

MAGNESIUM

(Xylidyl Blue)

SAFETY PRECAUTIONS AND WARNINGS:

This reagent is for *In vitro* diagnostic use only.

INTENDED USE:

This reagent kit is intended for "in vitro" quantitative determination of MAGNESIUM concentration in serum.

CLINICAL SIGNIFICANCE:

Magnesium is the second more abundant intracellular cation of the human body after potassium, being essential in great number of enzymatic and metabolic processes. Is a cofactor of all the enzymatic reactions that involve the ATP and comprises of the membrane that maintains the electrical excitability of the muscular and nervous cells. A low magnesium level is found in malabsorption syndrome, diuretic or aminoglycoside therapy; hyperparathyroidism or diabetic acidosis.

Elevated concentration of magnesium is found in uremia, chronic renal failure, glomerulonephritis, Addison's disease or intensive anti acid therapy^{1, 4, and 5}. Clinical diagnosis should not be made on a single test result; it should integrate clinical and other laboratory data.

PRINCIPLE:

At alkaline pH magnesium reacts with xylidyl blue and produces a chelating red colored compound. The red increasing or the blue decreasing colors are proportional to magnesium concentration.

REAGENT COMPOSITION:

Reagent 1: Xylidyl Blue Reagent
Magnesium Standard: 2.5 mg/dl

MATERIALS REQUIRED BUT NOT PROVIDED:

- Clean & Dry Glassware.
- Micropipettes & Tips.
- Colorimeter or Bio-Chemistry Analyzer.

SAMPLES:

Serum free of hemolysis.
It is recommended to use serum. When using Plasma avoid EDTA which may increase results. Urine should be previously taken to an acid pH value (pH 3-4) by adding some drops of HCl. Then dilute 1:5 with distilled water.

STABILITY OF REAGENT:

When Stored tightly closed at room temperature protected from light and contaminations prevented during their use; reagents are stable up to the expiry date stated on the label.

WORKING REAGENT:

The Reagent is ready for use

GENERAL SYSTEM PARAMETERS:

Reaction type	End Point
Wave length	520 nm
Light Path	1 Cm
Reaction Temperature	37°C
Blank / Zero Setting	Reagent
Reagent Volume	1ml
Sample Volume	10 µl
Incubation Time	5 Minutes
Standard Concentration	2.5 mg/dl
Low Normal	1.9 mg/dl
High Normal	2.5 mg/dl
Linearity	5.0 mg/dl

ASSAY PROCEDURE:

	Blank	Standard	Sample
Reagent	1ml	1ml	1ml
Standard		10 µl	
Sample			10 µl

Mix and read the optical density (A) after a 5-minute incubation at 37°C.

CALCULATION:

$$\text{Magnesium Conc. (Mg/dl)} = \frac{\text{OD of Sample}}{\text{OD of Standard}} \times \text{Conc. of Standard}$$

LINEARITY:

Reagent is Linear up to 5 mg/dl.
Dilute the sample appropriately and re-assay if Magnesium concentration exceeds 5 mg/dl. Multiply result with dilution factor.

REFERENCE NORMAL VALUE:

SERUM	1.9-2.5 mg/dl	1.6-2.0mEq/l
CSF	2.4-3.1 mg/dl	1.9-2.5mEq/l
URINE	75-125 mg/24h	60-100mEq/l

QUALITY CONTROL:

For accuracy it is necessary to run known controls with every assay.

LIMITATION & PRECAUTIONS:

1. Storage conditions as mentioned on the kit to be adhered.
2. Do not freeze or expose the reagents to higher temperature as it may affect the performance of the kit.
3. Before the assay bring all the reagents to room temperature.
4. Avoid contamination of the reagent during assay process.
5. Use clean glassware free from dust or debris.

BIBLIOGRAPHY:

Bohuen, C. Clin. Chem. Acta 16, 155 (1957).
Mann, C. Land Yoe, JH., Anal. Chem. 28, 202 (1955).
Fragay DA., Casey, Clin, Biochem., 791, (1974).