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## **Effect of Febuxostat on Renal Outcomes in Patients with Chronic Kidney Disease: A Meta-Analysis of Randomized Controlled Trials**

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**Objectives:** Febuxostat, is a novel alternative therapy of hyperuricemia treatment in chronic kidney disease (CKD) patients. There is evidence gap over the safety and efficacy of febuxostat for the treatment of hyperuricemia in CKD patients. The objective of this study to evaluate the efficacy and safety of febuxostat for improving renal outcomes in CKD patients

**Methods:** A systematic search on Pubmed/MEDLINE and CENTRAL was performed to identify English language articles for last 10 years. Eligible studies evaluating the efficacy and safety of febuxostat comparing with control group. The outcome measures were changes in serum creatinine (sCr), glomerular filtration rate (eGFR). A random-effects model was used to calculate the pooled mean difference (MD) and odds ratio (OR) with 95% confidence interval (CI).

**Results:** Total 8 randomized controlled trials (RCTs) with 1042 participants included. The mean age of the patients was 60.8 years. Duration of trials were ranged from 1-25 months. Results from meta-analysis showed no significant changes in sCr (mg/dL) at  $\leq 3$  months and  $> 3$  months follow up of the study when febuxostat compared to control group. Similarly, there was no significant differences ( $p=0.92$ ) observed in eGFR ( $\text{mL}/\text{min}/1.73 \text{ m}^2$ ). However, a significant difference was observed in the changes in serum uric acid at follow up  $\leq 3$  months and  $> 3$  months respectively (MD -3.36 mg/dL, 95% CI -5.44, -1.28;  $p < 0.002$  and MD -3.22 mg/dL, 95% CI -4.95, -1.49;  $p < 0.003$ ) between the febuxostat and control groups. In addition, no significant difference was found in the adverse effects (OR 1.03, 95% CI 0.76, 1.41;  $p=0.83$ ).

**Conclusions:** The febuxostat did not improve the renal outcomes in CKD patients. Further, well-controlled RCTs with long term follow-up and real-world studies required to confirm the present findings.