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Evaluation of antidiabetic and antioxidant activity of Moringa oleifera in experimental diabetes

Rajnish Gupta[1], Manas Mathur[2], R. Kamal[2] and R.S. Gupta[1]

[1]Reproductive Physiology Section, Centre for Advanced Studies, Department of Zoology, University of Rajasthan, India
[2]Laboratory of Medicinal Plant Biotechnology, Department of Botany, University of Rajasthan, India

Introduction: Moringa oleifera, the widely cultivated species in India is an exceptionally nutritious vegetable with a variety of potential uses in treating rheumatism, venomous bites and microbial infections. The antidiabetic and antioxidant effect of methanol extracts of Moringa oleifera pods in streptozotocin (STZ)-induced diabetes in rats was studied.

Methods: Methanolic extract of M. oleifera (MOMtE) was studied for antidiabetic effect on STZ-induced diabetes on albino rats. The protection was measured by changes in biochemical parameters of serum and pancreas tissue. Diabetic rats were treated daily with different doses of MOMtE, i.e. 150 and 300 mg/kg b. wt./day for 21 days. Two phytoconstituents, quercetin and kaempferol were isolated from the MOMtE extract and structures were determined using NMR and IR spectroscopy.

Results: The data of present study demonstrated that the progression of diabetes significantly reduced after MOMtE treatment. MOMtE induced a significant reduction in serum glucose and nitric oxide with concomitant increase in serum insulin and protein levels. Furthermore,

MOMtE treatment increased the pancreas tissue antioxidant level with concomitant decrease in the level of thiobarbituric acid-reactive oxygen species. The histologic examination of pancreas of diabetic rats showed degenerative changes in the number of β-cells, while

MOMtE treatment significantly regenerated the islets cells.

Conclusion: Moringa oleifera exerts protective effect against STZ-induced diabetes. From present study it can be concluded that methanolic extract of M. oleifera possess significant antidiabetic and antioxidant activity and may be considered in isolation of active constituents for clinical studies.

Keywords: Antioxidant; Moringa oleifera; Oxidative stress; Histopathology.

rajnish_gupta1985@hotmail.com