Magnesium Assay Kit (Colorimetric)

Magnesium Assay Kit (Colorimetric) is a detection kit for the quantification of Magnesium in Biological, food and beverage.

Catalog number: ARG82177

Package: 250 tests

TABLE OF CONTENTS

SECTION	Page
INTRODUCTION	3
PRINCIPLE OF THE ASSAY	3
MATERIALS PROVIDED & STORAGE INFORMATION	4
MATERIALS REQUIRED BUT NOT PROVIDED	4
TECHNICAL NOTES AND PRECAUTIONS	5
SAMPLE COLLECTION & STORAGE INFORMATION	6
REAGENT PREPARATION	6
ASSAY PROCEDURE	7
CALCULATION OF RESULTS	7
EXAMPLE OF TYPICAL STANDARD CURVE	8
QUALITY ASSURANCE	8

MANUFACTURED BY:

Arigo Biolaboratories Corporation

Address: No. 22, Ln. 227, Gongyuan Rd., Hsinchu City 300, Taiwan

Phone: +886 (3) 562 1738

Fax: +886 (3) 561 3008

Email: info@arigobio.com

INTRODUCTION

Magnesium is a chemical element with the symbol Mg and atomic number 12. It is a shiny gray solid which bears a close physical resemblance to the other five elements in the second column (group 2, or alkaline earth metals) of the periodic table: all group 2 elements have the same electron configuration in the outer electron shell and a similar crystal structure.

This element is the eleventh most abundant element by mass in the human body and is essential to all cells and some 300 enzymes. Magnesium ions interact with polyphosphate compounds such as ATP, DNA, and RNA. Hundreds of enzymes require magnesium ions to function. Magnesium compounds are used medicinally as common laxatives, antacids (e.g., milk of magnesia), and to stabilize abnormal nerve excitation or blood vessel spasm in such conditions as eclampsia. [Provide by Wikipedia: Magnesium]

PRINCIPLE OF THE ASSAY

This Magnesium Assay Kit (Colorimetric) is a simple colorimetric assay that measures the amount of magnesium present in biological, environmental, food and beverage samples. In the Copper Assay kit, a calmagite dye forms a colored complex specifically with magnesium. The intensity of the color, measured at O.D. 500 nm, is directly proportional to the magnesium concentration in the sample. The optimized formulation minimizes interference by potential substances.

MATERIALS PROVIDED & STORAGE INFORMATION

The kit is shipped at room temperature. Store all components at 4°C upon receiving. Shelf life: 12 months after receipt.

Component	Quantity	Storage information
Reagent A	25 mL	4°C
Reagent B	25 mL	4°C
EDTA Solution	1.5 mL x 2	4°C
Standard (10 mg/dL Mg^{2+})	1 mL	4°C

MATERIALS REQUIRED BUT NOT PROVIDED

- Microplate reader capable of reading at O.D. 500 nm
- Clear flat-bottom 96 well microplate
- Deionized or Distilled water
- Pipettes, pipette tips and Multichannel micropipette reservoir

TECHNICAL NOTES AND PRECAUTIONS

- Wear protective gloves, clothing, eye, and face protection especially while handling blood or body fluid samples.
- Reagents are for research use only. Normal precautions for laboratory reagents should be exercised while using the reagents. Please refer to Material Safety Data Sheet for detailed information.
- All reagents should be mixed by gentle inversion or swirling prior to use. Do not induce foaming.
- Before using the kit, spin tubes and bring down all components to the bottom of tubes.
- It is highly recommended assaying the Standards and samples in duplicates.
- Change pipette tips between the addition of different reagent or samples.

SAMPLE COLLECTION & STORAGE INFORMATION

The sample collection and storage conditions listed below are intended as general guidelines. Sample stability has not been evaluated.

Serum: Collect blood in a tube with no anticoagulant. Allow the blood to clot at room temperature for 30 minutes. Centrifuge at 2500 x g for 20 minutes at 4°C. Collect the serum and assay directly.

