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Bio Chemistry

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Uric Acid

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Uric Acid (UA)

Uric acid is the end product of the metabolism of nitrogenous bases that

They are known as purines, which are part of the chemical structure of nucleic acids

The cytoplasm of the cell, as for the other part of it, is formed from external sources through food.Uric originates internal and external depending. Acid is a source of purines in the body Serum uric acid is the most important factor in gout pathogenesis, and a high serum uric acid level was significantly associated with the presence of . The crystals in kidneys can also form stones. , kidneys become: infected when stones block the flow of urine and it backs up(decreased amount of urine if there is a partial blockage).

Hyperuricemia

Hyperuricemia is a significant risk factor for gout, renal failure, hypertension, hyperlipidemia, diabetes, and obesity. Hyperuricemia may be caused by an increase in uric acid synthesis, a decrease in renal uric acid excretion, or a combination of the two. It is defined by a high blood uric acid level, which results in the deposition of urate crystals in the joints and kidneys. Hyperuricemia is generally characterized in adults as a blood uric acid content higher than 7.0 mg/dL for males and 6.0 mg/dL for women. Uric acid is eliminated in the urine by healthy people. However, renal illness may impede uric acid excretion, resulting in hyperuricemia. The majority of uric acid is dissolved in the blood and carried to the kidneys.

It then excretes in the urine. The kidney is critical for maintaining a healthy blood uric acid level. Uric acid serves no physiological purpose in the body, and under normal conditions, about two-thirds to three-quarters of uric acid is expelled outside the body through the kidneys, with the remainder passing via the digestive system. In the presence of renal failure, uric acid cannot be excreted via the kidneys, and almost all of the uric acid filtered by the renal glomeruli is reabsorbed by the proximal renal tubules. Uric acid is a naturally occurring waste product in the blood. However, elevated uric acid levels may result in the formation of painful crystals in the joints and kidneys.

Fearful of sharp stones Infections and scarring of the kidneys may also result in renal disease and failure.(Wiederkehr & Moe, 2011)

Uric acid is a byproduct of purine compound metabolism. The reaction has a (functional) pKa of about 5.75 in blood (5.35 in urine).

$$\text{Uric acid} \leftrightarrow \text{Urate} + H^-$$

, uric acid is the end result of purine metabolism in humans, due to the fact that the human homologue of the mammalian uricase (urate oxidase) gene is structurally changed to a non-functional (Pseudogene) form. Thus, typical people have serum urate concentrations that approach the theoretical limit of urate solubility in serum (6.8 mg/dL) and routinely excrete uric acid-supersaturated urine. Hyperuricemia is a condition that develops when the body's uric acid level is abnormally high. Hyperuricemia may be caused by accelerated cell death caused by cancer or cancer therapies, which results in a buildup of uric acid in the body.

Increased uric acid levels in the blood may indicate the following: diabetes, gout, chemotherapy, bone marrow diseases such as leukemia, a purine-rich diet, hypoparathyroidism, renal problems, kidney stones, multiple myeloma, or metastasized cancer. Additionally, it is possible to have insufficient uric acid in the blood as a sign of liver or renal illness or Fanconi syndrome, a condition of the kidney tubules that inhibits the absorption of chemicals such as glucose and uric acid, which are subsequently excreted in the urine. Low uric acid levels in the blood may indicate the following: Wilson's illness (an hereditary condition in which the tissues contain an abnormal amount of copper), Fanconi syndrome (a problem of the renal tubes), alcoholism, liver or kidney disease, or a diet deficient in purines.

How to get rid of uric acid

There are some natural ways through which we can get rid of excess uric acid, which are:

Drink more than two liters of water daily, in addition to lemon, which contains citric acid.

Take magnesium sulfate, as well as celery seeds, which limit the conversion of purine into uric acid.

How to do a Uric Acid analysis

The uric acid analysis is performed by drawing a blood sample through a vein in the arm or obtaining a sample of the patient's urine. In the urine sample, it requires continuing to collect urine over the course of an entire day and then measuring the percentage of uric acid in the samples, while emphasizing that the amount The materials used in the analysis differ from one laboratory to another.

Anis Al-Khair Medical Analysis Laboratory provides medical analysis services with extremely accurate results. We have a group of the best technicians and specialists in the field of medical examinations, always paying attention to the speed and accuracy of the results, and providing continuous analysis offers to our customers and providing the best comprehensive analysis with reliable results to take care of your general health, which is Which helps us reach results that contribute to the ideal diagnosis of the condition.

Uric acid level in serum

PRINCIPLE

Uricase catalyzes the formation of allantoin, carbon dioxide, and hydrogen peroxide from uric acid. Hydrogen peroxide interacts with a chromogen (amino-antipyrine and dichlorohydroxybenzene sulfonate) in the presence of peroxidase to form quinoneimine, a red-colored complex. At 505 nm (495-505), the absorbance is proportional to the quantity of uric acid in the material.

PROCEDURE

Manual method

"Let stand reagent and specimens at room temperature".

"Reagent"	1000.0 microliter
"Standard / Control or Specimen"	25.0 microliter
"Mix. Let stands for 5 minutes at 25°C. Record absorbance at 520 (490-530) nm against reagent blank. Colour is stable for 30 minutes".	

Notes:

1. Diluted serum, plasma, or urine (1+9) with deionized water.

2. Manual process performances should be verified by the user.

3. Kenza applications and proposals for further applications are available upon request.

CALCULATION

Serum or plasma:

$$\text{Result} = \frac{\text{Abs (Assay)}}{\text{Abs (Standard)}} \times \text{Standard concentration}$$

Diluted urines (1+ 9): Multiply the above result by dilution factor 10