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Investigation of the antioxidant effects of pomegranate juice on the urinary risk factors for calcium oxalate stone formation

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Introduction: Pomegranate juice has high anti-oxidant activity due to the presence of punicalagin isomers.¹ It has been known to reduce oxidative stress, platelet aggregation and atherogenic modification to low density lipoproteins (LDL).² The administration of pomegranate juice in the possible management of kidney stone disease has not been previously investigated and this present study aims to test the hypothesis that pomegranate juice may be useful in reducing the risk of stone formation.

Methods: Five healthy male participants with no history of kidney stones were recruited. Prior to the study, subjects collected baseline 24hr urine. Each of them then ingested 250 ml of pomegranate juice (Goldcrest Pomegranate juice, Turkey) once a day (at breakfast) for 20 days. On day 20, 24hr urine samples were collected. These were analysed for the routine parameters which determine the supersaturation of urinary salts using standard biochemical techniques.

Results: Urinary citrate and magnesium increased significantly on day 20 relative to the baseline. Other parameters did not change.

Table 1: Effects of pomegranate juice on urine composition and relative supersaturation of CaOx

	Baseline Mean±SE	Day 20 Mean±SE	P-value
Citrate mmol/24h	1.96±0.44	3.30±0.23	0.03
Magnesium mmol/24h	1.48±0.27	2.74±0.28	0.01
RS CaOx	2.57±0.53	2.34±1.07	0.42

Conclusion: The observed increases in urinary citrate and magnesium are favourable in terms of reducing the risk of CaOx crystal formation. However, RS CaOx did not change. This is surprising, but may be due to the lack of statistical power in this pilot study. Nevertheless, the aforementioned changes in citrate and magnesium are promising. Future studies in which a much larger cohort of subjects are involved, may demonstrate decreases in RS CaOx. Pomegranate juice as a potential therapeutic agent for managing CaOx kidney stone formers may prove to be viable.

References:

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2. Guo C, Wei J, Yang J, Xu J, Pang W and Jiang Y. *Nutrition Research* 2008; **28**: 72-77.

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