LIQUIZYME

MAGNESIUM (XB Method)

Code	Product Name	Pack Size
LS024A	Liquizyme Magnesium	2 x 25 ml
LS024B	Liquizyme Magnesium	25 T

BEACON

Intended Use
Diagnostic reagent for quantitative *in vitro* determination of Magnesium in human serum.

Clinical Significance
Magnesium is an essential nutrient which is involved in many biochemical functions. It has a structural role in nucleic acids and ribosomal particles, required as an activator for many enzymes and has a role in energy producing oxidative phosphorylation.
Hypomagnesaemia results in the impairment of neuromuscular functions and may develop in severe prolonged diarrhoea, malabsorption syndromes, primary aldosteronism and diuretic therapy. Hypermagnesaemia is seen in renal glomerular failure and diabetic coma.

Principle
Magnesium reacts with Xylidyl Blue to form a colored compound in alkaline solution. The intensity of the color formed is proportional to the magnesium concentration in the specimen.

Reagent Composition
Reagent 1 : Magnesium Reagent
Tris Buffer : < 200 mmol/l
Xylidyl Blue : >0.05 mmol/l

Reagent 2 : Magnesium Standard : 2.43 mg/dl
Ready to use

Reagent Preparation
Reagents are liquid. ready to use.

Materials Required But Not Provided
- Clean & Dry container.
- Laboratory Glass Pippetes or Micropippetes & Tips.
- Colorimeter or Bio-Chemistry Analyzer.

Stability And Storage
The unopened reagents are stable till the expiry date stated on the bottle and kit label when stored at 2–8°C.

Specimen Collection And Handling
Use unheamolyse serum.
It is recommended to follow NCCLS procedures (or similar standardized conditions).

Stability In Serum
7 days : at 4 – 8°C
1 year : at -20°C
Discard contaminated specimens.

Calibration
Calibration with the Magnesium standard provided in the kit is recommended.

Quality Control
It's recommended to run normal and abnormal control sera to validate reagent performance.

Unit Conversion
mg/dl x 0.4114 = mmol/L

Expected Values
Serum
Men : 1.8 - 2.6 mg/dl
Women : 1.9 - 2.5 mg/dl
Children : 1.5 - 2.3 mg/dl
New Born : 1.2 - 2.6 mg/dl

It is recommended that each laboratory verify this range or derives reference interval for the population it serves.

Performance Data
Limit of quantification : 0.16 mg/dl
Linearity : 5.00 mg/dl
Measuring range : 0.16 – 5.00 mg/dl

Precision

Intra-assay precision Within run (n=20)	Mean (mg/dl)	SD (mg/dl)	CV (%)
Sample 1	2.15	0.03	1.23
Sample 2	3.93	0.05	1.30

Inter-assay precision Run to run (n=20)	Mean (mg/dl)	SD (mg/dl)	CV (%)
Sample 1	3.80	0.070	1.83

Comparison
A comparison between Beacon Magnesium (y) and a commercially available test (x) using 20 samples gave following results:
y = 0.982 x + 0.005 mg/dl
r = 0.992

Interferences
Following substances do not interfere:
Bilirubin up to 40 mg/dl, triglycerides up to 2000 mg/dl.Haemoglobin interferes because magnesium is relesed by erythrocytes.

BEACON DIAGNOSTICS PVT. LTD. *424, NEW GIDC, KABILPORE, NAVSARI - 396 424. INDIA*

Warning And Precautions
For *in vitro* diagnostic use. To be handled by entitled and professionally educated person.

Waste Management
Please refer to local legal requirements.

Assay Procedure
Wavelength : 546 nm
Cuvette : 1 cm

Addition Sequence	Reagent Blank	Standard	Sample
Reagent 1	1000 µl	1000 µl	1000 µl
Standard	-	10 µl	-
Sample	-	-	10 µl
Distilled Water	10 µl	-	-

Mix and incubate 5 min. at 37°C. Measure absorbance of standard (Abs. S) and test (Abs. T) against reagent blank at 546 nm.

Calculation

$$\text{Magnesium (mg/dl)} = \frac{\text{Abs. T}}{\text{Abs. S}} \times 2.43$$

Applications for automatic analysers are available on request.

Assay Parameters For Photometers

Mode	End point
Wavelength 1 (nm)	546
Sample Volume (µl)	10
Reagent Volume (µl)	1000
Incubation time (min.)	5
Incubation temp. (°C)	37
Normal Low (mg/dl)	1.8
Normal High (mg/dl)	2.6
Linearity Low (mg/dl)	0.16
Linearity High (mg/dl)	5
Standard Concentration	2.43 mg/dl
Blank with	Reagent
Unit	mg/dl

References

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.B Saunders Company; 1999. p. 1395-1457.
3. Mann CK, Yoe JH. Spectrophotometric determination of magnesium with 1-Azo-2-hydroxy-3-(2.4-dimethyl-carboxanilido)-naphthalene-1'-(2-hydroxybenzene). Anal Chim Acta 1957;16:155-60.
4. Bohoun C. Microdosage du magnesium dans divers milileux biologiques. Cliln Chim Acta 1962;7:811-7.
5. Sitzmann FC. Normalwerte. Munchen: Hans Marseille Verlag GmbH: 1986.p.166.
6. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. Burtis, C.A.,Ashwood, E.R., Bruns, D.D.; 5th edition, WB Saunders Comp., 2012

Symbols Used On Labels

REF	Catalogue Number		Manufacturer
	See Instruction for Use	LOT	Lot Number
CONT	Content		Storage Temperature
	Expiry Date	IVD	In Vitro Diagnostics

BEA/24/MAG/LS/IFU-01 08/01/2022