

CALCIUM

OCPC Method, End Point

PRODUCT CODE

CE001

INTENDED USE

For the quantitative determination of Calcium in serum or plasma

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. Among causes of hypercalcemia are cancers, large intake of vitamin D, enhanced renal retention, osteoporosis, sarcoidosis, thyrotoxicosis, hyperparathyroidism. Low levels of calcium are found in hyperparathyroidism, pseudohypoparathyroidism, vitamin D deficiency, malnutrition and intestinal malabsorption. Clinical diagnosis should not be made on a single test result; it should integrate clinical and other laboratory data.

PRINCIPLE

Calcium ions form a violet complex with o-Cresolphthaleine complexone on alkaline medium. The intensity of the color at 578 nm is proportional to the calcium concentration.



REAGENT COMPOSITION

REAGENT -1 (BUFFER)

Lysine 0.20 mol/L
 Potassium Hydroxide 20 mmol/L

CALCIUM REAGENT-2 (COLOUR)

8-Hydroxy Quinoline 14.0 mmol/L
 O-Cresolphthaleine Complexone 0.1 mmol/L
 Hydrochloric Acid 0.1 mmol/L

CALCIUM STANDARD

Calcium standard concentration 8 mg/dL or 2 mmol/L

WORKING REAGENT PREPARATION

Mix equal volume of buffer (1) and color reagent (2) allow standing for 10 minutes at room temperature before use.

STORAGE AND STABILITY

The reagents and standard are stable up to the stated expiry date when stored at 15-25° C.

The combined working reagent is stable for 7 days at 2-8° C and for 3 days at 15-25° C.

SPECIMEN

Serum or heparinized plasma,
 Stability of calcium in serum is 10 days when stored at 2-8° C.

PRECAUTION

To avoid contamination, use clean laboratory wares.
 Avoid direct exposure of reagent to light.

ASSAY

Wavelength 578 nm
 Cuvette 1 cm light path
 Temperature 37 °C
 Measurement Against reagent blank

PROCEDURE

Pipette in to cuvettes	Blank	Standard	Sample
Working reagent	1000 µL	1000 µL	1000 µL
Standard	--	10 µL	--
Sample	--	--	10 µL

Mix and measure the absorbance of the sample (As) and the standard (Astd) against the reagent blank within (5-10) minutes.

CALCULATION

$$\text{Serum Calcium (mg/dL)} = \frac{\Delta A \text{ sample}}{\Delta A \text{ standard}} \times 8 \text{ (Std.conc.)}$$

To convert serum calcium from mg/dL to mmol/L divide result by 4.

Linearity

The test is linear up to a calcium value of 15 mg/dL or 3.75 mmol/L.
 Sample with higher values should be diluted 1+1 with distilled water.
 The calcium is again estimated and the result multiplied by 2.

NORMAL RANGE

Serum /Plasma = 8.1 – 10.4 mg/dL or 2.02 – 2.60 mmol/L















QUALITY CONTROL

All control sera with Calcium determined by this method may be used.

NOTES

- Contaminated glassware is the commonest source of error. Disposable plastic is recommended for this test.
- The test is not influenced by haemoglobin up to 200 mg/dL or bilirubin up to 20 mg/dL.
- Lipaemic and haemolaetic sample require a sample blank prepared by adding 0.05 ml of sample 2.5 ml distilled water. Measure the absorbance against distilled water then subtract the value from the absorbance of the sample.
- Buffer and standard contain sodium azide (0.1%) as a preservative. Do not swallow. Avoid contact with skin and mucous membranes

SYMBOL ON LABEL

Symbols	Signify	Symbols	Signify
	Catalogue Number		Pack Size
	Expiry Date		Volume
	Storage Condition		Lot Number
	Instruction for Use		In Vitro Diagnostics
	Manufacturing Date		Manufacturer
	Number of Tests		For Single Use Only
	EC Representative		European conformity

BIBLIOGRAPHY

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- Pollard, F.H. and Martin, J.V. Analyst 81, 348, 1956.
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- Barnett, R. N. et al; Amer J. Clin. Path. 59, 836, 1973

