

ACCENT-300 MG

DIAGNOSTIC KIT FOR DETERMINATION OF MAGNESIUM CONCENTRATION

INTRODUCTION

Magnesium in human organism occurs mainly in bone (about 50%) but is present also intracellularly in other tissues. Magnesium serves as a cofactor for multiple enzymatic reactions involved in nucleic acids synthesis, transport and production of energy. Magnesium is important in neuromuscular conduction and activation. Reduced magnesium level generates: concentration disturbances, fatigue, muscle tremor, anxiety state.

METHOD PRINCIPLE

Magnesium forms a purple coloured complex in alkaline solution. In the presence of EGTA, the reaction is specific. The intensity of the purple colour is proportional to the magnesium concentration.

REAGENTS

Package

1-Reagent 2 x 19 ml

The reagent is stable up to the kit expiry date printed on the package when stored at 2-8°C. The reagents in open bottles are stable for 4 weeks on board the analyser at 2-10°C. The reagent is air sensitive, to extend reagents stability it is recommended to keep reagent's bottles recapped on the board of analyser. Protect from light and avoid contamination!

Concentrations in the test

xylydyl blue	0.15 mmol/l
EGTA	0.1 mmol/l
buffer (pH 11.5)	
detergent	

Warnings and notes

- Product for in vitro diagnostic use only.
- The reagent contains sodium azide (< 0.1%) as a preservative. Avoid contact with skin and mucous membranes.
- It is recommended to use disposable plastic materials. If it is not possible, the glassware should be washed with 1% HCl solution and rinsed with plenty of distilled water.
- 1-Reagent meeting the criteria for classification in accordance with Regulation (EC) No 1272/2008.

Ingredients:

1-Reagent contains potassium hydroxide.

Danger



H314 Causes severe skin burns and eye damage.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331 IF SWALLOWED: rinse mouth.
Do NOT induce vomiting.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P305 +P351 +P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER or doctor.

SPECIMEN

Serum, heparinized plasma free from hemolysis, 24-hours urine. Recommended anticoagulants: heparine lithium, sodium or ammonium salt.

Serum should be separated from red blood cells as soon as possible after blood collection, because erythrocytes contain approximately 3 times the magnesium concentration found in normal serum.

Urine preparation: Acidify urine with some drops of concentrated hydrochloride acid to pH 1.0. Then dilute 1 part of acidified urine with 4 parts of distilled water. Multiply the result by 5. Mix well samples before analysis.

Serum and plasma can be stored up to 7 days at 2-8°C. For longer storage samples should be frozen at -20°C.

24-hours urine samples can be stored up to 7 days at 2-8°C.

Nevertheless it is recommended to perform the assay with freshly collected samples!

PROCEDURE

This reagent may be used in automatic analyser ACCENT-300.

1-Reagent is ready to use.

Avoid foaming.

For reagent blank deionized water is recommended.

APPLICATION

Parameters

No.	14	Prim.Wave.	510
Test	MG	Sec.Wave.	670
Method	Endpoint	Sample Vol.	3
Direction	Ascend	R1 Vol.	300
Unit	mg/dl	R2 Vol.	0
Decimals	2	Line. Limit	20

Incubation	0	Antigen Check	
Reaction	0 10	Substrat	0

R1 Blank

Lower	0	Mix. R Blank	
Upper	0	Lower	0
		Upper	0

Response

Lower	-2.5	Linearity	
Upper	2.5	Lower	0.13
		Upper	5.0

Sample Vol.	45	Full Name	Magnesium
Dilution	5	Print No.	14

Calibration

Rule	Multi-Point Linear
K Factor	0
Replicates	3
Interval	7
Sensitivity	0
Correlation	0
Difference	2.5
Blank Response	0 2.5
Coefficient Difference	0
Non-linear SD	0

REFERENCE VALUES ⁶

serum / plasma	mg/dl	mmol/l
newborn 2 – 4 d	1.5 – 2.2	0.62 – 0.91
children 5 mo – 6 y	1.7 – 2.3	0.70 – 0.95
6 – 12 y	1.7 – 2.1	0.70 – 0.86
12 – 20 lat	1.7 – 2.2	0.70 – 0.91
adults	1.6 – 2.6	0.66 – 1.07
24-hours urine:	mg/24h	mmol/24h
	72.9 – 145.8	3 – 5

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

QUALITY CONTROL

For internal quality control it is recommended to use the CORMAY SERUM HN (Cat. No 5-172) and CORMAY SERUM HP (Cat. No 5-173) for determination in serum or CORMAY URINE CONTROL LEVEL 1 (Cat. No 5-161) and LEVEL 2 (Cat. No 5-162) for determination in urine with each batch of samples.

For the calibration of automatic analysers systems the CORMAY MULTICALIBRATOR LEVEL 1 (Cat. No 5-174; 5-176) and LEVEL 2 (Cat. No 5-175; 5-177) and deionised water is recommended.

The calibration curve should be prepared every week, with change of reagent lot number or as required e.g. quality control findings outside the specified range.

PERFORMANCE CHARACTERISTICS

These metrological characteristics have been obtained using automatic analyser ACCENT-300. Results may vary if a different instrument or a manual procedure is used.

- **Sensitivity:** 0.13 mg/dl (0.053 mmol/l).
- **Linearity:** up to 5.0 mg/dl (2.05 mmol/l).
- **Specificity / Interferences**
Haemoglobin up to 0.313 g/dl, ascorbate up to 62 mg/l, bilirubin up to 15 mg/dl, triglycerides up to 1000 mg/dl and calcium up to 20 mg/dl do not interfere with the test.

- **Precision**

Repeatability (run to run) n = 10	Mean [mg/dl]	SD [mg/dl]	CV [%]
level 1	2.06	0.02	0.88
level 2	4.18	0.03	0.62

Reproducibility (day to day) n = 10	Mean [mg/dl]	SD [mg/dl]	CV [%]
level 1	2.00	0.03	1.72
level 2	3.96	0.09	2.32

- **Method comparison**

A comparison between magnesium values determined at ACCENT-300 (y) and at ADVIA 1650 (x) using 111 samples gave following results:

$$y = 0.9548 x + 0.0587 \text{ mg/dl};$$

$$R = 0.9733 \quad (R - \text{correlation coefficient})$$

WASTE MANAGEMENT

Please refer to local legal requirements.

LITERATURE

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