Nutrients, vitamins, probiotics and herbal products: an update of their role in urolithogenesis

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Abstract

Nutrients, vitamins, probiotics, and herbal products may be risk factors, or alternately, protect against the formation of urinary stones. The purpose of this review was to update knowledge of the role of nutraceuticals in renal stone formation. A systematic search of the relevant literature published in PubMed in the last ten years was conducted and a narrative review of the data from the included studies was done. Search screened 513 studies that were reduced to 34 after evaluation by title and abstract; other 38 studies were retrieved by references of the selected studies. Beverages high fluid intake confirmed protective effect; orange juice protective effect; apple or grapefruit juice not confirmed as risk factors; sugar-sweetened soda and punch increased risk of stone formation. Energy intake: very high energy intake increased risk factor for women (especially after menopause); dietary acid load increased risk at equal levels of energy intake. Macronutrients confirmed increased risk of high protein intake. Calcium and Oxalate: calcium intake protective effect; oxalate intake only modest increase of risk in men and older women. Metal cations zinc and iron intake no clear impact on the risk of stone formation, dietary copper increased risk; manganese intake reduced risk of stone formation. Fruits and Vegetables decreased risk. Vitamins B6 intake not associated to risk of stone formation; vitamin

C intake increased risk in men; vitamin D or supplemental vitamin D intake not associated to increased risk in men and younger women, suggestion of a higher risk in older women; Probiotics Gut colonization with *Oxalobacter formigenes* associated to lower risk of stone formation, effect of oxalate-degraders probiotics on urinary oxalate equivocal. Herbal products efficacy of some herbal products demonstrated in some trials, more investigations needed to confirm their efficacy and safety.

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AUA, JOB, KHB, JP and IS searched the literature and wrote individual chapters of this manuscript. RNP, GSV and AT combined the chapters, streamlined and edited the first version of the manuscript. NB developed the concept, supervised and coordinated the project, edited and amended the final version.

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All authors declare that they have no conflict of interest in this publication.

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