Creatinine:
- *Creatinine* is the anhydride of *creatine*.

Creatine $\xrightarrow{-H_2O}$ Non-enzymatic \textcolor{green}{Irreversible} \textcolor{red}{Creatinine}

In Liver:
Glycine + Arginine $\rightarrow$ Creatine

Circulation

In Muscle: stored as “phosphocreatine”

Creatine $+$ ATP $\xrightarrow{\text{Creatine kinase}}$ Creatine $\sim P + ADP$

At Rest $\rightarrow$ At Muscle contraction
-The excretion of creatinine from kidney is:

1. **Constant** per day.
2. **Not influenced** by protein in diet or protein catabolism.
3. **Not reabsorbed** by renal tubules.

Better than Urea & Uric acid
**Principle:**
Creatinine + Picric acid \( \text{Alkaline medium} \text{ (NaOH)} \) Orange coloured complex

**Procedure:**

1. **Protein precipitation in serum:**
   - In a centrifuge tube
   - Mix and leave for 5 minutes,
   - then centrifuge for 5 minutes.

   - 1 ml serum
   - 1 ml 10% tungstate
2- Determination of creatinine concentration in serum supernatant:

<table>
<thead>
<tr>
<th></th>
<th>Test</th>
<th>Standard</th>
<th>Blank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supernatant</td>
<td>1 ml</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Standard creatinine</td>
<td>----</td>
<td>0.5 ml</td>
<td>----</td>
</tr>
<tr>
<td>Distilled H₂O</td>
<td>----</td>
<td>0.5 ml</td>
<td>1 ml</td>
</tr>
<tr>
<td>Picric acid/NaOH</td>
<td>2 ml</td>
<td>2 ml</td>
<td>2 ml</td>
</tr>
</tbody>
</table>

*Mix and leave for 20 min. at room temperature → measure absorbance of Test and Standard at 500 nm.*
Calculation:

\[
\text{Conc. of serum creatinine (mg/dl)} = \frac{\text{Abs. of } T}{\text{Abs. of St.}} \times \text{Conc. of st.}
\]
Normal range:

- Normal serum creatinine = \(0.6 - 1.2\) mg/dl.

Interpretation:

Physiologically

- \textit{Male} > \textit{Female} due to larger muscle mass.
Pathologically:
Serum creatinine increases in:

A - Renal dysfunction (decreased excretion)

B - Increased rate of formation as in:

Gigantism
Increase growth hormone in children

Acromegally
Increase growth hormone in adults
THANK YOU