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Protective effect of icariin on renal function in rats with type-2 diabetic nephropathy induced by HFD combined with low dose STZ via insulin signaling pathway

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Objective: To investigate the ameliorative effect of icariin on renal function in rats with type-2 diabetic nephropathy and the potential mechanism of regulating the abnormality of insulin signal pathway in renal tissue.

Method: Diabetes was induced in male SD rats by an intraperitoneal injection of STZ (40 mg/kg i.p.). Sustained blood glucose levels (>16.7 mmol/l) were considered as diabetic and for subsequent study. 100 rats were randomly divided into 5 groups: Control, diabetic, diabetic+icariin (60 mg/kg, i.g.), diabetic+icariin (120 mg/kg, i.g.), diabetic+metformin (200 mg/kg, i.g.) administered 12 weeks from 9th to 21th week. Research was carried out at the beginning of 22th week. All rats were anaesthetized and then killed to remove kidneys. Blood glucose, Serum Creatinine (Cr), Serum Free Fatty Acid (FFAs), Total Cholesterol (TC), Serum Triglyceride (TG), Blood Urea Nitrogen (BUN), LDL-c and HDL-c in the kidney tissue were measured. Glomerular podocyte morphology was observed by light microscopy. Western blot was employed to determine the proteins levels of nephrin, desmin, PI3K-P85 and type-IV collagen.

Result: The enhancement of blood glucose, Cr, FFAs, TC, TG, BUN and LDL-c was found in model group, which was significantly attenuated by icariin. The renal pathological changes in icariin treatment group were ameliorated, meanwhile decreased the expression of nephrin protein level as well as elevated desmin and collagen IV levels in renal tissue were significantly reversed by icariin. Furthermore, the icariin normalized insulin and PI3K-Akt signaling.

Conclusion: Icariin can evidently relieve renal damage in rats with diabetic nephropathy, which might be related to modulating the lipid metabolism and insulin resistance.

Biography

Qin Wang is a graduate student in China pharmaceutical university. Her research interests include clinical pharmacy, Diabetes.

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