**Quantitative determination of calcium**

Only for professional in vitro diagnostic use.

**Store at 2-8°C**

**PRINCIPLE OF THE METHOD**

Calcium with Arsenazo III (1,8-Dihydroxy-3,6-disulpho-2,7-napthalenebis (azo)-dibenzenearsonic acid), at neutral pH, yields a blue colored complex.

The intensity of the color formed is proportional to the calcium concentration in the sample.\(^1,2,3\)

**CLINICAL SIGNIFICANCE**

Calcium is the most abundant and one of the most important minerals in the human body. Approximately 99% of body calcium is found in bones. A decrease in albumin level causes a decrease in serum calcium. Low levels of calcium are found in hypoparathyroidism, pseudohypoparathyroidism, vitamin D deficiency, malnutrition and intestinal malabsorption. Among causes of hypercalcemia are cancers, large intake of vitamin D, enhanced renal retention, osteoporosis, sarcoidosis, thyrotoxicosis, hyperparathyroidism.\(^4,5\)

Clinical diagnosis should not be made on a single test result; it should integrate clinical and other laboratory data.

**REAGENTS**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Arsenazo III</td>
<td>100 mmol/L</td>
</tr>
<tr>
<td>Arsenazo III</td>
<td>120 mmol/L</td>
<td></td>
</tr>
<tr>
<td>CALCIUM CAL</td>
<td>Calcium aqueous primary standard</td>
<td>10 mg/dL</td>
</tr>
</tbody>
</table>

**PREPARATION**

All the reagents are ready to use.

**STORAGE AND STABILITY**

All the components of the kit are stable until the expiration date on the label. Do not use reagents over the expiration date.

**INTERFERENCES**

No interferences were observed with triglycerides up to 1,25 g/L.\(^6\)

A list of drugs and other interfering substances with calcium determination has been reported by Young et al.\(^3\).

**SYMBOLOGIES FOR IVD COMPONENTS AND REAGENTS**


**BIBLIOGRAPHY**


**PACKAGING**

R: 3 x 50 mL

MO-165075

CAL Ca: 1 x 5mL

**QUALITY CONTROL**

Control sera are recommended to monitor the performance of assay procedures: CONTROL Normal and Pathologic (Ref: MO-165107 and MO-165108).

If control values are found outside the defined range, check the instrument, reagent and calibration material.

Each laboratory should establish its own Quality Control scheme and corrective actions if controls do not meet the acceptable tolerances.

**REFERENCE VALUES**

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults</td>
<td>8-10.5 mg/dL</td>
</tr>
<tr>
<td>Children</td>
<td>10-12 mg/dL</td>
</tr>
<tr>
<td>Newborns</td>
<td>8-13 mg/dL</td>
</tr>
<tr>
<td>Urine</td>
<td>50-300 mg/dL</td>
</tr>
</tbody>
</table>

**PERFORMANCE CHARACTERISTICS**

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These values are for orientation purpose; each laboratory should establish its own reference range.

**Sensitivity**: 1 mg/dL = 0,0316 A.

**Accuracy**: Results obtained using MONLABTEST reagents (γ) did not show systematic differences when compared with other commercial reagents (x). The results obtained using 50 samples were the following:

<table>
<thead>
<tr>
<th>Component</th>
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</tr>
</thead>
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<tr>
<td>Mean (mg/dL)</td>
<td>8,35</td>
</tr>
<tr>
<td>SD</td>
<td>0,08</td>
</tr>
<tr>
<td>CV (%)</td>
<td>0,95</td>
</tr>
</tbody>
</table>

Regression equation: \( y = 0,8944x + 1,3421 \)

The results of the performance characteristics depend on the analyzer used.

**NOTES**

1. CALCIUM CAL: Proceed carefully with this product because due its nature it can get contaminated easily.
2. It is recommended to use disposable material. If glassware is used the material should be scrupulously cleaned with distilled (1/2) HNO\(_3\) in water and then thoroughly rinsed it with distilled water.
3. Most of the detergents and water softening products used in the laboratories contains chelating agents. A defective rinsing will invalidate the procedure.
4. Calibration with the aqueous standard may cause a systematic error in automatic procedures. In these cases, it is recommended to use a serum Calibrator.
5. Use clean disposable pipette tips for its dispensation.
6. MONLAB has instruction sheets for several automatic analyzers. Instructions for many of them are available on request.

**SYMBOLS FOR IVD COMPONENTS AND REAGENTS**

- Manufacturer: IVD
- For in vitro diagnostic use only
- Don’t re-use: Keep dry
- Contains sufficient for <n> tests
- Catalogue Code
- Temperature limitation
- Lot Number
- Use by