

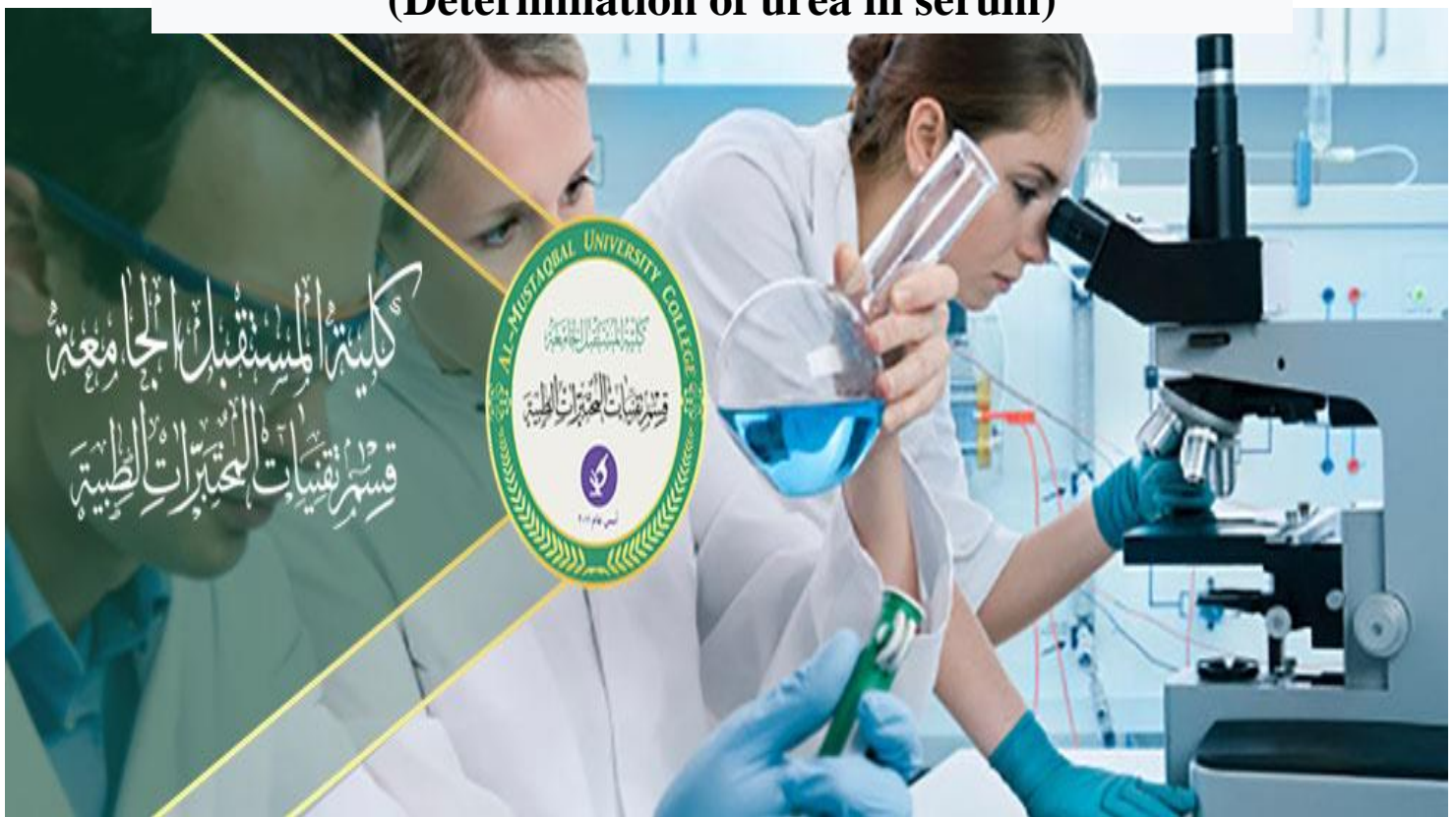


AL-MUSTAQBAL UNIVERSITY COLLEGE

**Department of Medical laboratory Techniques
Department**

Clinical Biochemistry

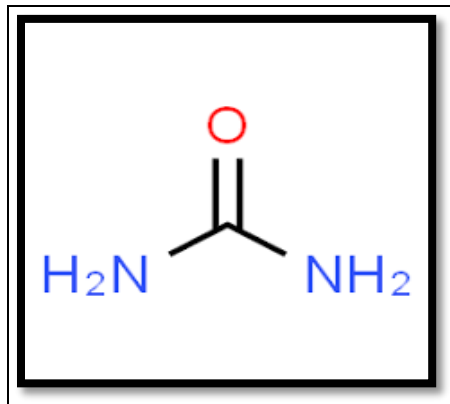
(Determination of urea in serum)



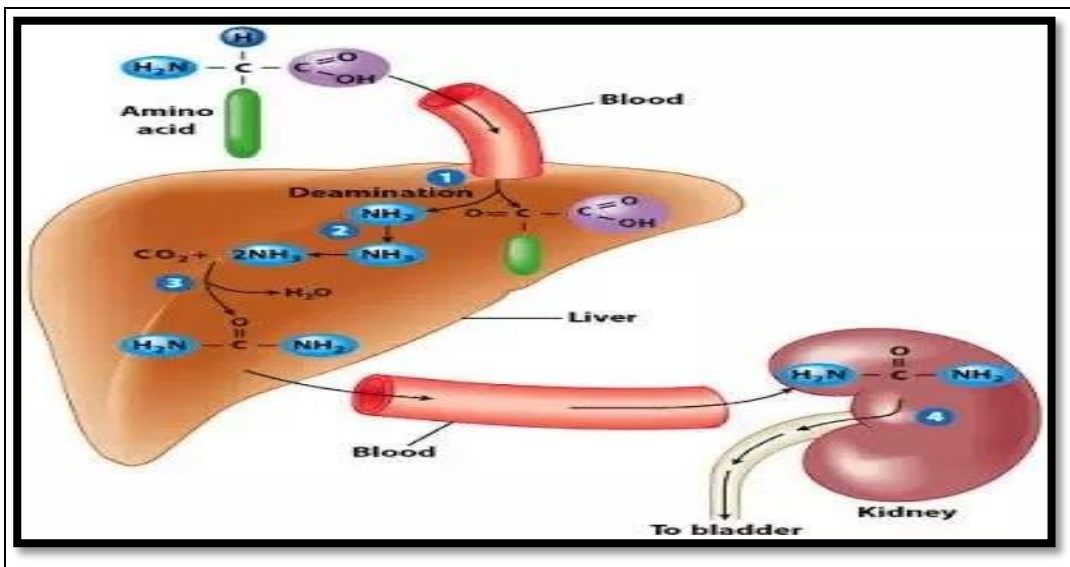
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Clinical Information

Urea is the final degradation product of protein and amino acid metabolism. Proteins are broken down to amino acids. The ammonia formed in this process is synthesized to urea in the liver. Urea is a small organic molecule (60 MW) comprising two amino (NH₂) groups and a linked carbonyl (C=O) group. It is the principal nitrogenous end product of protein and amino acid catabolism. Proteins are first degraded to constituent amino acids, which are in turn degraded (deaminated), with production of ammonia (NH₃), which is toxic. In a series of five enzymatically controlled reactions, known collectively as the "urea cycle", toxic ammonia resulting from protein breakdown is converted to non-toxic urea. A small amount (<10 %) of urea is eliminated via sweat and the gut, but most of the urea produced in the liver is transported in blood to the kidneys where it is eliminated from the body in urine.



During glomerular filtration, urea passes from blood to the glomerular filtrate, the fluid that is the precursor of urine. The concentration of urea in the filtrate as it is formed is similar to that in plasma so the amount of urea entering the proximal tube of the nephron from the glomerulus is determined by the glomerular filtration rate (GFR). Urea is both reabsorbed and secreted (recycled back into the filtrate) during passage of the filtrate through the rest of the tubule of the nephron; the net effect of these two processes results in around 30-50 % of the filtered urea appearing in urine.



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,

Causes of low urea

Urea reduction is a common , 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.