MAGNESIUM
Xylidyl Blue Method

MONOTEST

DIATEK

CLINICAL SIGNIFICANCE :

Magnesium is one of the major intracellular cations in the body. Its action is closely related to that of calcium. Magnesium deficiency, hypomagnesaemia can result in various neuromuscular disorders, weakness, tremors, tetany and convulsions. It is associated with hypocalcemia, intravenous therapy, diabetes mellitus, alcoholism, dialysis and pregnancy. Increased serum magnesium levels are associated with dehydration, severe diabetic acidosis and Addison's Disease. Conditions that interfere with glomerular filtration as in renal failure result in retention of magnesium and hence elevation of serum levels.

TEST PRINCIPLE :

Magnesium ions form a colored chelate complex when reacting with xylidyl blue in alkaline solution, the intensity of the color is proportional to the magnesium concentration. Calcium ions are masked by GEDTA.

REAGENTS COMPOSITION :

Reagent-1 (R1) : Ethanolamine (pH 11.0) 1 mol/l
GEDTA (Glycoletherdiamintetraacetic acid) 60 µmol/l
Xylidylblue 110 µmol/l

Magnesium Standard : Concentration 2.5 mg/dl

All the components of the kit are stable until the expiration date on the label when stored tightly closed at 2 - 8 ºC, and contaminations prevented during their use. Do not use reagents over the expiration date. Once opened the reagent is stable for 1 month on-board the analyzer at approximately 10°C. .

KIT CONTENTS :

CODE No.	MG01
Pack size :	(25x1 ml) MONOTEST
Reagent-1 (R1)	
Xylidyl Blue Reagent	25 x 1 ml
Magnesium Standard (Conc. : 2.5 mg/dl)	1 x 1 ml

SAMPLES :

Serum or heparinised Plasma
24 hours-Collected Urine

Serum should be separated from blood as soon as possible.

MATERIALS REQUIRED BUT NOT PROVIDED :

Magnesium Control (Use of assayed QC sera is recommended to validate test result).

ASSAY CONDITIONS:

Wavelength :	546 nm (540 - 555 nm)
Cuvette:	1 cm light path
Constant temperature	37ºC
Reaction	End Point
Standard Conc.	2.5
Unit	mg/dl
Linearity	4 mg/dl
Unit	mg/dl
Slope of Reaction	Increasing
Blanking	Reagent

PROCEDURE :

For MONOTEST vial, no need to pipette out the reagent.
Take 3 vials of MONOTEST Reagent and label on the top as Blank (B), Standard (S) and Test (T).

Pipette into test tubes labeled Blank (B), Standard (S) and Test (T) as follows **for other pack sizes.**

	B	S	T
Xylidyl Blue Reagent (R1)	1.0 ml	1.0 ml	1.0 ml
Magnesium Standard		10µl	
Specimen			10µl

Mix and incubate for 5 mint at 37ºC. Read absorbance of Standard (S) and Test (T) against Blank (B) with 546 nm. The final color is stable for 1 hour at R.T.

CALCULATIONS :

$$\text{Magnesium in mg/dl} = \frac{\text{Abs. of T}}{\text{Abs. of S}} \times 2.5$$

REFERENCE RANGE :

Serum / Plasma:

Newborn	Children	Women	Men
1.2 – 2.6 mg/dl	1.5 – 2.3 mg/dl	1.9 – 2.5 mg/dl	1.8 – 2.6 mg/dl

Urine : 73 – 122 mg/24 h

The above reference range is guideline and all the laboratories must establish their own normal reference range. Final diagnosis should be made with correlation of clinical factors.

PRECAUTIONS :

1. Storage conditions as mentioned on the kit to be adhered.
2. **Use fresh micropipette tips while pipetting Xylidyl Blue Reagent and Magnesium Standard. Replug Reagent and Standard vial after immediate use.**
3. Avoid contamination of the reagent during the assay process.
4. Before the assay begins, bring all the reagents to room temp.
5. If a larger volume of reagent is required for the absorbance reading, requisite volume can be taken in multiples, keeping the same ratio of reagent to specimen/standard.
6. Do not freeze or expose the reagents to high temperature and protect from direct sunlight as it will affect the performance of the kit.
7. Programmes for specific autoanalysers are available on request.
8. For accuracy of results, the assay procedure, reagent preparation and storage has to be meticulously followed.
9. As with all the diagnostic procedures, the physician should evaluate data obtained by the use of this kit in light of other clinical information.

LINEARITY AND DETECTION LIMIT :

The assay is linear up to Magnesium concentration of 4 mg/dl. The results of the performance characteristics depend on the analyzer used. If the results obtained were greater than linearity limit, dilute the sample 1 : 2 with Normal Saline and multiply the result by 2.

BIBLIOGRAPHY :

1. Thomas L. Clinical Laboratory Diagnostics. 1st ed. Frankfurt: TH-Books Verlagsgesellschaft; 1998. p.231-41.
2. Endres DB, Rude RK. Mineral and bone metabolism.In: Burtis CA, Ashwood ER, editors. Tietz Textbook of Clinical Chemistry. 3rd ed. Philadelphia: W.BSaunders Company; 1999. p. 1395-1457.
3. Mann CK, Yoe JH. Spectrophotometric determinationof magnesium with 1-Azo-2-hydroxy-3-(2.4-dimethylcarboxanilido)-naphthalene-1'-(2-hydroxybenzene).Anal Chim Acta 1957;16:155-60.
4. Bohoun C. Microdosage du magnesium dans divers milieux biologiques. Clin Chim Acta 1962;7:811-7.

Manufactured by : **DIATEK Healthcare Pvt. Ltd.**
P-54 , Phase-I , Kalyani Industrial Estate, Kalyani, Dist. : Nadia, Pin : 741235 E-mail : diatek@rediffmail.com
Corporate Office : P-27, Kalindi Housing Scheme, Kalindi, Kolkata- 700089, Help line : 033 - 25223075

Medical Device Insert / Kit Insert / Instruction for use (IFU)
MG/MONO/KI/01 1/10/2020 Rev:01