# Plasma amino acid response after the ingestion of micellar casein versus caseinate in healthy young men

Published: 30-06-2015 Last updated: 15-05-2024

To compare the digestion and absorption of micellar casein versus calcium-caseinate and sodium-caseinate with enzymatic cross-linking in healthy young men.

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

# Summary

## ID

NL-OMON44783

**Source** ToetsingOnline

**Brief title** Casein(ate) digestion

## Condition

• Other condition

#### Synonym

amino acid absorption, protein digestion

#### **Health condition**

eiwitvertering

#### **Research involving** Human

## **Sponsors and support**

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

## Intervention

Keyword: amino acid availabilty, caseine, digestion

## **Outcome measures**

#### **Primary outcome**

Plasma amino acid response

#### Secondary outcome

Plasma insulin-, and glucose responses

# **Study description**

#### **Background summary**

Protein intake is a strong stimulus for muscle protein anabolism, both at rest and after exercise. The anabolic effect of a protein supplement is mainly determined by the digestion and absorption kinetics of the ingested protein source. It is suggested that a slowly digested protein source is superior over a rapidly digested protein source during periods of limited food intake. In accordance, we have previously shown that the intake of casein, which is a slowly digested protein, increases muscle protein synthesis during the night. Casein can be provided either as micellar casein that clots as it enters the acid milieu of the stomach, or as a caseinate that remains solid. If casein clots or remains in solution may have an effect on its digestion and absorption kinetics and subsequent muscle protein synthesis rates. To determine the optimal composition of a casein supplement, the differences in digestion and absorption of casein versus calcium-caseinate and sodium-caseinate with enzymatic cross-linking should be examined first.

#### **Study objective**

To compare the digestion and absorption of micellar casein versus calcium-caseinate and sodium-caseinate with enzymatic cross-linking in healthy young men.

## Study design

Randomized, double-blinded, crossed-over experiment

#### Intervention

Subjects will be randomly assigned to three experiments:

- a test beverage of 600 mL containing 40 g micellar casein in water,
- a test beverage of 600 mL containing 40 g calcium-caseinate in water,
- a test beverage of 600 mL containing 40 g sodium-caseinate with enzymatic-cross linking.

After ingestion, blood samples will be taken at regular intervals during a 6 hour resting period.

## Study burden and risks

The risks involved in participating in this experiment are minimal. Insertion of a catheter in a vein is comparable to a normal blood draw and the only risk is a small local hematoma.

# Contacts

**Public** Universiteit Maastricht

Universiteitssingel 50 Maastricht 6229 ER NL Scientific

Universiteit Maastricht

Universiteitssingel 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**

- Males

- Aged between 18-35 years

- Healthy, recreationally active (participating in recreational sports activities <= 3 times per week)

- BMI < 25 kg/m2

- No physical limitations (i.e. able to perform all activities associated with daily living in an independent manner).

# **Exclusion criteria**

- Female
- Smoking
- Allergies to milk proteins
- Musculoskeletal disorders

- Use of any medications known to affect protein metabolism (i.e. corticosteroids, nonsteroidal anti-inflammatories, or prescribed acne medications).

- Participation in any structured regular exercise program
- Chronic use of gastric acid suppressing medication or anti-coagulants
- Unstable weight over the last three months
- Pathologies of the gastrointestinal tract
- Blood donation in the 2 months prior to start of the study

# Study design

# Design

Study type:	Interventional
Intervention model:	Crossover
Masking:	Double blinded (masking used)
Control:	Uncontrolled

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Primary purpose:

**Basic science** 

## Recruitment

NL	
Recruitment status:	Recruitment stopped
Start date (anticipated):	10-11-2016
Enrollment:	15
Туре:	Actual

# **Ethics review**

Approved WMO	
Date:	30-06-2015
Application type:	First submission
Review commission:	METC academisch ziekenhuis Maastricht/Universiteit Maastricht, METC azM/UM (Maastricht)
Approved WMO	
Date:	10-08-2016
Application type:	Amendment
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: 29333 Source: Nationaal Trial Register Title:

## In other registers

Register
ССМО
OMON

**ID** NL52798.068.15 NL-OMON29333

# **Study results**

Date completed:	13-02-2017
Actual enrolment:	15