عنوان مقاله:

Redox-Active Bacteria Alleviated Ethylene Glycol-Induced Kidney Calculi in Rats

محل انتشار:

فصلنامه تحقیقات بین رشته ای در اورولوژی, دوره 6, شماره 2 (سال: 1403)

تعداد صفحات اصل مقاله: 6

نویسندگان:

Mostafa Khedri - Department of Clinical Laboratory Sciences, School of Allied Medical Sciences, Kashan University of Medical Sciences, Kashan, Iran

Mahdi Zamani Boldaji - Department of Clinical Laboratory Sciences, School of Allied Medical Sciences, Kashan University of Medical Sciences, Kashan, Iran

Tahereh Mazouji - Department of Pathology, School of Medicine, Kashan University of Medical Sciences, Kashan, Iran

خلاصه مقاله:

Introduction: Impaired antioxidant capacity in the kidneys and urinary tract of animals suffering from kidney stones is a key pathological finding in urolithiasis. Bacteria with extracellular electron transfer (EET) ability can alter the oxidation and reduction potential of the surrounding environment. This article considered the preventive impact of an EET bacterium, Shewanella oneidensis MR-۱ (Sh. O) on renal calcium oxalate crystal deposition and stone formation in a rat model.Methods: Male Wistar rats were randomly categorized into ۳ experimental groups (n = ۷-۹). One group was left untreated, and the other received ethylene glycol (۱% v/v) in drinking water for ۴ weeks. In the treatment group, in addition to drinking ethylene glycol, ۰.۵ ml of the Sh. O suspension (۳.۵ × ۱۰۱۰ CFU/ml) was gavaged orally ۲-۳ times per week. After ۲۹ days, the kidneys were removed and tested for histopathological findings and the number of CaOx deposits in the microscopic fields.Results: The rats treated with Sh. O significantly reduced the number of CaOx deposits in the kidneys compared to the ethylene glycol group. Sh. O significantly increased kidney weight without significantly changing the total body weight. The bacterium Sh. O indicated a positive impact in preventing and removing CaOx deposition in the rat kidneys.Conclusions: These results suggest a new approach for the prevention and treatment of kidney stone disease using electrogenic bacteria.

کلمات کلیدی:

Nephrolithiasis, Extra cellular electron transfer, Shewanella oneidensis, Redox-active bacteria

لینک ثابت مقاله در پایگاه سیویلیکا: