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## URINALYSIS

Urinalysis is the process of analyzing urine for target parameters of health and disease. It can be performed on test strips (routine) by light microscope. It is also known as routine and microscopy (R&M), this is an array of tests performed on urine, and one of the most common method of medical diagnosis.

The target parameters that are measured or quantified in urinalysis include many substances and cells, as well as other properties, such as specific gravity. A part of urinalysis can be performed using urine test strips, in which the test results can be read as the strip's color changes. Another method is light microscopy of urine samples.

## TEST STRIP URINALYSIS

Test strip urinalysis exposes urine to strips that react if the urine contains certain cells or molecules. Test strip urinalysis is the most common technique used in routine urinalysis. It can identify;

- Leukocytes- their presence in urine is known as leukocyturia.
- Nitrites- their presence in urine is known as nitrituria.
- Protein- their presence in urine is known as proteinuria, albuminuria, or microalbuminuria.
- Blood- its presence in urine is known as hematuria.
- pH- the acidity of urine is easily quantified by test strips, which can identify cases of metabolic acidosis or alkalosis.

## URINE MICROSCOPY

The numbers and types of cells and/or materials, such as unitary cast, can yield a great detail of information and many suggest a specific diagnosis. A unitary cast is any tiny structure found in urine that consist of multiple molecules or cells bound together.

Casts form within the nephrons when abnormal cells and molecules are filtered from blood, and are excreted as the bound structures in urine. Microscopy can identify cast in urine and use them to diagnose kidney diseases, by characterizing symptoms such as:

- Red blood cell cast are associated with glomerulonephritis, vasculitis, or malignant hypertension.
- White blood cell casts are associated with acute interstitial nephritis, exudative glomerulone or severe pyelonephritis.

- Epithelial cell cast are associated with toxin-induced, acute tubular necrosis, hepatitis, and cytomegalovirus.
- (Heme) granular cast are associated with acute tubular necrosis, and are often composed of protein, especially antibodies.
- Hyaline cast are associated with dehydration; it is the most common type of cast.
- Bacterial cast are associated with urinary tract infection; the cast may be cultured in order to identify the causative organism of the cast.