

**Quantitative determination of Calcium in serum/plasma  
Only for *In Vitro* Diagnostic use**

**ORDER INFORMATION**

| REF      | Cont.     |
|----------|-----------|
| CARZ 100 | 2 X 50 ML |
| CARZM 50 | 50 X 1 ML |

**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, multiple myeloma, idiopathic hypercalcemia of infancy, and carcinoma metastatic to bone. Elevated calcium concentration in urine is found in nephrolithiasis and metabolic acidosis.

**PRINCIPLE**

Calcium with Arsenazo III (1, 8-Dihydroxy-3,6-disulpho-2,7-naphthalene-bis (azo)-dibenzene-arsonic acid), at neutral pH, yields a blue colored complex. The intensity of the colour formed is proportional to the calcium concentration in the sample.

**REAGENT COMPOSITION**

Reagent I : Arsenazo III reagent  
Calcium standard : 10 mg/dl

**SAMPLE COLLECTION AND PRESERVATION**

Serum, heparinized plasma or urine collected by standard procedures. Anticoagulants other than heparin should not be used. Calcium in serum or plasma is stable for 10 days at 2-8°C. Collect a 24-hour urine specimen in a bottle containing 10 ml of 50 % (v/v) nitric acid. Centrifuge or filter and dilute 1/2 with distilled water before testing and multiply results by 2 (Dilution Factor) Stable for 10 days at 2-8°C.

**REAGENT PREPARATION**

All reagents are ready to use.

**REAGENT STORAGE AND STABILITY**

When stored at Room temperature reagent is stable until the expiration date stated on the bottle and kit box label

**NOTES**

1. Proceed carefully with this product because due to its nature it can get contaminated easily.
2. It is recommended to use disposable material. If glassware is used the Contamination of glassware with calcium will affect the test. Use acid washed glassware or plastic tubes.
3. Most of the detergents and water softening products used in the laboratories contain chelating agents. A defective rinsing will invalidate the procedure.
4. Use clean disposable pipette tips for its dispensation.
5. CARZ 50 are specially treated monovials with 1ml pre-dispensed reagent. Just add 25 µl sample / std., Incubate at R. T. for 5 min. & aspirate. Use the same programme as above.

| AUTOMATED PARAMETERS   |                       |
|------------------------|-----------------------|
| Wavelength             | 650 nm (620 – 650 nm) |
| Cuvette                | 1 cm light path       |
| Reaction Temperature   | R.T.                  |
| Measurement            | Against Reagent       |
| Reaction Type          | End point             |
| Sample Volume          | 25 µl                 |
| Reagent Volume         | 1000 µl               |
| Incubation             | 5 minutes             |
| Blank Absorbance limit | < 0.80                |
| Low Normal             | 8.8 mg/dl             |
| High Normal            | 10.2 mg/dl            |
| Linearity              | 16 mg/dl              |

**ASSAY PROCEDURE**

**PIPETTE INTO TEST TUBES**

|          | BLANK   | STD     | SAMPLE  |
|----------|---------|---------|---------|
| Sample   | -       | -       | 25 µl   |
| Standard | -       | 25 µl   | -       |
| Reagent  | 1000 µl | 1000 µl | 1000 µl |

Mix well & incubate at R.T. for 5 min. Measure final absorbance of the sample (Ac) and standard (As) against the reagent blank.

**CALCULATION**

$$\text{Serum/Plasma} = \frac{(Ac) \text{ Sample}}{(As) \text{ Standard}} \times 10 \text{ (Standard concentration.)}$$

$$\text{Urine 24Hr.} = \frac{(Ac) \text{ Sample}}{(As) \text{ Standard}} \times 10 \times \text{vol. (dL) urine/24 h} \times 2$$

**LINEARITY**

The method is linear to a concentration of 16 mg/dl

**QUALITY CONTROL**

It is recommended to run a normal and a pathological control serum which is commercially available to verify the performance of the measured procedure. The value of controls should fall within the established limit.

**REFERENCE VALUES**

|         |                   |                       |
|---------|-------------------|-----------------------|
| Serum:  | 8.8 - 10.2 mg/dl  | = 2.2 - 2.55 mmol/L   |
| Urine : | 100 - 300 mg/24 h | = 2.5 - 7.5 mmol/24 h |

The reference values are to be considered as indicative only. Every laboratory should establish its own normal range.

**BIBLIOGRAPHY**

Bishop, M.L.Dubeb-Von Laufen, J.L., Burtis, Carl Aa and Ashwood, Titz 110, 61.