Enzymatic Creatinine

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THE CHOICE . . .
UV ENZYMATIC CREATININE VERSUS COLORIMETRIC JAFFÉ CREATININE

UV ENZYMATIC CREATININE

Advantages

• No known interferences from bilirubin, ascorbic acid, serum or plasma matrices and a very wide range of drugs
• Very Specific
• No interferences from endogenous creatine as this is not involved in the pathway
• No sample blank required
• Suitable for paediatrics and urine samples
• High sensitivity
• Non-toxic reagents
• Application sheets available for a wide range of automated analysers
• Eliminates the requirements for urea determination
• Working reagent stable for 30 days
• Produces reliable eGFR results

COLORIMETRIC JAFFÉ CREATININE

Advantages

• The Jaffé method is the most cost efficient test for measuring Creatinine
• Despite performance problems in different patient sample types Jaffé is the most common method used in laboratories
• To keep costs to a minimum many laboratories use Jaffé method as a first line test followed by a subsequent enzymatic creatinine test.
• Liquid stable
• Suitable for use with serum, plasma and urine

Disadvantages

• Suffers greatly from interferences, Bilirubin being the major concern
• Not suitable for neonatal samples
• Poorer precision and accuracy at low creatinine concentrations can lead to unreliable eGFR results

EFFECTS OF THE INTERFERING SUBSTANCES WITH THE RANDOX ENZYMATIC CREATININE

<table>
<thead>
<tr>
<th>Drugs and Derivatives</th>
<th>No Interference is observed below</th>
<th>Drugs and Derivatives</th>
<th>No Interference is observed below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen</td>
<td>180 mg/l</td>
<td>Furosemide</td>
<td>5 mg/l</td>
</tr>
<tr>
<td>Acetyl Salicylic Acid</td>
<td>600 mg/l</td>
<td>Glutathione (Reduced)</td>
<td>100 mg/l</td>
</tr>
<tr>
<td>Ascorbic Acid</td>
<td>1500 mg/l</td>
<td>Hydrochlorothiazide</td>
<td>1.42 mg/l</td>
</tr>
<tr>
<td>Phenobarbitone</td>
<td>80 mg/l</td>
<td>Indomethacin</td>
<td>6 mg/l</td>
</tr>
<tr>
<td>Gentisic Acid</td>
<td>20 mg/l</td>
<td>L-Dopa</td>
<td>6 mg/l</td>
</tr>
<tr>
<td>Nalidixic Acid</td>
<td>60 mg/l</td>
<td>MethylDopa</td>
<td>20 mg/l</td>
</tr>
<tr>
<td>Salicylic Acid</td>
<td>150 mg/l</td>
<td>Novatgin</td>
<td>100 mg/l</td>
</tr>
<tr>
<td>Valproic Acid</td>
<td>1000 mg/l</td>
<td>Oxyphenbutazone</td>
<td>220 mg/l</td>
</tr>
<tr>
<td>Ampicillin</td>
<td>12 mg/l</td>
<td>Fenfluramin</td>
<td>7 mg/l</td>
</tr>
<tr>
<td>Buscopan</td>
<td>20 mg/l</td>
<td>Pyrasanine</td>
<td>150 mg/l</td>
</tr>
<tr>
<td>Cefoxitin</td>
<td>1 mg/l</td>
<td>Prednisolone</td>
<td>0.23 mg/l</td>
</tr>
<tr>
<td>Cimetidine</td>
<td>4 mg/l</td>
<td>Phoproanol</td>
<td>0.16 mg/l</td>
</tr>
<tr>
<td>Chloramphenicol</td>
<td>20 mg/l</td>
<td>Saccharin</td>
<td>3 mg/l</td>
</tr>
<tr>
<td>Chloroazepoxide</td>
<td>20 mg/l</td>
<td>Spironolactone</td>
<td>1 mg/l</td>
</tr>
<tr>
<td>Clofibrate</td>
<td>500 mg/l</td>
<td>Sulfamethoxypyridazine</td>
<td>70 mg/l</td>
</tr>
<tr>
<td>Doxepin Chlorhydrate</td>
<td>0.3 mg/l</td>
<td>Tetracycline Chlorhydrate</td>
<td>60 mg/l</td>
</tr>
<tr>
<td>EDTA (Disodium Salt)</td>
<td>3360 mg/l</td>
<td>Tolbutamide</td>
<td>500 mg/l</td>
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</tbody>
</table>
CALCIUM DOBESILATE

Recent studies have shown that calcium dobesilate does not interfere at therapeutic levels with the Randox Enzymatic Creatinine assay.

