The impact of ingesting milk versus free amino acids on muscle protein synthesis in healthy young adults

Published: 27-12-2017
Last updated: 12-04-2024

To assess the anabolic properties of free amino acids and milk protein.

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

Summary

ID

NL-OMON44413

Source
ToetsingOnline

Brief title
MILK-AA

Condition

- Other condition

Synonym
muscle growth, muscle protein synthesis

Health condition

To assess the anabolic response following protein ingestion

Research involving
Human

Sponsors and support

Primary sponsor: Universiteit Maastricht
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: amino acids, milk protein, muscle protein synthesis

Outcome measures

Primary outcome

muscle bound L-[ring-2H5]-phenylalanine, L-[1-13C]-phenylalanine, and

L-[1-13C]-leucine enrichments (in MPE)

plasma L-[ring-2H5]-phenylalanine and L-[1-13C]-leucine enrichments (in MPE)

Secondary outcome

Plasma amino acid, glucose en insulin concentrations, "whole-body" metabolism

Study description

Background summary

Muscle tissue consists of proteins. These proteins are built up of small building blocks: amino acids. By consuming enough protein in our diet, we make sure that the body is provided with enough amino acids to facilitate muscle growth (also called muscle protein synthesis). Currently, it is known that different protein sources can have different effects on muscle growth. Although, it is unknown whether free amino acids can stimulate muscle growth more than regular milk protein.

Study objective

To assess the anabolic properties of free amino acids and milk protein.

Study design

Parallel group, randomized, double blind.

Intervention

Assess the muscle protein synthetic response after ingestion of a protein beverage.

Study burden and risks

The burden and risks involved in participating in this experiment are small. Insertion of the catheters in a vein is comparable to a normal blood draw and the only risk is a small local hematoma. Muscle biopsies will be obtained under local anaesthesia by an experienced physician, but may cause some minor discomfort. The discomfort is comparable to muscle soreness or the pain one has after bumping into the corner of a table. During the experimental trial 20 blood samples (210mL total) will be obtained. The total amount of blood collected is less than half the amount of a blood donation and will be completely restored in approximately 1 month. The stable isotope amino acids tracers that will be infused intravenously during the experimental trial are produced according to GMP standards and are safe for human use.

Contacts

Public
Universiteit Maastricht

Univerisiteitssingel 50
Maastricht 6229 ER
NL
Scientific
Universiteit Maastricht

Univerisiteitssingel 50
Maastricht 6229 ER
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

1) Aged 18-35 y
2) BMI 18.5-27.5 kg/m2
3) Healthy, recreationally active, young adults

Exclusion criteria

1) Allergies to milk protein
2) Lactose intolerance
3) PKU disease
4) Smoking
5) Diagnosed diabetes
6) Diagnosed metabolic or intestinal disorders
7) A history of neuromuscular problems
8) Any medications known to (or may) affect protein metabolism (i.e. corticosteroids, non-steroidal anti-inflammatories, or prescription strength acne medications)
9) Participation in structured resistance exercise program
10) Pregnant
11) Hormone replacement therapy
12) Third generation oral contraceptives
13) Strict vegetarian

Study design

Design

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

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	09-04-2018
Enrollment:	24
Type:	Actual

Ethics review

Approved WMO

Date:	27-12-2017
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	NL63767.068.17
Other	Protocol will be registered at NTR after approval by METC