Intended Use

Spectrum-Diagnostics Chloride reagent is intended for the in-vitro quantitative diagnostic estimation of Chloride in human serum, plasma and urine.

Background

Chloride is the most abundant extracellular anion. Together with natrium-chloride is responsible for the maintenance of osmotic pressure, the anion-cation balance and therefore of the water distribution in the extracellular fluid compartment. Decreased plasma Cl–-concentrations (hypochloremia) can result from salt-losing nephritis, persistent gastric secretion, prolonged vomiting and metabolic acidosis that are caused by increased production or reduced secretion of organic acids. Increased plasma Cl–-concentrations (hyperchloremia) occur with dehydration, renal tubular acidosis, acute renal failure, in adrenocortical hyperfunction, salicylate intoxication and metabolic acidosis associated with prolonged diarrhoea and loss of sodium bicarbonate. Chloride is often analyzed in combination with natrium and kalium to determine the anion gap in serum and/or urine. The urinary anion gap is useful in the initial evaluation of hyperchloremic metabolic acidosis.
Due to the different reactivity equivalents of chloride and bromide the thiocyanate method is less disturbed by the presence of bromide than measurement with an ion-selective electrode.

Method

Colorimetric method.

Assay Principle

Chloride ions and Hg II-thiocyanate form thiocyanate ions in acidic medium. These ions react with HNO3 and Fe III-ions and effect a red colour.

The increasing extinction is directly proportional to the concentration of chloride ions.

Reagents

Reagent (R)
Hg II - thiocyanate 2 mmol/l
Fe III - nitrate 30 mmol/l
HNO3 40 mmol/l

Standard (S)
Chloride 100 mmol/l (354.6 mg/dl)

Precautions and Warnings

The reagent contains mercuric thicyanate which is toxic and harmful if inhaled or absorbed through skin. Do not ingest or inhalate. In case of contact with eyes or skin; rinse immediately with plenty of soap and water. In case of severe injuries; seek medical advice immediately.

Reagent Storage and Stability

Reagents and standard are ready-to-use. When stored at 2 – 8 ÔC; they are stable up to the expiry date stated on the label.

Sample

Serum.
Freshly drawn non hemolysed serum is the specimen of choice. Chloride in serum is stable for 7 days at 2-8ÔC.

Urine.
Urine has to be diluted 1+2 with distalled water. Multiply result by 3

System Parameters

Wavelength 492 nm (460 - 500 nm)
Optical path 1 cm
Assay type colorimetric end-point
Direction Increase
Sample: Reagent Ratio e.g.; Reagent volume 1 ml
Sample volume 10 µl
Temperature 25 ÔC, 30 ÔC, 37 ÔC
Zero adjustment Against reagent blank
Linearity 130 mmol/l (462 mg/dl)
Incubation 5 min.

Procedure

Pipette into clean test tubes:

<table>
<thead>
<tr>
<th>Blank</th>
<th>Standard</th>
<th>Sample</th>
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</thead>
<tbody>
<tr>
<td>Reagent (R)</td>
<td>1 ml</td>
<td>1 ml</td>
</tr>
<tr>
<td>Standard</td>
<td>.........</td>
<td>10 µl</td>
</tr>
<tr>
<td>Sample</td>
<td>.........</td>
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</tbody>
</table>

Mix well, let stand for 5 minutes, then read absorbances ,A standard and A sample against Reagent Blank at 492 nm.

Calculation

Serum Chloride Conc.((mmol/l) = \( \frac{\Delta A_{Sample}}{\Delta A_{Standard}} \times 100 \)

Expected Values

Serum 97 – 108 mmol/l.
Urine 24 h urine 95 – 240 mmol/l24h
morning urine 54 – 158 mmol/l

Conversion between conventional and SI units: 1 mEq/l = 1 mmol/l
Conversion between mmol/l and mg/dl: mmol/l = 0.282 x mg/dl

Note:
It is recommended for each laboratory to establish and maintain its own reference values. The given data are only an indication.

Spectrum Diagnostics does not interpret the results of a clinical laboratory procedure; interpretation of the results is considered the responsibility of qualified medical personnel. All indications of clinical significance are supported by literature references.

Linearity

The assay is linear up to 130 mmol/l (462 mg/dl)
Waste Disposal

This product is made to be used in professional laboratories. Please consult local regulations for a correct waste disposal.

S56: dispose of this material and its container at hazardous or special waste collection point.

S57: use appropriate container to avoid environmental contamination.

S61: avoid release in environment. refer to special instructions/safety data sheets.

References


ORDERING INFORMATION

<table>
<thead>
<tr>
<th>CATALOG NO.</th>
<th>QUANTITY</th>
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<tbody>
<tr>
<td>233 001</td>
<td>4 x 25 ml</td>
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<tr>
<td>233 001</td>
<td>2 x 25 ml</td>
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