

Abstract Submission No. : 2428

Vitamin C inhibits crystallization of struvite from artificial urine in the presence of urease producing *Pseudomonas aeruginosa*

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Objectives: Struvite stones is associated with urinary tract infection by urease-producing bacteria. It is mainly occur in females having UTI. Biogenic crystal growth in natural and synthetic materials is regulated by the action of inhibitors, ranging from small ions, molecules to large macromolecules.

Methods: Crystallization of struvite in presence of vitamin C in synthetic urine using single diffusion gel growth technique is an *in vitro*. Sodium metasilicate gel of specific gravity 1.05 and the aqueous solution of ammonium dihydrogen phosphate were used as the medium for growing the struvite crystals. The crystallization process was induced by a urease positive struvite stone associated *Pseudomonas aeruginosa* to mimic the infection leading to stone formation. The grown crystals were characterized by ATR-FTIR and powder XRD. The surface morphology was analyzed through FE-SEM for comparison between treatments

Results: We observed decrease in number, dimension, and growth rate of struvite crystals with the increasing concentrations of vitamin C. Crystals displayed well-defined faces and dendritic morphology of struvite in both control and biogenic systems.

Conclusions: The results strongly suggest that, vitamin C can modulate the formation of struvite crystals in the presence of uropathogenic bacteria. so it can be used for prevention and treatment of struvite stone.

inhibition of struvite stone by vit c in the presence of urease producing bacteria

KSN 2021
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