Linearity of the Randox UV method and the Jaffé Method using Aqueous Standards

<table>
<thead>
<tr>
<th>Metabolites</th>
<th>No Interference is observed below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uric Acid</td>
<td>200 mg/l</td>
</tr>
<tr>
<td>Bilirubin</td>
<td>700 mg/l</td>
</tr>
<tr>
<td>Haemoglobin (from haemolysed serum)</td>
<td>14000 mg/l</td>
</tr>
<tr>
<td>Glucose</td>
<td>3000 mg/l</td>
</tr>
<tr>
<td>Total Lipids</td>
<td>15000 mg/l</td>
</tr>
<tr>
<td>Urea</td>
<td>4000 mg/l</td>
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</tbody>
</table>

Ascorbic Acid Interference in Normal Serum (comparison of Jaffé - Trinder - UV Method)

BILIRUBIN INTERFERENCE IN NORMAL SERUM
(Comparison of Jaffé - Trinder - UV Method)

<table>
<thead>
<tr>
<th>Bilirubin (mg/dl)</th>
<th>Creat. UV (mg/dl)</th>
<th>Creat. Trinder 1 (mg/dl)</th>
<th>Creat. Trinder 2 (mg/dl)</th>
<th>Creat. Jaffé (mg/dl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6</td>
<td>0.89</td>
<td>1.19</td>
<td>0.89</td>
<td>1.19</td>
</tr>
<tr>
<td>5.3</td>
<td>0.91</td>
<td>0.92</td>
<td>0.70</td>
<td>1.03</td>
</tr>
<tr>
<td>11.0</td>
<td>0.92</td>
<td>0.40</td>
<td>0.52</td>
<td>0.88</td>
</tr>
<tr>
<td>15.1</td>
<td>0.92</td>
<td>nd</td>
<td>0.34</td>
<td>0.74</td>
</tr>
<tr>
<td>21.6</td>
<td>0.91</td>
<td>nd</td>
<td>0.19</td>
<td>0.62</td>
</tr>
<tr>
<td>26.7</td>
<td>0.92</td>
<td>nd</td>
<td>0.10</td>
<td>0.49</td>
</tr>
<tr>
<td>31.5</td>
<td>0.89</td>
<td>nd</td>
<td>0.03</td>
<td>0.38</td>
</tr>
<tr>
<td>37.9</td>
<td>0.90</td>
<td>nd</td>
<td>nd</td>
<td>0.29</td>
</tr>
<tr>
<td>43.6</td>
<td>0.87</td>
<td>nd</td>
<td>nd</td>
<td>0.16</td>
</tr>
<tr>
<td>48.5</td>
<td>0.90</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
</tr>
<tr>
<td>54.0</td>
<td>0.89</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
</tr>
<tr>
<td>60.0</td>
<td>0.89</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
</tr>
</tbody>
</table>

Bilirubin Interference in Pathological Serum (comparison of Jaffé - Trinder - UV Method)

nd - could not be determined
<table>
<thead>
<tr>
<th>Product Description</th>
<th>Size</th>
<th>Cat No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CREATININE (Enzymatic UV method)</td>
<td>4x50 ml</td>
<td>CR2336</td>
</tr>
<tr>
<td>CREATININE (Enzymatic UV method)</td>
<td>4x100 ml</td>
<td>CR2337</td>
</tr>
<tr>
<td>CREATININE (Liquid) [RX Daytona™] (Jaffé)</td>
<td>R1 6x51, R2 3x28 (6x245T)</td>
<td>CR3814</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Size</th>
<th>Cat No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUMAN ASSAYED MULTI-SERA LEVEL 2</td>
<td>20 x 5 ml</td>
<td>HN1530</td>
</tr>
<tr>
<td>HUMAN ASSAYED MULTI-SERA LEVEL 3</td>
<td>20 x 5 ml</td>
<td>HE1532</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Size</th>
<th>Cat No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOVINE ASSAYED MULTI-SERA LEVEL 1</td>
<td>20 x 5 ml</td>
<td>AL1027</td>
</tr>
<tr>
<td>BOVINE ASSAYED MULTI-SERA LEVEL 2</td>
<td>20 x 5 ml</td>
<td>AN1026</td>
</tr>
<tr>
<td>BOVINE ASSAYED MULTI-SERA LEVEL 3</td>
<td>20 x 5 ml</td>
<td>AE1032</td>
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