

Urinary excretion of an intravenous ^{26}Mg dose as an indicator of magnesium status in adults

Project: 316

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Background:

Measurement of magnesium status is problematic because tissue magnesium deficiency can be present without low serum Mg concentrations.

Objective:

To evaluate a modified version of the magnesium retention test using stable isotopes for the assessment of magnesium status in general, and the detection of marginal magnesium deficiency in particular.

Design:

A modified version of the magnesium retention test using a small dose of ^{26}Mg was evaluated for assessment of magnesium status in 22 healthy subjects.

Muscle magnesium concentration was used as reference for magnesium status. A muscle biopsy was taken from the lateral portion of the quadriceps muscle from each subject. Two to four weeks later, 11 mg of ^{26}Mg (as MgCl_2 in 14 mL water) were injected i.v. over a period of 10 minutes and all urine was collected for the following 24 hours. Excretion of the isotopic label was expressed as percentage of the administered dose excreted in urine within 24 hours.

Results:

Mean \pm SD magnesium concentration in muscle was 3.85 ± 0.17 mmol/100g fat-free dried solids. Mean \pm SD excretion of the injected dose within 24 hours was $7.9 \pm 2.1\%$. No correlation was found between muscle magnesium concentration and excretion of the isotopic label ($r^2=0.061$, $p=0.27$).

Conclusions:

In this study, urinary excretion of an intravenous magnesium tracer was not influenced by muscle magnesium concentration and does therefore not appear to be useful for the detection of marginal magnesium deficiency.

Sponsorship:

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