Anabolic Properties of Plant Based Proteins

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To assess the anabolic properties of key plant based protein sources and specific protein blends

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

Summary

ID

NL-OMON50096

Source
ToetsingOnline

Brief title
Plant Protein for Muscle Growth / APPROS

Condition

- Other condition

Synonym
Muscle growth, Muscle protein synthesis

Health condition

This study will evaluate the skeletal muscle anabolic response to protein consumption

Research involving
Human

Sponsors and support

Primary sponsor: Universiteit Maastricht
Source(s) of monetary or material Support: Ministerie van OC&W,TI Food and Nutrition /

TKI

Intervention

Keyword: Muscle protein synthesis, Plant based protein

Outcome measures

Primary outcome

Primary study parameters include muscle protein synthesis rates based on mixed muscle and myofibrilar protein bound [U-13C6]-phenylalanine enrichments.

Secondary outcome

Secondary endpoints will include plasma amino acid, glucose and insulin concentrations as well as whole-body protein synthesis, breakdown, oxidation, and net balance.

Study description

Background summary

More than half of the total amount of dietary protein that is consumed by humans worldwide is of plant origin, with plant based proteins providing up to 80% of dietary protein consumed in less developed regions. Overall it is assumed that plant based proteins are less potent in stimulating post-prandial muscle protein synthesis. However, the anabolic properties of the main plant based protein sources have hardly been assessed. This project will investigate the anabolic properties of a selection of plant based protein sources and a key reference protein.

Study objective

To assess the anabolic properties of key plant based protein sources and specific protein blends

Study design

Parallel group, randomized, double blind.

Intervention

The post-prandial muscle protein synthetic response after ingestion of plant based protein drinks and a key reference protein.

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 16 blood samples (170mL 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. In order to administer this infusion, a catheter will be placed in an antecubital vein, this might result in a small local hematoma.
There is no risk associated with the DEXA scan. The radiation dose emitted during a DEXA scan is 0.001 mSv. This is a very low exposure compared to the total background radiation in the Netherlands, which is ~2.5 mSv/year.

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

- Male
- Aged18-35 y inclusive
- BMI 18.5 * 27.5 inclusive
- Healthy recreationally active males

Exclusion criteria

- Females
- Wheat allergy
- Celiac disease
- Allergies to milk proteins
- Lactose intolerance
- Smoking
- Diagnosed diabetes
- Diagnosed metabolic or intestinal disorders
- A history of neuromuscular problems
- Any medications known to (or may) affect protein metabolism (i.e. corticosteroids, non-steroidal anti-inflammatories, or prescription strength acne medications).
- Participation in structured resistance exercise program
- Previous participation in a 13C amino acid tracer study within the last 1 year

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):	02-06-2017
Enrollment:	122
Type:	Actual

Ethics review

Approved WMO

Date:	10-05-2017
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

ID: 21457
Source: Nationaal Trial Register
Title:

In other registers

Register	ID
CCMO	NL60500.068.17

Register	ID
Other	Protocol will be registered at NTR after approval by the METC
OMON	NL-OMON21457