Biomaghreb

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CE

MAGNESIUM

Colorimetric Method

Reagent for the quantitative determination of magnesium in human plasma and urine

IN VITRO DIAGNOSTIC USE

IVD

REF	**04017**	**2 x 160 ml** (320 T)	**R1:** 2 x 80 ml	**R2:** 2 x 80 ml	**R3:** 1 x 5 ml
REF	**04024**	**1 x 160 ml** (160 T)	**R1:** 1 x 160 ml	**R2:** 1 x 160 ml	**R3:** 1 x 5 ml
REF	**04031**	**2 x 125 ml** (250 T)	**R1:** 2 x 125 ml	**R2:** 2 x 125 ml	**R3:** 1 x 5 ml

CLINICAL SIGNIFICANCE

Magnesium is a trace element essential for the regulation of energy metabolism, the transmission of nerve impulses and muscle contractions; it also regulates mood, sleep, behaviour and stress. The determination of magnesium makes it possible to evaluate several pathological states. Hypermagnesemia may reflect uremia, diabetic acidosis, dehydration, or Addison's disease. Low magnesium levels are seen in patients with malabsorption syndrome, acute pancreatitis, hypoparathyroidism, glomerulonephritis, or aldosteronism.

PRINCIPLE

In an alkaline medium, calmagite (a metallochromic indicator) forms a colored complex with magnesium.
The presence of EGTA makes the reaction specific by limiting interference with calcium. The intensity of the coloration produced is proportional to the magnesium concentration.

REAGENT COMPOSITION

Reagent 1	Amino-Methyl propanol Buffer EGTA	1 mmol/l 0,20 mmol/l
Reagent 2	Calmagite	0,30 mmol/l
Reagent 3	Standard magnesium	2 mg/dl 20 mg/l 0,824 mmol/l

SAFETY CAUTIONS

Biomaghreb reagents are intended for use by qualified personnel for in vitro use (do not pipette by mouth).
- Consult the current MSDS available on request or on www.biomaghreb.com.
- Check the integrity of the reagents before use.
- Disposal of waste: comply with the legislation in force.

For safety reasons, treat any specimen or reagent of biological origin as potentially infectious. Observe the applicable legislation.

REAGENT PREPARATION

Working Solution :
Mix 1 volume of reagent R1 with 1 volume of reagent R2.

SAMPLE COLLECTION AND HANDLING

Serum or heparinized plasma.
Urine diluted 1/10 with distilled water, acidified to pH: 3.4 with diluted HCl.

PRESERVATION AND STABILITY

- Before opening: Until the expiry date indicated on the label of the box.
- After opening (Working Solution) :
  24 hours at 20 -25°C;
  4 days at 2-8°C.

ADDITIONAL EQUIPMENT

• Basic equipment of the medical analysis laboratory ;
• Spectrophotometer or Clinical Biochemistry Analyzer.

LIMITS

Use only single use plastic material.

QUALITY CONTROL

External quality control program.
It is recommended to control in the following cases:
• At least one test per series.
• Change of reagent bottle.
• After maintenance work on the analyzer.

If a control value is outside the confidence limits, repeat the procedure using the same control.
Use normal and pathological control sera.

CALIBRATION

The standard of the kit (Reagent 3) or any calibrator connected to a method or reference material.
The frequency of calibration depends on analyzer performance and reagent storage conditions.
Recalibration is recommended in the following cases:
1. changing the reagent lot ;
2. after maintenance work on the analyzer; and
3. the control values are outside the confidence limits.

LINEARITY

The method is linear up to 50 mg/l (5 mg/dl - 2.06 mmol/l).
Above this limit, dilute the sample with 9 g/L NaCl solution and repeat the determination taking the dilution into account in the calculation of the result. The linearity limit depends on the volume ratio sample/reagent.

PROCEDURE

Wavelength: 520 nm (500-550) ;
Temperature : 20 -25°C ;
Tank: 1 cm thick
Adjust the spectrophotometer zero on the reagent blank.

	Blank	**Standard**	**Sample**
Standard	-	10 µl	-
Sample	-	-	10 µl
Working Solution	1ml	1ml	1ml
Mix and incubate 5 minutes at room temperature. Read optical densities. Staining is stable for 1 hour.			

CALCULATION

$$\text{Magnesium} = \frac{\text{DO. Sample}}{\text{DO Standard}} \times n \qquad n = \text{standard Value}$$

n = 2 mg/dl;
n = 20 mg/l;
n = 0,824 mmol/l.
Urine: multiply the result by the dilution factor.

REFERENCE VALUES

Serum, Plasma	1.6 - 2.5 mg/dl 16 - 25 mg/l 0.65 - 1.03 mmol/l
Urine	0.65 – 12.5 mmol/24h

REFERENCES

Gindier E. Clin. Chem. 17, 662, (1971).

Manufacturer | Use by | In Vitro Diagnostic | Temperature Limitation | Catalogue number | See insert | Store away from light | Sufficient for < n > essais | Batch number