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Emerging Health Challenges of CDs and NCDs; with an
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STEP-5

Growth of Urate (Gouty and Urinary) Crystals on Glass Slide: A simple and Inexpensive *in vitro* Model to Evaluate Natural Antiuro lithiatic and Anti-gout Drugs

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Noncommunicable diseases also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behaviors factors. Uric acid nephrolithiasis, arthritis and gout comes under noncommunicable diseases related with Monosodium urate monohydrate (MSUM) crystals. MSUM crystals are deposited in peripheral joints causing gout and elicit an intense localized inflammatory attack whereas in collecting ducts and medullary interstitium as a urinary calculi which causes dysuria, nausea and hematuria.

The purpose of the study is to explore the possible morphological features of mono sodium urate monohydrate crystals. The study was carried out on a glass slide under microscope to observe the growth patterns of MSUM crystals. For this purpose, a drop of gel medium (sodium meta silicate solution + 0.2M sodium hydroxide + 2N acetic acid) at pH 5.02 - 5.17 was placed in the middle of glass slide and allowed to convert into gel, then single drop of 0.07 M uric acid was added to properly formed gel. The glass slide was observed under microscope till it was completely dried. Mono sodium urate monohydrate were formed as spherical ring banded spherulites, dumbbell and composite spherulites. Current study provides different phases of MSUM crystallization on glass slide for the first time. It may also be used as a model to evaluate prophylactic management against gouty and renal stones through *in vitro* assessment of crystal growth and aggregation inhibition and modulation of developing or developed crystals by using different natural products.