Plasma: Collect blood with heparin or citrate and centrifuge at 2000 x g for 10 minutes at 4°C. Collect the plasma layer and assay directly.

Other liquid deproteinated biological sample: Assay directly.

Note:

- Sample pretreatment: for milk and other lipid/protein-rich samples, mix equal volumes of sample and 10% trichloroacetic acid (Sigma Cat# T6399). Incubate 5 minutes at room temperature and centrifuge for 2 minutes at 14,000 rpm. Collect the supernatant for assay (dilution factor = 2).
- EDTA and other Mg^{2+} chelators interfere with this assay. This assay can't be applied to plasma samples obtained with EDTA.

REAGENT PREPARATION

- **Standard:** Dilute Standard to 2 mg/dL by mixing 40 µL of 10 mg/dL Standard with 160 µL of distilled water. Diluted standard can be stored at 4°C for future use.
- **Working Reagent:** for each well, mixing 105 µL of Reagent A and 105 µL of Reagent B. Equilibrate to room temperature before use.

ASSAY PROCEDURE

Equilibrate reagents to room temperature. Briefly centrifuge tubes before use.

1. Add **5 µL** of diluted **Standard** and **samples** into separate wells of a clear bottom plate.
2. Add **200 µL** of **Working Reagent** to each well. Tap lightly to mix.
3. Incubate for **2 minutes** at **room temperature** and read the absorbance at **O.D. 500 nm**. (OD for samples and Standard)
4. Add **10 µL** of **EDTA Solution** to all sample wells and tap plate to mix thoroughly.
5. Incubate for **2 minutes** at **room temperature** and read the absorbance at **O.D. 500 nm**. (OD for Blank)

CALCULATION OF RESULTS

1. The magnesium concentration of Sample is calculated as:

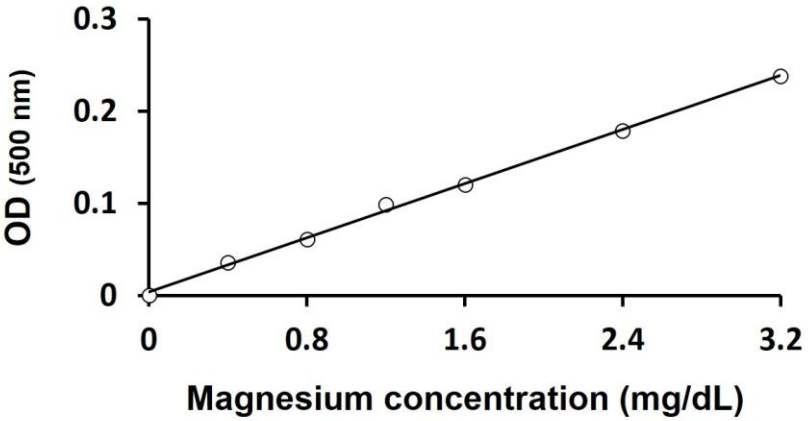
   Magnesium (µg/dL) = $[(OD_{SAMPLE} - OD_{BLANK}) / (OD_{MG} - OD_{MGBLANK})] \times 2$

   Note:

   - OD_{SAMPLE}, OD_{BLANK} and $OD_{STANDARD}$: the O.D. 500 nm values of the Sample before and after the addition of EDTA Solution.
   - OD_{MG}, $OD_{MGBLANK}$: the O.D. 500 nm values of the Standard (2 mg/dL) before and after the addition of EDTA Solution.
2. Conversions: 1 mg/dL Mg^{2+} equals 411 µM, 0.001% or 10 ppm.

EXAMPLE OF TYPICAL STANDARD CURVE

The following figures demonstrate typical results with the Magnesium Assay Kit (Colorimetric). One should use the data below for reference only. This data should not be used to interpret actual results.



QUALITY ASSURANCE

Sensitivity

0.1 mg/dL (41 µM)