



MAGNESIUM-COLORIMETRIC METHOD FOR BECKMAN CX AND LX SYSTEMS

MG

INTENDED USE:

This magnesium reagent kit is prepared for the quantitative determination of magnesium in serum or urine.

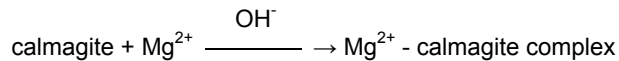
CLINICAL SIGNIFICANCE

Magnesium is one of the most abundant cat-ions in the body involved in many biochemical reactions. Many enzymes such as alkaline phosphatase, ALP require magnesium as activator. Magnesium is also necessary for the stability of conformational structure for many macromolecules such as DNA, RNA, etc..

Although little is known about the regulation of magnesium levels in blood, it has been reported that para-thyroid gland is involved. Increased level of magnesium has been shown in Addison's disease, diabetic acidosis, renal failure and vitamin D intoxication, and decreased level of magnesium are observed in diabetes, diuretics, hyperthyroidism, hyperalimentation, alcoholism, myocardial infarction, congestive heart failure and liver cirrhosis.

PRINCIPLE

Magnesium forms a colored complex with calmagite under alkaline conditions which is measured spectrophotometrically at 530 nm. The interference of calcium is eliminated by the addition of EGTA. The reaction formula is shown as follows:



SPECIMEN COLLECTION AND PREPARATION

Freshly drawn serum is the specimen of choice, plasma derived from specimen collection tubes containing EDTA, citrate, or oxalate must not be used in this procedure. Serum should be removed from the clot without delay to avoid loss of serum magnesium due to increased erythrocyte permeability to magnesium.

REAGENT

- Each kit contains 2 x 200 tests For Beckman CX4 and LX-20
- Ready to use
- Components: 2-ethylaminoethanol 6% w/v
EGTA, calmagite 0.006%
Stablizer
Magnesium standard: 0.823 mmol/L (2 mg/dl)

STORAGE: Store all the reagents at 2~8 .

PRECAUTIONS

1. For in vitro diagnostic use only.
2. Buffer solution and color reagent may be irritating, avoid contact.
3. Buffer solution contains cyanide and should not be pipette by mouth.
4. Since all specimens are potentially infectious, they should be handled with appropriate precautions and practices in accordance with Biosafety level 2 as recommended by USA NIH manual "Biosafety in Microbiological and Biomedical Laboratories", and in accordance with National or local regulations related to the safety precautions of such materials.
5. Each laboratory has to perform the quality control test to assure the results being reliable before running the specimen tests

PROCEDURE

Use bar code reading to follow the Beckman CX-4 and LX-20 parameters and procedures.

NOTE

1. Magnesium mg/dl = magnesium mmol/L x 2.4
2. Hemoglobin up to levels of 200 mg/dl, bilirubin up to 20 mg/dl or moderate lipemia produce no detectable interference in this procedure. Markedly lipemic serum will give elevated results due to added absorbance of the specimen caused by its turbidity.
3. Contamination of glassware with magnesium, usually from detergents, is a problem of determination. Wash all glassware with 4N hydrochloric acid and rinse with distilled water. Use of disposable plastic tubes is recommended.
4. It is highly recommended that each laboratory establish its own normal range.



EXPECTED VALUES

0.7-1.10 mmol/L

PERFORMANCE

Linearity: 2.0 mmol/L.

Precision:

Samples	Within run		Between run	
	Level I	Level II	Level I	Level II
Number n	20	20	20	20
Mean mmol/L	1.7	3.7	1.7	3.8
SD mmol/L	0.1	0.2	0.1	0.1
CV %	5.7	6.0	5.7	2.2

REFERENCES

1. Faulkner, W.R.: Selected Method for the Small Clinical Chemistry Laboratory. "Magnesium in Biological Fluids." AACC Washington. D.C., p. 277 (1982).
2. Tietz, N.W.: Fundamentals of Clinical Chemistry, W.B. Saunders Co., Philadelphia, p.919 (1976).
3. Gindler, E.M. and Heth, D.D.: Clinical Chem. 17:662 (1971).