



Shaping Tomorrow's Nephrology: Insight-Driven Kidney Care

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Abstract Topic : Diabetic Kidney Disease + Metabolic Abnormality-related Kidney Disease

Caffeic Acid Attenuates Diabetic Nephropathy by Inhibiting Inflammation, Oxidative Stress And TNF- Activation In-Vivo

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Objectives : Diabetic renal complications mainly attributed to increase oxidative stress and release pro-inflammatory and inflammatory cytokines. Caffeic acid (CA) synthesized by mostly all the plant species and is present in daily consumed food such as variety of fruits, vegetables and seasonings and predominantly in tea, coffee, wine etc. It has been shown to have many different pharmacological activities like anti-inflammatory, antioxidant, anticancer, free radical scavenging properties etc.

Methods : IDDM was induced using a single dose of Streptozotocin (45mg/kg) by IV route. Treatment groups received the treatment of CA (25mg/kg, PO and 50 mg/kg, PO) for eight weeks. Serum and urine were collected after eight weeks for the estimation of different biochemical parameters and tissue parameters. Kidney were isolated in order to estimate the inflammatory, oxidative and histopathological parameters.

Results : Treatment with 25 mg/kg and 50 mg/kg of CA shown the protecting effect in diabetes by significantly decreasing blood glucose level, total cholesterol, TG and LDL and increasing in HDL. The drug is also shown the nephroprotective action dose dependently as it decreases various important renal markers like urinary albumin, sodium, creatinine and BUN. Anti-inflammatory effects are proven by a significant decrease in plasma levels of CK-MB, LDH, CRP. It also brought significant decrease in LPO and NO while increase in Superoxide dismutase (SOD), Catalase (CAT), Glutathione (GSH) and Total thiol (T-SH) levels in renal and cardiac systems in comparison of diabetic control group. Histopathology revealed decrease in glomerular lesions, mesangial expansion and tubular atrophy in renal tissues as compared to diabetic control rats.

Conclusions : Natural polyphenols like CA can be found in a variety of fruits and vegetables. The signalling pathways involved in the metabolism of fats and carbohydrates are regulated by the antioxidant properties of CA and its derivatives. By modifying transcription factors and inflammatory cytokines, CA also has anti-diabetic benefits.

CA renal complications.png



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