



AL-MUSTAQBAL UNIVERSITY COLLEGE

**Department of Medical laboratory Techniques
Department**

Clinical Biochemistry

(Determination of Creatinine in serum)

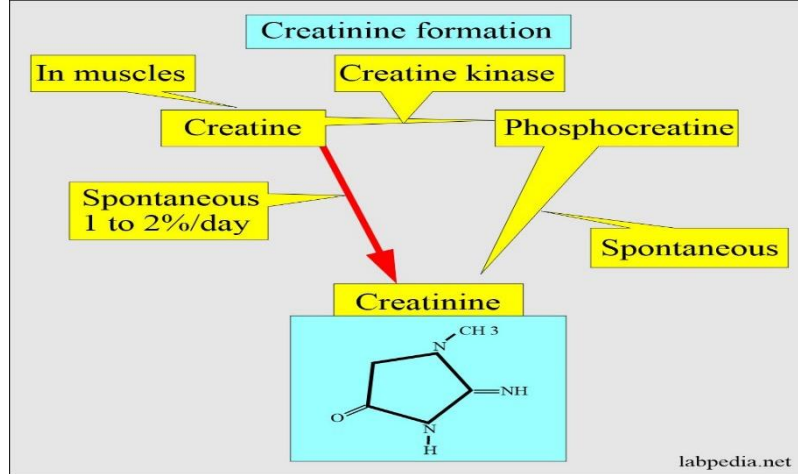
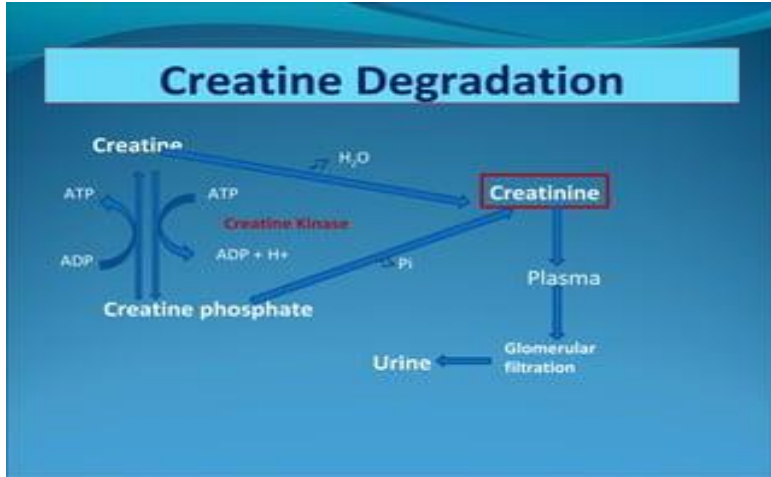


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Creatinine:

The body produces various harmful chemicals as byproducts of metabolism. Creatinine, one such chemical, is formed in skeletal muscle and released by muscle cells when they degenerate naturally as a result of aging.

It is a product derived either from creatine phosphate in muscle, or directly from creatine by non-enzymatic catalysis, and is usually produced at a fairly constant rate by the body.



Creatinine tests :

Used to estimate the waste product "creatinine," in blood and urine. Creatinine test is used to monitor kidney disorders (renal), acute and chronic renal failure, The body produces creatinine everyday constantly. The creatinine is excreted from the body if kidney functioning is normal . Only about 2% of creatine is converted to creatinine daily.

Diagnosis involves testing to determine the underlying cause after signs have developed. Creatinine may be measured to help diagnose symptoms that can be associated with kidney problems, such as swelling in the feet, urinary changes, loss of appetite, and fatigue.

Most men with normal kidney function have approximately 0.6 to 1.2 milligrams/deciliters (mg/dL) of creatinine. Most women with normal kidney function have between 0.5 to 1.1 mg/dL of creatinine. Women usually have lower creatinine levels than men because women, on average, have less muscle than men.

Other factors that may affect the level of creatinine in the blood include body size, activity level and medications.

	$\mu\text{mol/L}$	mg/dL
Adult male (S):	55–96	0.62–1.10
Adult female (S):	40–66	0.45–0.75
10 years (S):	19–52	0.22–0.59
6–9 years (S):	18–46	0.20–0.52
2–5 years (S):	4–40	0.04–0.45
0–1 year (S):	4–29	0.04–0.33

[4] S: serum

There are key causes of low creatinine:

- low muscle mass : Low levels may indicate a loss of muscle density, which can happen naturally with age

- diet : Although the body produces creatine independently, it can also come from the diet. Source mostly found in meat, so those who follow a vegetarian or low protein diet may have lower levels than meat eaters.
- Pregnancy : Pregnancy causes an increase in blood flow to the kidney leading to increased urine production and faster elimination of creatinine, leading to lower levels.

There are key causes of higher creatinine:

- Chronic kidney disease : When kidneys are damaged, they trouble removing creatinine from the blood and levels rise. Doctors use the result of the creatinine blood test to calculate GFR, It's more specific indicate chronic kidney disease.
- Increased consumption of protein : What a person eats can have a significant impact on creatinine levels. For example, proteins and cooked meat contain creatinine, so eating more than the recommended amount of meat or other proteins for your activity levels, through supplements can cause high creatinine levels.
- Intense exercise : Creatine is present in the muscles and helps them produce energy. Rigorous exercise can increase creatinine levels by increasing muscle breakdown.