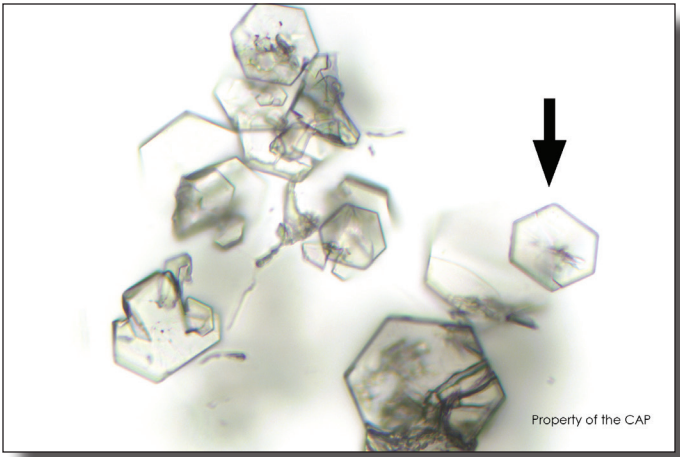


Cystine Crystals:

Appearance: Clear, colorless, and hexagonal. There may be a wide variation in crystal size. They demonstrate weak birefringence when viewed with polarized light.

Size: Variable.

Special Features: These crystals are present in large numbers in patients with cystinosis, a congenital autosomal recessive condition that has a homozygous incidence of about 1:10,000 to 1:13,000. It is the most common cause of aminoaciduria.

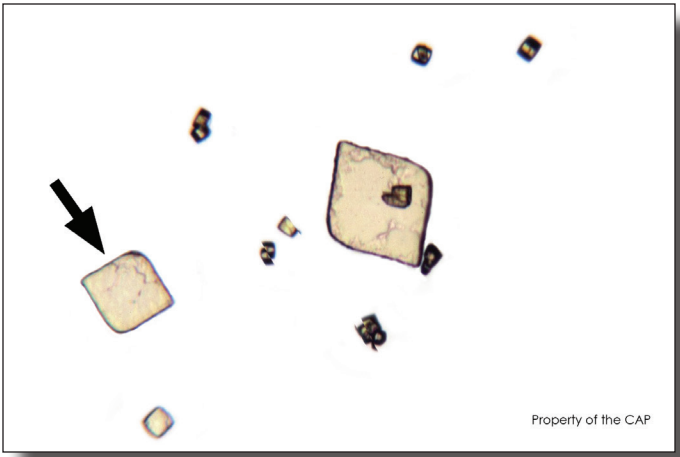
Confirmatory Test: Positive cyanide-nitroprusside test. Definitive diagnosis is dependent upon chromatography and quantitative amino acid analysis.

Sulfonamide Crystals:

Appearance: There are two types of sulfonamide crystals: sulfadiazine and sulfamethoxazole. Sulfadiazine crystals (shown above) appear as bundles of long needles with eccentric binding that resemble stacked wheat sheaves, fan shapes, or spherical clumps with radiating spikes. Sulfamethoxazole crystals are dark brown, divided or fractured spheres.

Size: Two to three times the size of red blood cells.

Special Features: May form renal calculi, especially in a dehydrated patient; but with the use of water-soluble sulfonamides, this is infrequently seen today.

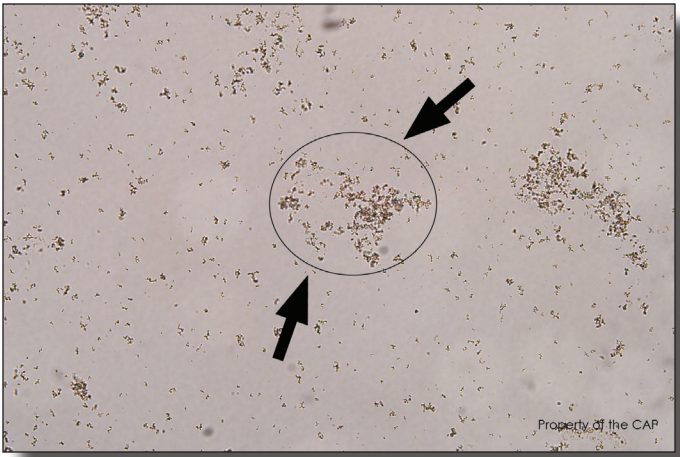


Uric Acid Crystals:

Appearance: Usually yellow to brown in color and birefringent. Common forms are four-sided, flat, and whetstone. They vary in size and shape, including six-sided plates, needles, lemon-shaped forms, spears (clubs), wedge shapes, and stars.

Size: Variable.

Special Features: When hexagonal, use birefringence to distinguish from cystine (uric acid is highly birefringent). Can be associated with hyperuricemia, uric acid stones, tumor lysis syndrome, or gouty nephropathy.



Amorphous Urate Crystals:

Appearance: These colorless or red-brown aggregates of granular material occur in cooled standing urine. Often referred to as "brick dust." Amorphous urates are morphologically identical to amorphous phosphates occurring in alkaline urine.

Size: Fine granules.

Special Features: Found in concentrated urine associated with fever and dehydration. Amorphous urates should be carefully examined for hidden bacteria, casts, or other crystals.