World Academy of Science, Engineering and Technology
International Journal of Pharmacological and Pharmaceutical Sciences
Vol:12, No:02, 2018

In vivo Antidiabetic and in vitro Antioxidant Activity of Myrica salicifolia Hochst. ex A. Rich. (Myricaceae) Root Extract in Streptozotocin-Induced Diabetic Mice

Authors : Yohannes Kelifa, Gomathi Periasamy, Aman Karim

Abstract : Introduction: Diabetes mellitus has become a major public health and economical problem across the globe. Modern antidiabetic drugs have a number of limitations, and scientific investigation of traditional herbal remedies used for diabetes may provide novel leads for the development of new antidiabetic drugs that can be used as alternative or complementary to available antidiabetic allopathic medications. Though Myrica salicifolia Hochst. ex A. Rich. is used for the management of diabetes in Ethiopian traditional medicine, there was no previous scientific evidence about its antidiabetic effect to the authors' knowledge. This study was undertaken to evaluate the antidiabetic activity the root extracts of Myrica salicifolia in streptozotocin (STZ)-induced diabetic mice. Methods: Experimental diabetes was induced by intraperitoneal administration of STZ (150 mg/kg) in male mice. Diabetic mice were treated with oral doses of M. salicifolia root extracts at 200, 400 and 600 mg/kg, and its fractions (chloroform, ethyl acetate, n-butanol and aqueous) at a dose of 400 mg/kg daily for 15 days. Fasting blood glucose level (BGL) was measured at 0, 5th,10th, and 15th day. The free radical scavenging activity of the crude extract was determined using in vitro by DPPH assay. The statistical significance was assessed by one-way ANOVA, followed by Tukey's multiple comparison tests. Results were considered significant when $p < 0.05$. Results: Daily administration of the M. salicifolia 80% methanol root extracts (at three different doses (200, 400 and 600 mg/kg) significantly ($p < 0.05$, $p < 0.01$ and $p < 0.001$) reduced fasting BGL compared with diabetic control. The aqueous and butanol fractions at a dose of 400 mg/kg resulted in maximum reduction of fasting BGL by 42.39%, and 52.13%, respectively at the 15th day in STZ-induced diabetic mice. Free radical scavenging activity of the 80% methanol extract of M. salicifolia was comparable to ascorbic acid. The IC50 values of the crude extract and ascorbic acid (a reference compound) were found to be 4.54 µg/ml and 4.39 µg/ml, respectively. Conclusion: These findings demonstrated that the methanolic extracts of M. salicifolia root and its fractions (n-butanol and aqueous) exhibit a significant antihyperglycemic activity in STZ-induced diabetic mice. Furthermore, the result of the present study indicates that M. salicifolia root extract is a potential source of natural antioxidants.

Keywords : antidiabetic, diabetes mellitus, DPPH, mice, Myrica salicifolia, streptozotocin
Conference Title : ICEPR 2018 : International Conference on Experimental Pharmacology and Research
Conference Location : Barcelona, Spain
Conference Dates : February 27-28, 2018