Review

Efficacy and Safety of Turmeric Dietary Supplementation on Proteinuria in CKD: A Systematic Review and Meta-analysis of RCT

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The beneficial effects of oral turmeric extract on proteinuria levels have been investigated in several human and animal studies. We conducted a systematic review and meta-analysis to evaluate the significance of this new treatment in CKD patients for the first time. We searched ISI Web of Science, PubMed/Medline, Google Scholar, Scopus, SID, and Magiran until March 2021 to identify human-controlled trials that evaluated the effect of turmeric on proteinuria in chronic kidney disease patients. A total of six trials met the selection criteria and were reviewed in our study and four of them were included in the meta-analysis. In these studies, the results showed not only a significant decrease in the level of proteinuria of the trial groups, who had received curcumin but also a significant change in the level of proteinuria between the trial and control groups (SMD = -0.72, 95% CI: -1.10 to 0.35). The results of this meta-analysis demonstrates that turmeric/curcumin oral supplementation significantly improves urinary protein excretion in patients who suffer from chronic kidney diseases with proteinuria; thus, it can be considered as a potential treatment modality in this population.

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INTRODUCTION

The global rise in the prevalence of chronic kidney disease (CKD) in the last decade has made it more reputed as a public health problem.[1] The mortality rate of CKD has been constantly increasing, as its rank has risen from the 17th cause of death in 1990 to the 12th most common cause of death in 2017.[2-3]

According to Kidney Disease Improving Global Outcomes (KDIGO) guidelines, CKD is defined as "persistently elevated urine albumin excretion (≥ 30 mg/g), reduced estimated glomerular filtration rate (eGFR < 60 mL/min/ 1.73 m^2), or both, for > 3 months".[4] While quantitative measurement of urine protein is considered as a marker of kidney damage, which facilitates the diagnosis of CKD, it can also be used as a strong predictor of CKD progression even independent of the GFR level.[5] Albuminuria is categorized in CKD patients based on 24 hours urine albumin excretion rate as normal or mildly increased (< 30 mg/24h), moderately (30 to 300 mg/24h), and severely increased (> 300 mg/24h).[4]

Current treatment options for CKD patients are renin-angiotensin system blockers including angiotensin-converting enzyme inhibitors (ACEIs) or angiotensin II receptor blockers (ARBs). Although ACEIs and ARBs are effective in reducing proteinuria, they are associated with potential side effects such as cough, angioedema, and