Transdermal magnesium absorption as due to bathing in baths filled with magnesium chloride

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We aimded to investigate if there excist transdermal magnesium absorption.

Ethical review	Not approved
Status	Will not start
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON35577

Source
ToetsingOnline

Brief title
Transdermal magnesium absorbtion

Condition

- Other condition

Synonym
magnesium deficiency, magnesium shortage

Health condition

magnesium opname, en mogelijk magnesium tekort

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Groningen
Source(s) of monetary or material Support: unristricted grant

Intervention

Keyword: baths, magnesium, skin, uptake

Outcome measures

Primary outcome

The primary study parameter are the changes in magnesium concentration in the

urine and changes in magnesium concentrations in the intersitium.

Secondary outcome

n.a.

Study description

Background summary

Magnesium plays an important role in different kinds of reactions in the body. Magnesium deficiency is often seen in the Western population as due to the foodprocessing process. A magnesium deficiency is associated with chronic diseases such as atherosclerosis, hypertension, diabetes mellitus, tiredness, arrhythmias, stress, ADHD and cancer.
It is frequently claimed that the transdermal route, so absorption trough the skin, is a good way for magnesium supplementation.Products such as: magnesium oils, bath flakes containing Dead Sea minerals or pure magnesium are widely available and frequently used despite the lack of scientific evidence for transdermal magnesium uptake. In many Spa and wellness centers throughout the world magnesium sulfate (MgSO4) and magnesium chloride (MgCi2) are used for flotation therapy.Despite the transdermal application of magnesium there is no evidence for transdermal uptake of magnesium. So we aimed to investigate if there excist an uptake of magnesium across the skin.

Study objective

We aimded to investigate if there excist transdermal magnesium absorption.

Study design

In this study 2 groups will be compared in a randomized experimental design. As due to drawing lots a volunteer will be classified in the intervention group or in the control group. In the intervention group the absorption of magnesium across the skin will be measured as due to taking baths filled with magnesiumchloride. The control group will take baths filled with sodiumchloride. In bothgroups the uptake of magnesium across the skin, as due to bathing. The effects on the magnesiumconcentration of the healthy volunteers in the intervention group will be compared with the effects on the magnesiumconcentration of the healthy volunteers in the control group.

The intervention for the intervention group will consists of 3 baths with a duration of twenty minutes. The day before the test day the participants will collect 24 hour urine. To determine the magnesium concentration, blood and oral mucosa will be collected by arriving at swim paradise 'Tropiqua'. Also the blood pressure and pulse will be measured. After these tests the participants will take 3 baths with magnesium chloride, for a duration of twenty minutes. After every bath the healthy volunteers have to catch up the urine. The blood pressure and pulse will be measured as well. After the third bath, besides collecting urine and measuring of the blood pressure and pulse, also blood and oral mucosa will be collected.

The study design will be the same for the control group. However the baths will not contain magnesium chloride but sodium chloride. In the control group the same measurements will be performed as in the intervention group.

Intervention

The intervention group will take 3 baths filled with magnesiumchloride. The baths have a duration of twenty minutes. The whirlpools will have a watertemperature of 37 degrees and a concentration of 22-26% magnesiumchloride. The whirlpools will be available in tropical swim paradise *Tropiqua* in Veendam.

The control group will take 3 baths of twenty minutes filled with a sodiumchloride solution. The whirlpools will have a watertemperature of 37 degrees and a concentration of 30-33% sodiumchloride. The whirlpools will be available in tropical swim paradise *Tropiqua* in Veendam.

Study burden and risks

Bathing in magnesium chloride is comparable to taking a bath in the Dead Sea (salinity 33%). The Dead Sea contains a high percentage of magnesiumchloride: 50.8%. As known from several studies bathing in the Dead Sea has a positive influence on the skin. In many Spa and wellness centers throughout the world

magnesium sulfate (MgSO4) and magnesium chloride (MgCi2) are used for flotation REST therapy. There are several studies on flotation REST as a therapy as such in which no side effects are reported. The baths are pH neutral. The baths can give a light sensation on the skin, but this is not harmfull. Here fore, we consider the risks of the study to be small.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

Volunteers need to be between 18-70 years
Signed informed consent

Exclusion criteria

Diabetes mellitus
Cardiovascular diseases
Age > 70 years
Hypertension (Systolic >140 mmHg, Diastolic >90mmHg)
Open wounds (such as *wet* eczema)
Incontinence

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Single blinded (masking used)
Control:	Active
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Will not start
Enrollment:	12
Type:	Anticipated

Ethics review

Not approved

Date:	08-09-2011
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL37973.042.11