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CALCIUM ARSENAZO III

LIQUID

Cat. No.: 43941 43943
2x125 ml 20x20 ml



Reagent kit for the determination of calcium concentration in serum and urine.

In the human body 98 - 99% of calcium is present in bound form in bones and teeth. About 50% of the blood calcium circulates in ionic form, the other part as bound to proteins. The concentration of ionic calcium is influenced by the acid-base household of the body. The ratio of ionic/protein-bound calcium is higher in acidosis and lower in alkalosis. Elevated calcium levels are found in association with primary hyperparathyroidism, neoplastic diseases (eg. breast cancer, bronchial cancer, pancreatic tumor), osteoporosis, Paget's disease and Addison's disease, overdosage of the vitamins A and D, hyperthyroidism. Lower calcium values are measured in hypoparathyroidism, disturbances of the absorption, chronic renal failure, nephrotic syndrome, hepatic cirrhosis, acute pancreatitis.

Principle

At a neutral pH, the Ca²⁺ forms with arsenazo III a complex, the color intensity of which is directly proportional to the concentration of calcium in the sample.

Reference values

Serum: 2.2-2.55 mmol/l
(8,80-10,2 mg/dl)
Urine: 2.5- 8.0 mmol/24 h
(100-320 mg/24 h)

It is recommended that each laboratory should assign its own normal range.

Reagents compositions

1. Reagent (R1)

MES, pH= 6.50 100 mmol/l
Arsenazo III 200 µmol/l

2. Reagent (R2)

Calcium standard See label for exact value.
20x20 ml kit doesn't contain any standard.

Samples

Serum free of haemolysis.

Urine diluted in ratio of 1:3 with distilled water; adjust to pH 3-4 with 0.1N HCl.

PROCEDURE

In the course of determination please use disposable plastic equipments only!

Preparation and stability of the working reagent

The reagent is ready for use.

If the absorbance of working reagent is higher than 1.5 at 600 nm the reagent can not be used.

Assay Conditions

Wavelength: 650 nm (600 nm)
Temperature: 37 °C
Cuvette: 1 cm light path
Method: endpoint (increasing)
Read against: reagent blank

Pipette into cuvette

	Blank	Standard	Sample
Reagent	1 ml	1 ml	1 ml
Distilled water	10 µl		
Standard		10 µl	
Sample			10 µl

Mix and read the optical density after a 1-minute incubation.

Calibration (37°C, arsenazo method)

S1: Distilled water

S2: Calcium standard is found in the kit or

Roche C.F.A.S. (Calibrator for automated system) or

Randox Calibration Serum Level I

Calibration frequency

Two point calibration is recommended

- after reagent lot change,

- as required following quality control procedures.

Calculation using calibration

$$\frac{A_{sample}}{A_{standard}} \times C_{standard} = C_{sample}$$

A=absorbance

C=concentration

Quality control

A quality control program is recommended for all clinical laboratories. The analysis of control material in both the normal and abnormal ranges with each assay is recommended for monitoring the performance of the procedure. Each laboratory should establish corrective measures to be taken if values fall outside the limits.

PERFORMANCES DATA

The following data were obtained using the Olympus 600 analyzer.

Linearity

Up to 4 mmol/l (16,0 mg/dl).

Sensitivity

It is recommended that each laboratory establishes its own range of sensitivity as this is limited by the sensitivity of the spectrophotometer used. Under manual conditions however, a change of 0.001 Abs is equivalent to 0.013 mmol/l (0,052 mg/dl) Calcium concentration at 600 nm.

Precision

	Reproducibility		
	Average conc. (mmol/l)	SD	CV%
Sample I.	2.21	0.044	1.98
Sample II.	3.48	0.071	2.04

Correlation

Comparative studies were done to compare our reagent with another commercial calcium assay.

The results from these studies are detailed below.

Correlation coefficient: r=0.988

Linear regression: y(mmol/l)= 1.052x+0.003

(x= other commercial reagent, y= own reagent).

Specificity

Bilirubin 855 µmol/l (50mg/dl), lipid 700mg/dl, glucose 55.5 mmol/l (1000mg/dl) and ascorbic acid 2.84 mmol/l (50mg/dl) don't interfere with the assay up to the given levels.

Note

Do not use reagents after the expiry date stated on each reagent container label. Do not use products, test solutions and reagents described above for any purpose other than described herein.

For in vitro diagnostic use only.

The following symbols are used on labels

For in vitro diagnostic use

Use by (last day of the month)

Temperature limitation

Batch Code

Code

Bibliography

Baver, P. J.,: Anal. Biochem, 110; 61, (1981)