

Biochanin-A ameliorates experimental diabetic nephropathy by reducing the hyperglycemia induced oxidative stress and renal TGF- β expression

Amjid Ahad

Jamia Hamdard University, India

Increased oxidative stress and renal transforming growth factor-beta (TGF- β) expression play an important role in the development of diabetic nephropathy (DN). This study was undertaken to evaluate the protective effect of biochanin-A, an isoflavonoid isolated from *Oroxylum indicum* (L.) Kurz against DN and to elucidate the potential mechanism. Male Wistar rats were randomly divided into four equal groups including normal healthy rats, diabetic untreated rats and two groups of diabetic rats treated with biochanin-A. Type-2 diabetes was induced by feeding the rats with high fat diet initially for 6 weeks followed by single intraperitoneal injection of streptozotocin (STZ, 35 mg/kg bw/day). Biochanin-A was administered to the rats orally at doses of 10 mg/kg bw/day and 20 mg/kg bw/day, respectively, over a period of 14 weeks post-induction of diabetes. After 14 weeks of biochanin-A treatment, 24 h urine was collected and animals were sacrificed. Glycemic and renal function parameters were evaluated in serum, urine and kidney tissue. The results showed that treatment with biochanin-A significantly ameliorated the kidney function. Biochanin-A administration significantly reduced the oxidative stress, modulated the increased renal TGF- β expression and reduced the renal pathology. However, there was no significant decrease in the fasting blood glucose concentration. In conclusion, the present investigation demonstrated that biochanin-A prevents DN in experimentally induced Type-2 diabetic rats by virtue of its antioxidant activity as well as by modulation of increased renal TGF- β expression.

Keywords: Biochanin-A, diabetic nephropathy, oxidative stress, renal function.

Biography

Amjid Ahad has completed his Masters degree in Biochemistry at the age of 23 years from Kashmir University, J&K, India. He is presently pursuing his Ph.D. in the Department of Biochemistry, Jamia Hamdard, New Delhi, India. He has published more than 7 papers in reputed journals and is actively engaged in research on diabetes and its related complications.

amjidpar12@gmail.com