General Examination of Urinary Sediment

Set of 8 Slides (95 W 9702)

94 W 0404	Calcium phosphate crystals	**94 W 0406**	Hippuric acid
94 W 0408	Triphosphate	**94 W 0412**	Cystine crystals
94 W 0402	Calcium oxalate crystals	**94 W 0252**	Unstained sediment
94 W 0418	Uric acid crystals	**94 W 0258**	Stained sediment

Background:

A thorough urinalysis may provide more information about the general condition of the body than any other set of tests. The microscopic examination of urine is a vital aspect of routine urinalysis. Crystals, casts, cells, and microorganisms are among the significant elements found in the urine sediment. Crystals are usually categorized into two main groups: those found in acid urine, and those found in alkaline urine. Abnormal crystals are only found in acid urine. The presence of some crystals are of little or no significance, while others constitute a positive diagnostic test. Each type of crystal may take many forms and this set of slides is meant to be only a representative sample. It is recommended to view the crystal slides to become familiar with some of these types; then try to identify the crystals found in the stained and unstained urine sediment slides. The use of a reference such as *An Atlas of Urinary Sediment* (32W0808) will assist in identification of crystals, cells, casts, and other structures present in slides of actual urine sediment.

Crystals

Alkaline Urine

Calcium phosphate crystals 94 W 0404

Calcium phosphate crystals may occur in a wide variety of forms. They appear as colorless individual prisms, rosettes, or needles. They also form as irregular granular plates which may float on the surface of the urine. These crystals may be present in normal urine or may indicate calculi (stone) formation.

Triphosphate 94 W 0408

Also known as Ammonium magnesium phosphate, these crystals may take two forms: "coffin-lid" prisms, or feathery crystals. Large amounts of these crystals over time are a possible indicator of stone formation.

Acid Urine

Calcium oxalate crystals 94 W 0402

Calcium oxalate crystals are usually found in acid urine but may be present in neutral urine, and occasionally in alkaline urine. Calcium oxalate crystals may be found in normal urine after ingestion of such foods as asparagus, spinach, rhubarb, and garlic. Pathologic conditions in which calcium oxalate crystals are found in increased numbers include ethylene glycol poisoning and diabetes mellitus.

Uric acid crystals 94 W 0418

Uric acid crystals are a result of purine metabolism in man, other primates, birds, some dogs, and reptiles. They are of little significance unless seen in the presence of other symptoms. Pathological conditions associated with elevated levels of uric acid are gout, high purine metabolism, and chronic nephritis.

Hippuric acid 94 W 0406

Hippuric acid crystals are an example of a crystal that is rarely seen and has no clinical significance. Distinguishing between significant elements and those that are artifactual is essential for an accurate urinalysis.

Abnormal Crystals

Cystine crystals 94 W 0412

Cystine crystals are colorless hexagonal plates with equal or unequal sides. The presence of cystine crystals in urine sediment is always of clinical significance. They occur in patients with calculi, congenital cystinosis, or congenital cystinurea.

Sediments

Unstained sediment 94 W 0252

The urine sediment slide is made from a centrifuged sample. Crystals, RBC's, WBC's, casts, squamous epithelial cells, and threads are among the structures present. Unstained sediment slides are best viewed using high (40X) power and low light. A blue filter is helpful for contrasts. The use of fine adjustment is recommended to see the depth of sediments as well as structures on different focal planes.

Stained sediment 94 W 0258

Staining provides a more detailed examination of the urine sediment. The advent of a supravital staining technique gave the clinician a more accurate diagnostic tool.

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WARD'S Natural Science Establishment, Inc.
5100 West Henrietta Road • P.O. Box 92912
Rochester, New York 14692-9012
1-800-962-2660