

Calcium ARS (Arsenazo III method)

Diagnostic reagent for quantitative in vitro determination of calcium in serum, plasma or urine on photometric systems.

Reagent

Reagent : Arsenazo solution
Standard : Calcium (10 mg/dL)

Principle

Ca²⁺ forms a blue colored complex with arsenazo III and the intensity of the color formed is directly proportional to calcium concentration present in the sample.

Summary

Approximately 99% of Calcium is mainly found in bones, whereas in serum it found in free ionized form (Ca²⁺) or bound with Albumin. Thus increase or decrease of this protein causes increase or decrease of Calcium levels in blood respectively. Increased blood calcium may be observed in hyperparathyroidism, vitamin D intoxication, multiple myeloma and some neoplastic diseases of bone. Decreased serum calcium may be observed in hypoparathyroidism, vitamin D deficiency, steatorrhea, nephrosis, and nephritis.

Storage instructions and Reagent stability

The reagent and standard is stable till the date of expiry, if stored at 2° - 30°C, protected from light and contamination is avoided. Do not freeze the reagent.

Composition

Arsenazo 0.1 g/L, Imidazole 7 g/L, 8-Hydroxyquinoline 0.5 g/L.
Standard: Calcium - 8.0 mg/dL

Waste Management

Please refer to local legal requirements

Reagent Preparation

Reagent is ready to use.

Materials required but not provided

NaCl solution 9 g/L
General laboratory equipment

Specimen

Serum, Heparin plasma or Urine

In Serum or Plasma may be stored for 10 days at 2-8°C & 8 months at -20°C.

In urine 4 days at 2-8°C.

21 days at -20°C

Add 10 mL of concentrated HCl to 24 h urine and heat the specimen to dissolve calcium oxalate.

Discard contaminated specimens. Freeze only once!

Assay Procedure

Wavelength 630 nm
Light path 10 mm
Temperature R.T°C
Measurement Against reagent blank

	Blank	Standard	Sample
Reagent	1000 µL	1000 µL	1000 µL
Standard	-----	20 µL	-----
Sample	-----	-----	20 µL

Mix, incubate for 2-3 min. at R.T°C. Read absorbance against the reagent blank.

Calculation

Calculation of the concentration "C" of calcium in the sample

$$C = 8.0 \times \frac{\text{A sample}}{\text{A standard}} \text{ (mg/dL)}$$

Quality Control

For internal quality control check with normal and abnormal controls should be assayed with each batch of samples.

Each laboratory should establish corrective action in case of deviations in control recovery.

Warning and Precautions

1. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
2. Wear suitable gloves and eye/face protection.
3. Always use safety pipettes to pull the reagents into a pipette.
4. Reagents may contain some non-reactive and preservative components. It is suggested to handle carefully, avoid direct contact with skin and do not swallow.
5. For professional use only!

Performance characteristics Measuring Range

Measuring Range of assay is 0.20 mg/dL–20 mg/dL. If such value is exceeded the sample should be diluted 1+4 with NaCl solution (9g/L) and results multiplied by 5.

Linearity/Limit of maximum Detection

The maximum limit of detection is 20 mg/dL.

Sensitivity/Limit of Detection

The lower limit of detection is 0.20 mg/dL.

Interferences

No interference was observed by Bilirubin up to 40 mg/dL, Triglyceride up to 2000 mg/dL.

Precision

Intra-assay n=20	Mean [mg/dL]	SD [mg/dL]	CV [%]
Sample 1	8.36	0.22	2.66
Sample 2	12.26	0.21	1.73
Sample 3	17.46	0.19	1.08

Inter-assay n=20	Mean [mg/dL]	SD [mg/dL]	CV [%]
Sample1	7.34	0.14	1.89
Sample 2	12.55	0.17	1.36
Sample 3	17.77	0.17	0.96

Method Comparison

A comparison of Precision Biomed Calcium ARS (y) with a commercially available test (x) using 15 samples gave following results:
 $y = 1.005x - 0.098$; $r^2 = 0.984$

Reference Range

In Serum/Plasma – 8.1 - 10.4 mg/dL (2.02 - 2.6 mmol/L)

In Urine – Woman < 250 mg/24h (6.24 mmol/24h)

– Men < 300 mg/24h (7.49 mmol/24h)

Note: It is recommended that each laboratory should establish its own reference range based on the patient population.

Quick Reference

Parameter	Calcium ARS III
Mode	End Point
Wavelength	630 nm
Path length	10 mm
Standard	10 mg/dL
Reagent volume	1000 µL
Sample volume	20 µL
Incubation time	2-3 min
Temperature	R.T°C
Blanking	Reagent blank
Normal range	8.1 - 10.4 mg/dL
Linearity	20 mg/dL
Sensitivity	0.20 mg/dL










Pack Size

Cat No.	Configuration	Pack
CAL00100	Reagent - 2 x 50mL Standard - 1 x 2mL	100mL
CAL01000	Reagent - 2 x 500mL Standard - 1 x 4mL	1000mL

Literature

1. Smith, H.G. Jr. and Bauer, P.J. (1979) Biochemistry 18, 5067 - 5073.
2. Budesinsky, b. (1969) in chlantes in analytical chemistry.
3. Cadwell P.C. (1970) in Calcium An. Cellular function.
4. Cuthbert, A.W. Ed., PP-10-16 Macmillan, London.
5. Tietz, N.W., Fundamentals of Clinical Chemistry, Philadelphia, W.B. Saunders, p. 149 (1984).
6. Henry, J.B., Clinical Diagnosis and Management by Laboratory Methods, Philadelphia, W.B. Saunders, p. 149 (1984).

Version : CAL/00

 In Vitro Diagnostic Use
  See Pack Insert For Procedure
  Single Use only
  CE
 Temperature Limit
  Manufacturer's Address
  Manufacturing Date
  Expiry Date
  LOT Lot Number



Manufactured in India by :

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