

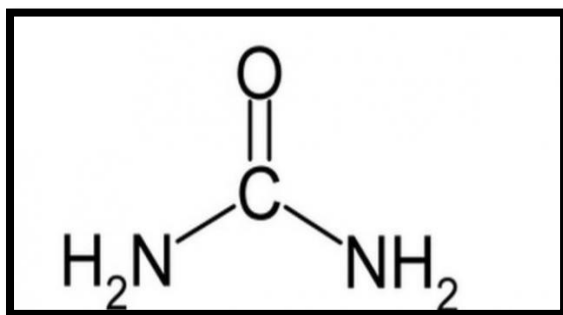


Title of the lecture: Determination of urea in serum



## Determination of urea in serum

Urea is a chemical compound found in the human body in the blood and lymph, and is disposed of by urine, synthesized in the liver where the amino acid and ammonia, and urea is the waste that exits the body; From inside the body itself or from outside, as it either results from the breakdown of proteins as a result of the regeneration of body tissues, or the removal of amino acids absorbed from food. Urea is one of the most important metabolites of protein in the human body, and the high proportion of urea in the blood is an indication of a problem in the body, where it is important to measure the proportion of urea in the blood in many health problems.



## **Urea synthesis:**

- Protein metabolism produces amino acids that can be oxidized, this result in the release of ammonia which is converted to urea (via urea cycle) and excreted as a waste product.
- Following synthesis in the liver, urea is carried out in the blood to the kidney which is readily filtered from the plasma by glomerulus.
- Most of the urea in the glomerular filtrate excreted in the urine, and some urea is reabsorbed through the renal tubules.
- The amount reabsorbed depends on urine flow rate and extent of hydration .
- The concentration of urea in the plasma is determined by renal function, the protein content in diet and the rate of protein catabolism .

### Elevation of urea in the blood

Urea is a health condition caused by toxic effects of abnormally high concentrations of nitrogen in the blood. As a result of the failure of the kidneys to expel the waste by urine, the end products of the protein metabolism accumulate in the blood and are normally filtered during blood passage in the kidneys, It is caused by any disorder that hinders kidney functions or hinders the process of removing urine from the body.

## **Symptoms of high urea in the blood**

At the beginning of chronic kidney disease, the patient may not show any symptoms, but as the urea rises in the blood, the kidneys have been destroyed, and cause the rise of urea in the emergence of some of the symptoms as follows:

- 1-Extreme fatigue.
- 2-Spasm in the legs.
- 3-Decreased or loss of appetite.
- 4-Headache.
- 5-Nausea.
- 6-Vomiting.
- 7-Focus problems.

## **Causes of high urea in the blood**

Chronic kidney disease can cause renal failure, making it difficult for the kidneys to filter waste and keep the blood clean. There are many diseases that can cause chronic kidney disease, the most common are diabetes and high blood pressure. Diabetes causes high blood sugar levels. Causes kidney, blood vessels, heart and other organs to be destroyed. High blood pressure may damage the blood vessels in the kidneys. It makes them weak or stiff. This damage causes the kidneys to become dysfunctional,

leading to renal failure. There are other causes of kidney disease, To the height of urea Include:

- 1-Genital kidney disease as a polycystic kidney disease.
- 2-Problems in the form or composition of the kidney, which usually occur during the development of the baby in the womb.
- 3-Autoimmune diseases of lupus.
- 4-A range of diseases called glomerulonephritis, lead to kidney damage and chronic inflammation of the inflammation; making it difficult for them to filter urea.
- 5-Kidney blockage or around, large kidneys examination or kidney tumors or prostate enlargement are possible to hurt kidneys.
- 6-Kidney inflammation or chronic urinary tract infection.

### **Causes of low urea**

Urea reduction is a common and non-hazardous condition, as is the case with urea, and may occur either because of low urea production, either because of increased renal clearance, or because of the presence of workers together, and cases that cause the low level of urea:

\*Lack of intake of sources containing protein.

\*Pregnancy. Urea is low in pregnancy because of its low production and increased urinary output. Advanced liver disease, due to normal liver production of urea.

\*liver injury in advanced diseases such as liver cirrhosis or liver failure causes urea decrease.

\*The disturbance in one of the urea cycle enzymes.