

**Quantitative Determination of Magnesium in Serum**  
Only for *In Vitro* Diagnostic use

**ORDER INFORMATION**

REF	Cont.
MAG 25	25 x 1 ml
MAG 100	2 x 50 ml

**CLINICAL SIGNIFICANCE**

Magnesium is the second most 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. 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 color is proportional to magnesium concentration.

**REAGENT COMPOSITION**

Reagent 1 : Magnesium Reagent  
Magnesium Standard : 2.5 mg/dl (1.04 mmol/L)

**SAMPLE COLLECTION AND PRESERVATION**

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.

**REAGENT PREPARATION**

The reagent is provided in a ready to use format.

**REAGENT STORAGE AND STABILITY**

The reagent included is stable, unopened or opened, at 15-30°C until the expiry date stated on the label.

AUTOMATED PARAMETERS	
Wavelength	505 nm (490-550 nm)
Reaction Type	End Point
Cuvette	1 cm light path
Reaction Temperature	Room temperature
Reaction Type	Increasing
Measurement	Against Reagent Blank
Sample Volume	10µl
Reagent Volume	1000µl
Incubation	05 minutes
Low Normal	1.6 mg/dL(0.65 mmol/L)
High Normal	2.6 mg/dl (1.05 mmol/L)
Linearity	5.0mg/dL (2.08 mmol/L)

**MANUAL ASSAY PROCEDURE**

**PIPETTE INTO TEST TUBES**

	BLANK	STD	SAMPLE
Sample	-	-	10µl
Standard	-	10µl	-
Reagent	1000µl	1000µl	1000µl

Mix & Incubate for 05 min. at R.T. Measure absorbance of Sample (AT) and Standard (AS) against Reagent Blank at 505 nm. The colour is stable for 30 min. at R.T.

**CALCULATION**

$$\text{Magnesium (mg/dl)} = \text{AT/AS} \times \text{Conc. of Standard}$$

**LINEARITY**

The method is linear to a concentration of 5.0 mg/dl (2.08 mmol/L) Dilute samples above this concentration 1:1 and multiply the result by 2.

**REFERENCE VALUES**

SERUM	1.6 - 2.6 mg/dl (0.65 – 1.05 mol/L)
CSF	2.4 - 3.1 mg/dl (1.9 - 2.5 mEq/l)
URINE	24 - 244 mg/24h ( 2 - 21 mEq/L/24 hr)

**INTERFERENCES**

**Haemoglobin:** No interference up to 155 mmol ( 800 mg/dL).  
**Bilirubin:** No interference up to 684 mmol/L(40 mg/dL).  
**Lipaemia:** No interference from lipaemia, measured as triglycerides up to 23 mmol/L (2000 mg/dL).  
**Ascorbate:** No interference from ascorbate up to 121 mmol/L (3000 mg/dL)..

**QUALITY CONTROL**

It is recommended to run a normal and a pathological control serum which is commercially available to verify the performance of the measured procedure. The value of controls should fall within the established limit.

**BIBLIOGRAPHY**

Tietz, N.W.: *Fundamentals of Clinical Chemistry, W.B. Saunders Co., Philadelphia, p. 919 (1976).*