

Influence of daily green tea infusions on hypercalciuric renal stone patients: biological and morpho-constitutional analysis.

Julie Rode, Laurent Benzerara, Dominique Bazin, Arnaud Dessombs, Emmanuel Letavernier, Andras Hoznek, Olivier Traxer, Michel Daudon, JP Haymann.

Service d'Explorations Fonctionnelles Multidisciplinaires. Hôpital Tenon. Service d'Urologie. Hôpital Tenon. Service d'Urologie. Hôpital Mondor. CNRS. Collège de France

Calcium stones contain predominantly calcium oxalate monohydrate (COM) and calcium oxalate dihydrate (COD). Catechins of green tea may prevent crystallization of calcium oxalate crystals but tea is also a source of oxalates. Here we evaluate the influence of regular daily green tea intake on stone risk factors in 273 hypercalciuric renal stone formers, their stone morphology and composition and a potential in vitro solubilizing effect of epigallocatechin (EGC) on calcium stones. Green tea "drinkers" (n=48) and "non drinkers" (n=225) were compared according to gender with biochemical analyses and stone composition performed by infrared spectroscopy (IRS) on 117 patients. Scanning electron microscopy (SEM) renal stone analysis was realized of 57 stones containing COD as major component in the two groups. Different criteria were collected including the presence of pores and their shape. In vitro SEM analysis were performed after incubation with different solutions containing either EDTA 0.1 M, green tea, EGC 10- 300 μ M and sodium citrate 10-300 mM. The groups were similar for 24 hours calciuria and bone remodeling biomarkers but a green tea diuretic effect was suggested. IRS analysis showed a significant higher prevalence of COD in female "drinkers" whereas COD was found in nuclei in male "drinkers". SEM analysis revealed a higher prevalence of square pores detected in "drinkers" and similar holes at the surface of COD crystals after incubation with green tea solution, EGC and calcium chelators, EDTA and sodium citrate. Green tea through catechins has a pharmacological effect with no influence on stone risk factors but a significant change on calcium stones composition and structure.