

Inhibitory effect of rutin and curcumin on experimentally-induced calcium oxalate urolithiasis in rats

Jaydip Ghodasara, Anil Pawar, Chinmay Deshmukh, Bhanudas Kuchekar

aDepartment of Pharmacology, MAEER's Maharashtra Institute of Pharmacy, Kothrud, Pune - 411 038, Maharashtra, India

ABSTRACT

Background Renal epithelial cell injury by reactive oxygen species is pre-requisite step in the pathogenesis of urolithiasis. Rutin and curcumin are polyphenolic compounds known to have antioxidant and anti-inflammatory activities, but their effect on urolithiasis is yet to be elucidated. In the present study, we have investigated the inhibitory effect of rutin and curcumin on calcium oxalate urolithiasis in Wistar albino rats.

Methods Calcium oxalate urolithiasis was induced experimentally by administration of 0.75% v/v ethylene glycol with 1% w/v ammonium chloride in drinking water for three days followed by only 0.75% v/v ethylene glycol for 25 days. Rutin (20 mg/kg body weight) and curcumin (60 mg/kg body weight) were given once daily for 28 days by oral route. After treatment period, calcium and oxalate levels in urine and kidney tissue homogenate were measured. Kidney was also used for histopathological examination. **Results**

Stone-induction with ethylene glycol and ammonium chloride resulted in elevated levels of calcium and oxalate in the urine and kidney sample, whereas supplementation of rutin and curcumin restored it near to normal. Histopathological study revealed minimum tissue damage and less number of calcium oxalate deposits in kidney of animal treated with rutin and curcumin as compared to calculi-induced animal. **Conclusion** The data suggest that the rutin and curcumin inhibits calcium oxalate urolithiasis. This effect is mediated possibly through a lowering of urinary concentration of stone forming constituents, anti-inflammatory and antioxidant effects.

KEYWORDS

Calcium oxalate . curcumin . ethylene glycol . rutin . urolithiasis

REFERENCES