

Solanum Nigrum Show Anti-Obesity Effects on High Fat Diet Fed Sprague Dawley Rats

Authors : Kathryn Nderitu, Atunga Nyachieo, Ezekiel Mecha

Abstract : Introduction: Solanum nigrum, also known as black nightshade, biosynthesizes various phytochemical compounds with various pharmacological activities, including treating cardiovascular diseases and type 2 diabetes, among others. Materials and Methods: To assess the anti-obesity effects of Solanum nigrum using high-fat-fed diet rats, Sprague Dawley male rats (n = 35) of weights 160-180 g were assigned randomly into seven groups comprising n = 5 rats each. Each group was fed for 11 weeks as follows: normal group (normal chow rat feed); high-fat diet control (HFD); HFD and standard drug (Orlistat 30 mg/kg bw); HFD and methanolic extract 150 mg/kgbw; HFD and methanolic extract 300 mg/kgbw; HFD and dichloromethane extract 150 mg/kgbw; HFD and dichloromethane extract 300 mg/kgbw. Body mass index and food intake were monitored per week, and an oral glucose tolerance test was measured in weeks 5 and 10. Lipid profiles, liver function tests, adipose tissue, liver weights, and phytochemical analysis of Solanum nigrum were later carried out. Results: High-fat diet control group rats exhibited a significant increase in body mass index (BMI), while rats administered with leaf extracts of Solanum nigrum showed a reduction in BMI. Both low doses of dichloromethane (150 mg/kgbw) and high doses of methanol extracts (300 mg/kgbw) showed a better reduction in BMI than the other treatment groups. A significant decrease (p < 0.05) in low-density lipoprotein-cholesterol, triglycerides, and cholesterol was observed among the rats administered with Solanum nigrum extracts compared to those of HFD control. Moreover, the HFD control group significantly increased liver and adipose tissue weights compared to other treatment groups (p < 0.05). Solanum nigrum also decreased glycemic levels and normalized the hepatic enzymes of HFD control. However, food intake among the groups showed no significant difference (p > 0.05). Qualitative analysis of Solanum nigrum leaf extracts indicated the presence of various bioactive compounds associated with anti-obesity. Conclusion: These results validate the use of Solanum nigrum in controlling obesity.

Keywords : solanum nigrum, High fat diet, phytocompounds, obesity

Conference Title : ICO 2024 : International Conference on Obesity

Conference Location : New York, United States

Conference Dates : July 11-12, 2024