The effects of quark ingestion with or without prior exercise on muscle protein synthesis rates in young and old men.

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Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Muscle disorders
Study type	Interventional

Summary

ID

NL-OMON47959

Source
ToetsingOnline

Brief title
Quark

Condition

- Muscle disorders

Synonym
Anabolic Resistance, Muscle anabolism, Muscle growth

Research involving
Human

Sponsors and support

Primary sponsor: Medisch Universitair Ziekenhuis Maastricht
Source(s) of monetary or material Support: Ministerie van OC&W,FrieslandCampina,TKI/Health~Holland

Intervention

Keyword: Exercise, Muscle, Quark

Outcome measures

Primary outcome

Increase in postprandial muscle protein synthesis in rest and after exercise

compared to rested postabsorptive muscle protein synthesis

Secondary outcome

whole body protein metabolism

plasma amino acids

plasma glucose and insulin.

Study description

Background summary

Muscles are built up out of proteins. These protein consists of little building blocks: amino acids. By consuming sufficient amino acids/protein in our nutrition, we make sure our body has enough building blocks to maintain or increase our muscle mass. To maintain or increase muscle mass with aging, it is advised to combine exercise with sufficient protein intake. A high quality source of protein is milk. However, it is important to get more insight in the anabolic properties of milk derived protein, like quark.

Study objective

The effects of quark ingestion with or without prior exercise on muscle protein synthesis rates in young and old men.

Study design

A single-intervention, within-subjects experimental trial with 2 different groups (young and old).

Intervention

300g quark
resistance exercise

Study burden and risks

The burden and risks associated with participation are small. Insertion of the catheters and the venapunction are comparable to a blood draw and could result in a small hematoma. Muscle biopsies will be taken under local anesthesia by an experienced physician, but may cause some minor discomfort for maximally up to 24 h after completion. The discomfort is comparable to muscle soreness or the pain one has after bumping into a table. We will take 12 blood samples (10 mL) of which 1 during the screening and 11 during the experimental trial. The total amount of blood we draw is less than half the amount of a blood donation and will be completely restored in approximately 1 month. Participants come to the university twice: 1 screening (3 hours) and 1 experimental trial (entire day). For both the screening and the experimental trial, participants have to be fasted, so they are not allowed to eat and drink (except for water) from 22h00 the evening before. Also, 3 days prior to the experimental trial participants should keep their diet as constant as possible, do not perform any type of intense physical exercise, and do not consume alcohol. During the screening we will perform a DEXA and a strength test. Furthermore, we will ask the participants to fill out a medical questionnaire and record their food intake and activity for 2 days prior to the experimental trial. During the experimental trial, we will collect muscle and blood samples, and participants have to perform resistance exercise and consume 300g quark. There is no direct benefit for the participants, only their contribution to scientific knowledge.

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

* Healthy males
* Age between 18 and 35 y or 65 and 85 y inclusive
* BMI between 18.5 and 30 kg/m2

Exclusion criteria

* Allergies to milk proteins
* Lactose intolerant
* Smoking
* Phenylketonuria
* Diabetes Mellitus (diagnosed, or fasting glucose >7.0 mmol/L, or HbA1c >6.5)
* Diagnosed GI tract disorders or diseases
* Arthritic conditions
* A history of neuromuscular problems
* Any medications known to affect protein metabolism (i.e. corticosteroids, non-steroidal anti-inflammatories, or prescription strength acne medications).
* Use of certain anticoagulants (use of thrombocyte aggregation inhibitors such as acetylsalicylic acid and carbasalaatcalcium is permitted. Use of other thrombocyte aggregation inhibitors will be discussed with the responsible physician)
* Blood donation within 2 months of study initiation
* Hypertension (according to WHO criteria; >90/140 mmHg)
* Recent participation in amino acid tracer studies (less than 1 year ago)
* Physical activity (not training more than 3 times per week and no structured resistance training.)

Study design

Design

Study type: Interventional

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	10-09-2020
Enrollment:	39
Type:	Actual

Ethics review

Approved WMO

Date:	24-12-2019
Application type:	First submission
Review commission:	METC academisch ziekenhuis Maastricht/Universiteit Maastricht, METC azM/UM (Maastricht)

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	NL71731.068.19