

NEO CHEM MAGNESIUM (xylidyl blue method)

KIT NAME	KIT SIZE
NEO CHEM - Magnesium	2 x 50 ml



INTRODUCTION

Magnesium is the second more abundant intracellular cation of the human body after potassium, being essential in great number of enzymatic and metabolic processes. It is a cofactor of all 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 1,4,5. Clinical diagnosis should not be made on a single test result; it should integrate clinical and other laboratory data.

METHOD PRINCIPLE

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

KIT CONTENTS

Reagent Name	PACK SIZE
R1 - Magnesium Reagent	2 x 50 ml
R2 - Standard	2 ml

Please refer the standard value mentioned on the vial.

WORKING REAGENT PREPARATION AND STABILITY

The reagent is ready to use.

CONCENTRATIONS IN THE TEST

Potassium Carbonate	58 mmol/L
EGTA	0.04 mmol/L
Xylidyl Blue	0.10 mmol/L

ADDITIONAL EQUIPMENT

- Automatic analyzer or photometer able to read at 505 nm
- Thermostat at 37°C
- General laboratory equipment

SPECIMEN

Serum free from hemolysis. When using plasma avoid EDTA which may increase the results. Urine should be previously taken to an acid pH value (pH 3-4) by adding some drops of HCL, then dilute with 1+5 with distilled water.

PROCEDURE

These reagents may be used both for manual assay and in several automatic analysers. Programme Sheets are available on request.

Wavelength	505 nm
Temperature	37°C
Cuvette	1 cm

Pipette into the cuvette:

Reagent	Blank (B)	Standard (S)	Test (T)
R1 Magnesium Reagent	1000 µl	1000 µl	1000 µl
Bring up the temperature of determination. Then add,			
Distilled water	10 µl		
R2 - Standard		10 µl	
Sample			10 µl

Mix well and incubate for 5 minutes. Read the absorbance of test sample A(T) and standard sample A(S) against reagent blank (B).

CALCULATION

Magnesium Concentration = $A(T) / A(S) \times \text{standard concentration}$

REFERENCE VALUES

1.9 to 2.5 mg/dl

It is recommended for each laboratory to establish its own reference ranges for local population.

QUALITY CONTROL

To Ensure adequate quality control, each run should include assayed normal and abnormal controls. If commercial controls are not available it is recommended that known value samples be aliquoted, frozen and used as controls.

For Fully Automated analyzers by using multi-calibrator or lactate standard the calibration curve can plot and the same should be prepared every 3 weeks or with change of reagent lot number.

PERFORMANCE CHARACTERISTICS

- Linearity:** up to 5 mg/dl. For higher concentration of magnesium dilute the sample with 0.9% NaCl and repeat the assay. Multiply the result by dilution factor.

LITERATURE

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

SYSTEM PARAMETERS

Method	End Point
Wavelength	505 nm
Zero Setting	Reagent Blank
Temperature Setting	37° C
Incubation Temperature	37° C
Incubation Time	5 mins
Delay Time	----
Read Time	----
No. of Reading	----
Interval Time	----
Sample Volume	0.01 ml (10 ul)
Reagent Volume	1.0 ml (1000 ul)
Standard Concentration	Refer Standard vial
Units	mg/dl
Factor	----
Reaction Slope	Increasing
Linearity	5 mg/dl