

CALCIUM – LS

(ARSENAZO III METHOD)



PRINCIPLE

Arsenazo iii binds with calcium in an alkaline medium to form a purple color complex which absorbs maximally at 620nm. Magnesium interference is minimized by the addition of 8-Hydroxyquinoline . The intensity of the color is proportionally to the calcium concentration.

CLINICAL SIGNIFICANCE

Calcium in Serum is distributed about equally as the ionized form and the in bound ionized form, the ionized form plays physiologically active role in blood coagulation and enzyme activation. Calcium plays an important role in many cell functions intracellularly in muscle contraction and glycogen metabolism, extracellular in bone mineralization, in blood coagulation in the transmission of nerve impulses.

A reciprocal relation ship appears to exist between calcium and phosphorus in serum. As one goes up, the other usually decreases. Calcium in the body is present in the bones, as calcium phosphate. The remainder of the calcium although a very small amount, is present in plasma.

Increased calcium levels result from hyperparathyroidism and multiple myeloma. Hyperthyroidism , nephrosis, steatorrhea and rickets decrease serum level of calcium.

Measurement of also helps in monitoring of calcium supplementation mainly in the prevention of osteoporosis.

SAMPLE COLLECTION & STORAGE

Serum / heparinized plasma.

Do not use hemolysed samples.

EDTA, Citrate and oxalate binds calcium and should not be used as anticoagulants.

The reagent is ready to use and stable at room temperature till the expiry date mentioned on the label. When opened, care should be taken to avoid contamination.

PRECAUTIONS

1. As calcium is a ubiquitous ion essential precautions must be taken against accidental contamination. Use only disposable material (test tubes, micro tips etc.,)
2. This test is very sensitive, improperly cleaned containers or cuvettes can lead to positive errors and high absorbance.
3. The reliability of test results should be monitored routinely using suitable quality control materials(normal and abnormal).
4. If the calcium value exceeds 20 mg/dl , dilute sample with normal saline. In such a case , the result obtained must be multiplied with the appropriate dilution factor.
5. Specimens from patients receiving EDTA or bromsulfophtalein (BSP) should not be used.
6. For serum, fasting blood should be collected severe lipemia may cause elevated results and a serum blank should be run for greatest accuracy.
7. Traces of chelating agent such as edta can prevent the formation of colored complex.
8. As with all the diagnostic procedures, the physician should evaluate data obtained by the use of this kit in light of other clinical information.

| KIT CONTENTS | (50X1ml) | (10X1ml) |
|---------------------------------------|----------|----------|
| Reagent-1. Arsenazo III Dye agent | 50x1ml | |
| Reagent-1.Calcium Standard (10mg/dl) | 1ml | |
| 50 Pre dispensed Tubes | 1ml | |

REAGENT PREPARATION

All the Reagents are ready to use.

SYSTEM PARAMETERS

| Reaction Type | : | END POINT |
|-----------------------|---|-----------------|
| Wave Length | : | 620nm (600-650) |
| Flow cell Temperature | : | 37°C |
| Sample Volume | : | 100µl |
| Reagent volume | : | 100 µ l |
| Standard Conc | : | 10.0 |
| Units | : | mg/dl |
| Blank | : | Reagent |
| LoNormal | : | 8.5 |
| High Normal | : | 11.0 |

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PROCEDURE

Pre dispensed Tubes should be labeled as Blank (B)
Standard (S) and Test(T) as follows

| PROCEDURE | B | S | T |
|------------------|-------|-------|-------|
| Arsenazo III | 1.0ml | 1.0ml | 1.0ml |
| Calcium Standard | --- | 10 µl | --- |
| Specimen | --- | --- | 10 µl |

Mix well and keep for 1 minutes at R.T. Read absorbance of Standard (S) and Test(T) against Blank (B) At 620nm or with Red filter (600-650nm).

CALCULATIONS

Serum Calcium in mg/dl = (Abs of Test/Abs of STD) x 10

LINEARITY

The Linearity of this kit is up to 20 mg/dl

NORMAL RANGE

Serum - Adults : 8.5 to 11.0 mg/dl
Urine - Women : <250mg/24 hour
- Men : <300mg/24 hours

It is recommended that each laboratory should establish their own normal

BIBLIOGRAPHY

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