Nigeria. She is currently undergoing her master's program in Microbiology, in the department of Pure and Applied Biology, Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria.

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