



Determination of Serum Creatinine

Creatinine is the cyclic anhydride of creatine that is produced as the final product of decomposition of phosphate creatine. It is excreted in the urine, measurements of excretion rates are used as diagnostic indicators of kidney functions.

Biochemistry and Physiology:

Creatine is synthesized in the kidneys, liver, and pancreas by two enzymatically mediated reactions, from glycine, arginine and methionine. Creatine is then transported in blood to other organs such as muscle and brain, where it is phosphorylated to phosphor creatine, a high energy compound.

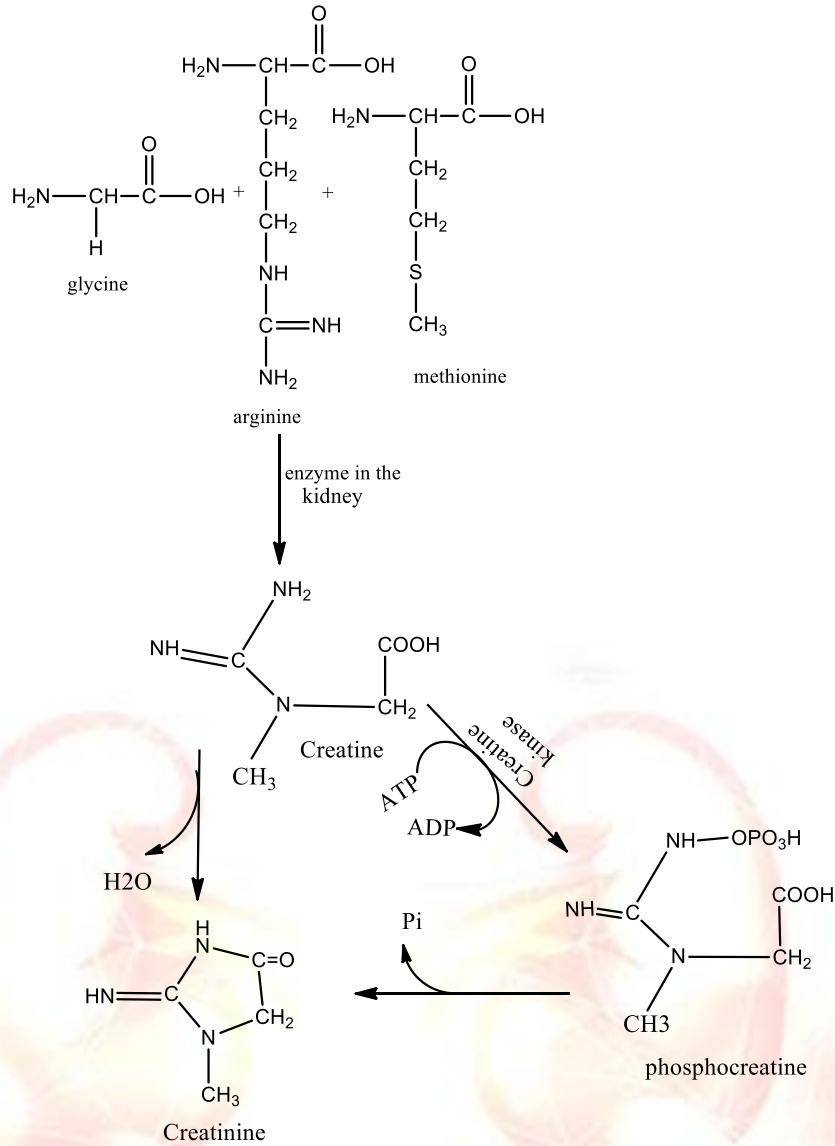
The level of creatinine produced each day is fairly constant and is related to the muscle mass (and body weight) of the individual creatinine is removed from the plasma by glomerular filtrated and excreted in the urine. The measurement of creatinine clearance is used as a measure of glomerular filtration.

Normal range:

Children: 0.3-0.7 mg/dl

Male: 0.6-1.2

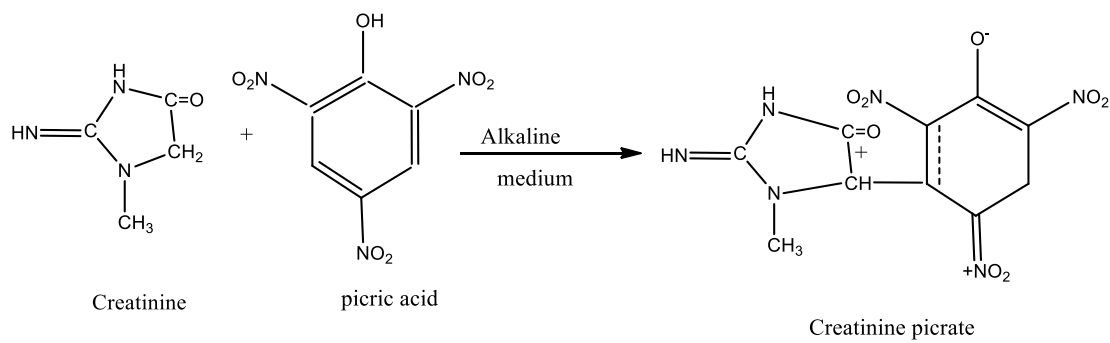
Female: 0.5-1.1





Principle:

The method depends on Jaffe reaction by the reaction of creatinine in serum or urine with alkaline sodium picrate in 500nm.



Clinical Significance:

Higher Than Normal Levels May Indicate

- Nephrotic syndrome
- Chronic glomerulonephritis
- Acute tubular necrosis
- Dehydration
- Diabetic nephropathy
- Reduced renal blood flow
- Pyelonephritis
- Renal failure
- Urinary tract obstruction.



Lower Than Normal Levels May Indicate

- Muscular dystrophy (late stage)
- Myasthenia gravis.
- Anemia
- Advance renal disease
- leukemia

Manual Procedure

Note : Let Stand Reagent And Specimen At Room Temperature ■

1 ml = 1 000 μL ■

■ بالامكان اجراء الفحص على البلازما **Plasma** أو المصل **Serum** أو الادرار **Urine**.

Addition Sequence	Blank	Standard	Test
Working Agent	1.0(ml)	1.0(ml)	1.0(ml)
Distilled Water	100μL	-	-
Standard(S)		100 μL	
Sample	-	-	100 μL



1. Mix well after **30 second** , Measure Absorbance of sample and standard against the reagent blank then record absorbance **A1** . Read Absorbance at **490 nm**.
2. Exactly **2 minutes** after the first reading record absorbance **A2**
3. Calculate Creatinine In sample using this equation :

$$\text{Creatinine Concentration} = \frac{(A2 - A1)_{\text{sample}}}{(A2 - A1)_{\text{Standard}}} \times \text{Conc. Standard} \left(\frac{\text{mg}}{\text{dl}} \right)$$

Conc. Standard = $2 \left(\frac{\text{mg}}{\text{dl}} \right)$, **A1 = Absorbance after 30 second**

Conc. Standard = $177 \left(\frac{\mu\text{mol}}{\text{L}} \right)$, **A2 = Absorbance after 2 minutes**

