KSN 2020
FULLY VIRTUAL MEETING

Abstract Type : Poster
Abstract Submission No. : PO-1293

Nephroprotective effect umbelliferone on chronic renal failure in rats via inhibition of inflammatory pathway

P Pandey[1], P Bhatt[2]
[1]Department of Pharmaceutical Sciences, SHUATS, India
[2]Department of Biotechnology, Fermentis, India

Objectives: Chronic renal failure (CRF) is a worldwide problem and one of the main morbidity and mortality factors. Usually, CRF patients are distinguished by progressive degradation of renal tissue and function and higher levels of serum urea and creatinine, which may contribute to numerous other dangerous diseases. Umbelliferone (7-hydroxy coumarin) already proof their anti-inflammatory effect. But its nephroprotective effect still unclear. In the current study, we made attempt to scrutinize the nephroprotective effect of umbelliferone against the chronic renal failure and identify the mechanism of action.

Methods: SD rats were used for induction the CRF model and rats were divided into different groups. The rats were treated with umbelliferone (2.5, 5 and 10 mg/kg/day) and estimated the different renal parameters, antioxidant, pro-inflammatory cytokines and inflammatory mediators. Additionally, expression of transforming growth factor-β (TGF-β) was also estimated. Histopathological parameter also estimated.

Results: Umbelliferone altered the level of renal parameters such as Scr (2±0.26 mg/dL), BUN (19.34±1.93 mg/dL), total urea protein (35.91±4.83 mg/dL); antioxidant parameters including SOD (0.26±0.09 U/mg), CAT (0.39±0.09 U/mg), MDA (0.84±0.11 U/mg); pro-inflammatory cytokines TNF-α (400±15.46 pg/dL), IL-1β (45.6±3.45 pg/dL), IL-6 (103±8.56 pg/dL); inflammatory mediators such as NF-kB (56.5±5.45 pg/dL) as compared to CRF control group rats. Umbelliferone improved the fibrosis, degradation and histopathological abnormalities of renal tissue. Additionally, down-regulated the expression of laminin, TGF-β, NF-κB p65 (p-p65) and fibronectin in umbelliferone treatment group.

Conclusions: Umbelliferone exhibit the therapeutic effect against the chronic renal failure via down-regulation of fibrosis and inflammation.