

# MAGNESIUM XYL

Metodo xylidyl blue - Endpoint

4 x 25 ml  
2 x 100 ml

CL47-100S  
CL47-200S

## INTENDED USE

Kit for quantitative determination of Magnesium in serum, plasma and urine.

## CLINICAL MEANING

Magnesium is implied in the process of ATP phosphorylation. ATP is a source of energy for the body, it is therefore present in all metabolic processes and it influences the functions of many organs, including neuromuscular tissue. ATP is especially important for the monitoring of magnesium levels in cardiopatic patients: low levels of magnesium can aggravate cardiac arrhythmia, while higher levels can retard neuromuscular and cardiac conduction.

Magnesium deficit is present in case of malnutrition, malabsorption, lower renal functions such as in hypoparathyroidism, hyperaldosteronism, decompensated diabetes, diuretics usage, alcoholism, preeclampsia. Symptoms of magnesium deficits are mainly neuromuscular: weakness, irritability, convulsions, electrocardiographic alterations etc.

Augmented levels of magnesium are commonly associated with ingestion of antacids and laxatives containing magnesium, chronic renal failure, hypothyroidism, Addison's disease. Symptoms of higher magnesium levels include lethargy, vomit and nausea.

## PRINCIPLE

With xylidyl-blue dye, magnesium ion forms a blue-violet complex, whose color intensity is proportional to the magnesium concentration in the sample.

## SAMPLE

Serum, plasma (do not use EDTA).

Avoid hemolyzed samples.

STABILITY: 1 week at 2-8°C

24 hour urine adjusted to pH 3-4 with hydrochloric acid. Acidified urine are not suitable for the determination of creatinine.

## REAGENTS

Only for In Vitro diagnostics. Liquid monoreagent ready to use.

Package contents	CL47-100S	CL47-200S
<b>REAGENT 1</b> Tamponne Tris (pH > 10) 200 mmol/L, xylidyl blue 0,15 mmol/L, EGTA 0,10 mmol/L, detergente.	4 x 25 ml	2 x 100 ml
<b>STANDARD (Std)</b> Magnesio 2 mEq/L (1 mmol/L)	1 x 4 ml	1 x 4 ml

STABILITY: Store at 2-8°C and protect from light to keep the reagents stable up to the expiration date on the label. Once opened, the reagents are stable for 2 months at 2-8°C if contamination is avoided. Keep bottles closed when not in use. Do not use turbid reagents.

## NECESSARY ITEMS – NOT PROVIDED

Usual laboratory equipment: UV/VIS Spectrophotometer with temperature control; automatic micropipettes; Optical glass cuvettes or, alternatively, disposable ones in optical polystyrene; saline solution.

## MANUAL ASSAY PROCEDURE

Method: increasing endpoint  
Wavelength: 512 nm (480 - 520)  
Optical path: 1 cm  
Temperature: 20-37°C  
Reaction Time: immediate  
Reading: against blank reagent  
Sample/Reagent Ratio: 1/100

Bring the reagent to the chosen temperature for the analysis.

Pipette in cuvette:

	Reagent Blank	Standard	Sample
Distilled water	10 µl	-	-
Standard	-	10 µl	-
Sample	-	-	10 µl
Reagent 1	1,0 ml	1,0 ml	1,0 ml

Stir, then read the absorbance of the standard (AbsStd) and the sample (AbsS) against the blank reagent.

Reaction volumes can be proportionally varied without any change in calculation.

## CALCULATION

Calculate the magnesium concentrations in the sample using the following formula:

Serum / plasma:

$$[\text{mEq/L}] \text{ magnesium} = \text{AbsS} / \text{AbsStd} \times 2$$

$$[\text{mmol/L}] \text{ magnesium} = \text{AbsS} / \text{AbsStd} \times 1$$

Urine:

$$[\text{mEq/L}] \text{ magnesium} = \text{AbsS} / \text{AbsStd} \times 2$$

$$[\text{mmol/L}] \text{ magnesium} = \text{AbsS} / \text{AbsStd} \times 1 \times \text{L} / 24\text{h}$$

## REFERENCE VALUES

Serum / plasma:

$$1,4 \div 1,9 \text{ mEq/L} (0,7 \div 0,95 \text{ mmol/L})$$

Urine:

$$1,3 \div 25,0 \text{ mEq/24h} (0,65 \div 12,5 \text{ mmol/24h})$$

Each laboratory should define its own reference values for this method.

## QUALITY CONTROL – CALIBRATION

All Clinical Chemistry laboratories should implement a quality control program. Control serums of human origin are available for this purpose on request:

**PRE-NORM** serums with normal values

**PRE-PATH** serums with pathological values

If the method requires it, a multi-parametric calibrator of human origin is available.

## PERFORMANCE CHARACTERISTICS

### Sensitivity

The sensitivity of the method is 0,05 mEq/L.

### Linearity

The method is linear up to 8 mEq/L.

For higher values, dilute the sample 1:5 with saline solution and multiply the result by 5.

### Precision

within run (n=10)	Average [mEq/L]	SD	CV %
Sample 1	1,98	0,01	0,50
Sample 2	3,54	0,09	2,54

between run (n=20)	Average [mEq/L]	SD	CV %
Sample 1	2,00	0,03	1,50
Sample 2	3,48	0,08	2,30

### Interferences

Up to 20 mg/dl of bilirubin does not interfere. Up to 14 mg/dl of calcium does not interfere. Hemolysis presence in the sample gives falsely positive values.

### Correlation against a reference method

The correlation of the method (Y) against a reference method (X) gives these equation:

$$Y = 1,0239 - 0,036 \quad r = 0,9871$$

## DISPOSAL

The product must be disposed of according to national/international laws.

## WARNINGS AND PRECAUTIONS

The reagents may contain non-reactive components and various preservatives. Contact with the skin and ingestion should be avoided. Use the normal precautions expected with correct behaviour in laboratory.

## REFERENCES

- 1 Mann C.K., Yoe J.H., Anal: Chem. 28, 202 (1956)
- 2 Bohuon C., Clin. Chim. Acta 7, 811 (1962)
- 3 Kaplan LA, Pesce AJ: "Clinical Chemistry", Mosby Ed. 1989

## MANUFACTURER

FAR

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
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## KEY SYMBOLS

	In Vitro diagnostic medical device
	batch number
	catalogue number
	temperature limits
	use by
	caution
	consult accompanying documents