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Amelioration of kidney damage in diabetic rat by *Catharanthus roseus* (L.) G. Don extract

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Catharanthus roseus (L). G. Don is used in traditional medicine worldwide to treat various diseases including diabetes. Present study was carried out to evaluate the protective effect of aqueous leaf extract of *C. roseus* (CR) on type 2 diabetes mellitus (T2DM)- associated nephropathy in a rat model. Streptozotocin and nicotinamide-induced T2DM Wistar rats were fed with CR extract (200, 400 and 600 mg/kg body weight) daily, for eight weeks. Fasting blood glucose (FBG) level was monitored at regular intervals. Urine and serum biochemical markers were measured after sacrificing the animals at the end of eight weeks of treatment. Kidney tissues were used for histopathological examinations and for western blot analysis of nephrin, a slit diaphragm protein of glomerular filtration barrier. The results showed a dose-dependent decrease in FBG in CR-treated diabetic animals. CR treatment led to normalisation of serum lipid markers, and urine albumin-creatinine ratio which were elevated in diabetic groups. Histopathological analysis demonstrated a reduction of glomerular abnormalities in diabetic rats after CR-treatment. Further, CR doses of 200 mg and 400 mg/kg body weight significantly improved nephrin expression in kidney. CR was highly rich in alkaloids and flavonoids along with other phytochemical compounds as found in qualitative phytochemical analysis. CR protected kidneys from high sugar-induced damage in diabetic rats. While phytochemicals of *C. roseus* are well known for their anti-diabetic properties, they are yet to be explored in depth as potential therapeutic agent(s) for diabetic kidney disease.

Keywords: Diabetes, Diabetic nephropathy, Nephrin, Phytochemicals