PP-131

Prophylaxis and therapeutic effects of raspberry (Rubus idaeus) on renal stone formation in Balb/c mice

M. Abu-Harfeil, I. Ghalayini, M. Al-Ghazo Mohammad
Jordan University of Science and Technology, Irbid, Jordan

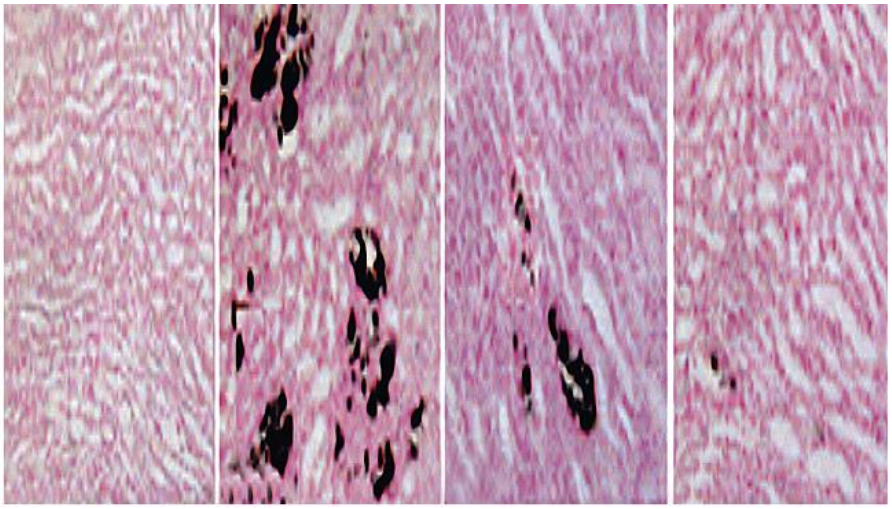
Purpose: To evaluate the prophylactic potential of herbal decoction from Rubus idaeus, a medicinal plant widely used in the Middle East to treat kidney stones, by assessing the effect of administration in experimentally induced calcium oxalate (CaOx) nephrolithiasis in mice.

Materials and Methods: This study was based on administration of glyoxylate and/or herbal treatments simultaneously for 12 days, followed by histological and biochemical tests. Group I was used as a negative control. Group II was only given daily intra-abdominal injection of glyoxylate (80 mg/Kg). Group III and IV were given 100 mg/kg/day and 200 mg/kg/day of aqueous extract of R. idaeus by gavage, respectively in addition to glyoxylate injection. To examine the effect of anti-oxidants on hyperoxaluria-induced changes in kidney, the enzymatic and non-enzymatic anti-oxidant levels were assessed.

Results: Significant reductions were obtained in the urinary oxalate, calcium and phosphorus values in the herbal-treated groups relative to untreated animals while creatinine excretion increased. Serum oxalate, calcium and creatinine were significantly reduced, while phosphorus was not significantly changed. Kidney content of calcium was higher in the untreated group. Mice in treated groups at 12 days had significantly more superoxide dismutase, catalase, glutathione reductase (GSH) and G6PD activities than the untreated group. Hyperoxaluria-induced generation of malondialdehyde (MDA) and protein carbonyls was significantly prevented in the treated groups. R. idaeus had a significantly high content of vitamin E in the herbal treated groups. The histology showed more CaOx deposition in the kidneys of untreated animals.

Conclusion: Rubus idaeus has an impressive prophylactic effect on CaOx stones in nephrolithic mice. There is a possible role of lipid peroxidation in CaOx stone formation which may has a relationship with the major risk factors in urine including oxalate, calcium, phosphorus and MDA. Further experimental studies are required to elucidate the chemical constituents of the active ingredients of this interesting plant.

Figure 1. Kidney crystallization generated by glyoxylate administration. A) Control mouse kidney. B) Kidney from a mouse treated with glyoxylate without herbal treatment where brown-stained calcium oxalate crystal retention in the distal tubules between the renal cortex and medulla can be seen. C) Kidney from a mouse received glyoxylate and 100 mg/Kg Rubus idaeus. D) Kidney from a mouse received glyoxylate and 200 mg/Kg Rubus idaeus (X 400).



As published in the *Supplement of AFJU, Volume 18 (2012), 1st ESD "Experts in Stone Disease" Conference* (pages 85-86)