MAGNESIUM

CALMAGITE-Colorimetric method

IVD CE

PRODUCT CODE
CE008

INTENDED USE
For the quantitative determination of magnesium in human serum, plasma or urine.

CLINICAL SIGNIFICANCE
Magnesium is the second more abundant intracellular cation of the human body after potassium, being essential in great number of enzymatic and metabolic processes. Is a cofactor of all the enzymatic reactions that involve the ATP and comprises of the membrane that maintains the electrical excitability of the muscular and nervous cells. A low magnesium level is found in malabsortion syndrome, diuretic or minoglucoside therapy; hyperparathyroidism or diabetic acidosis. Elevated concentration of magnesium is found in uremia, chronic renal failure, glomerulonephritis, Addisons's disease or intensive anti acid therapy'. Clinical diagnosis should not be made on a single test result; it should integrate clinical and other laboratory data.

PRINCIPLE
Magnesium form a purple coloured complex when reacts with Calmagite in alkaline solution (Note 1) The intensity of the color formed is proportional to the magnesium concentration in the sample'.

REAGENT COMPOSITION
- **R1 Buffer:**
  Amino-methyl-propanol 1 mmol/L
  EGTA 0.21 mmol/L
- **R2 Chromogen:**
  Calmagite 0.30 mmol/L
- **Magnesium standard:**
  Magnesium aqueous primary standard 2 mg/dl

REAGENT PREPARATION
working reagent (WR): Mix equal volumes of R 1 Buffer and R 2 Chromogen. The working reagent is stable for 4 days at refrigerator (2-8°C) or 24 h at room temperature (15-25°C).

STORAGE AND STABILITY
- All the components of the kit are stable until the expiration date on the label when stored tightly closed at 2-8°C protected from light and contaminations prevented during their use.
- Do not use reagents over the expiration date.
- Magnesium STD: Store at 2-8°C.
- The Standard is stable until the expiry date stated on the label.
- Signs of reagent deterioration:
  Presence of particles and turbidity.
  Blank absorbance (A) at 520 > 1.4.

SPECIMEN
Serum, heparinized plasma': Free of hemolysis and separated from cells as rapidly as possible. Do not use oxalates or EDTA as anticoagulant. Stability: 7 days at 2-8°C. Urine': Should be acidified to pH 1 with HCI. If urine is cloudy; warm the specimen to 60°C for 10 min. to dissolve precipitates. Dilute the sample 1/10 with distilled water and multiply the result by 10. Stability: 3 days at 2-8°C.

ASSAY

Wavelength	520 ± 20 nm
Cuvette	1 cm light path
Temperature	37 °C/15-25°C

Adjust the instrument to zero with distilled water

PROCEDURE

Pipette in to cuvettes	Blank	Cal. Standard	Sample
working reagent	1000 µL	1000 µL	1000 µL
Standard	--	10 µL	--
Sample	--	--	10 µL
-Mix and let the tubes stand 2 minutes at room temperature. -Read the absorbance (A) of the samples and the standard at 520 nm against the reagent blank, The color is stable for at least 1 hour			

CALCULATION

$$\text{Serum Magnesium (mg/dL)} = \frac{\Delta A \text{ sample}}{\Delta A \text{ standard}} \times 2.0 \text{ (Std.conc.)}$$

LINEARITY
Up to 5 mg/d L. If the results obtained were greater than linearity limit, dilute the sample 1/2 with NaCI 9 g/L and

NORMAL RANGE

Serum, plasma	1.6 – 2.5 mg/dL	0.66 – 0.03 mmol/L
Urine	24 – 244 mg/24 h	2 – 21 mEq/L/24 h

NTERFERENCES
hemolysis and anticoagulants other than heparin'. A list of drugs and other interfering substances with magnesium determination has been reported by Young et. alz.

QUALITY CONTROL
All control sera with Magnesium values determined by this method can be used.

NOTES
1-Interference by calcium is prevented by the use of EGTA'.
2. It is recommended use disposable material to avoid calcium or magnesium contamination. If glassware is used the material should be scrupulously clean with H2SO4- K2Cr2O7 and then thoroughly rinsed with distilled water and dried before use.
3. Calibration with the aqueous standard may cause a systematic error in automatic procedures. It is recommended to use a serum Calibrator.
4. Use clean disposable pipette tips for its dispensation.
5. Magnesium standard: Proceed carefully with this product because due its nature it can get contaminated easily

SYMBOL ON LABELS

Symbols	Signify	Symbols	Signify
REF	Catalogue Number	SIZE	Pack Size
	Expiry Date	VOL	Volume
	Storage Condition	LOT	Lot Number
	Instruction for Use	IVD	In Vitro Diagnostics
	Manufacturing Date		Manufacturer
	Number of Tests	2	For Single Use Only
EC REP	EC Representative	CE	European conformity

BIBILOGRAPHY

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