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Abstract

INHIBITION OF PTPase PROTECTS AGAINST STRUCTURAL AND FUNCTIONAL RENAL ABNORMALITIES IN EXPERIMENTAL MODEL OF CKD

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Abstract:

Chronic kidney disease (CKD) a recognized predicament comprises of renal fibrosis, inflammation, structural and functional changes in kidney. Further, preclinical use of protein tyrosine phosphatase inhibitor (sodium orthovanadate)/(SOV) to improve mitochondrial enzyme activity and to accelerate angiogenesis in diseased animals have also been registered in earlier studies. In the present study, we investigated whether sodium orthovanadate will be able to turn down bilateral I/R-induced CKD by suppressing these renal alterations or not. Bilateral I/R surgery was performed to induce chronic kidney disease in Wistar rats, which leads to the development of severe tubulointerstitial fibrosis and glomerulosclerosis with altered renal function. Noticeable changes were observed in oxidative stress, serum and urine parameters after subsequent SOV treatment (5mg and 10mg/kg/p.o) for 90 days in CKD rats. Furthermore, SOV treatment showed beneficial effects on mRNA expression of Kim-1, TGF-β and Collagen-IV, which is known to promote fibrosis via various signalling pathways involved in the progression of renal disease, Additionally, results revealed that SOV treatment successfully reduced the overexpression of pro-inflammatory marker IL-6 and also helped to restore reduced expression of nephrin, and podocin in bilateral I/R-induced CKD animals. Moreover, present studies also demonstrated the considerable functional and structural changes after SOV treatment, and these results are further supported via data obtained from the biochemical analysis and quantitaive analysis of histopathological slides respectively. In conclusion, SOV reduces renal fibrosis,glomerulosclerosis and inflammation in chronic kidney disease by modulating involved gene expressions (PTP-1B, IL-6, podocin, nephrin,Kim-1, TGF-β and Collagen-IV)and inhibiting PTPase activity in renal tissue.

Biography:

Gagandeep Kaur has her expertise in evaluation and passion in improving the health and wellbeing. She is a Ph.D (Research Scholar) working under the kind supervision of Dr. Pawan Krishan in the department of Pharmaceutical Sciences and Drug Research, Punjabi University, Patiala, Punjab (India). Currently, she

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Recent Publications:

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