The impact of milk protein glycation on muscle protein synthesis after resistance training in healthy young men

No registrations found.

Ethical review	Positive opinion
Status	Recruitment stopped
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON22985

Source
Nationaal Trial Register

Brief title
MusLy study

Health condition

- Milk protein
- Protein digestion
- Muscle protein synthesis

Sponsors and support

Primary sponsor: Maastricht University
Source(s) of monetary or material Support: FrieslandCampina

Intervention

Outcome measures

Primary outcome

Muscle protein synthesis rates from 0-6 h following drink ingestion

Secondary outcome

- Muscle protein synthesis rates from 0-2 and 2-6h
- Plasma lysine concentrations
- Plasma amino acid concentrations

Study description

Background summary

Protein intake is an essential stimulus for muscle protein anabolism. The muscle protein synthetic response to protein ingestion is mainly determined by the post-prandial plasma amino acid response. Glycation of proteins during commonly applied milk processing procedures, attenuates the digestibility of a dairy product, and the subsequent appearance of amino acids in the circulation. The level of protein glycation in processed dairy products might therefore be an important modulator of the overall protein quality of a product, and its ability to stimulate protein metabolism. It has not yet been investigated if the glycation level of dietary protein modulates its capacity to stimulate muscle protein synthesis. Therefore, the current study will compare the muscle protein synthetic response after ingestion of a milk protein powder with different levels of protein glycation in healthy young men.

Study objective

Ingestion of low glycated milk protein results in a greater muscle protein synthetic response compared to high glycated milk protein.

Study design

- Muscle biopsies at t=0, 120, 360 min after drink ingestion.
- Plasma samples at t=0, 15, 30, 45, 60, 90, 120, 150, 180, 210, 240, 300, 360 min after drink ingestion.

Intervention

- Low-glycated milk protein + 2 grams leucine
- High-glycated milk protein + 2 grams leucine
- Water placebo

Contacts

Public

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Eligibility criteria

Inclusion criteria

- Males
- Aged between 18-35 years
- Healthy, recreationally active (participating in recreational sports activities ≥ 1 and ≤ 6 h per week, with a maximum of 2 h resistance-type exercise)
- 18.5 ≤ BMI ≤ 30 kg/m2
- No physical limitations (i.e. able to perform all activities associated with daily living in an independent manner).

Exclusion criteria

- Smoking
- Lactose intolerant or allergies to milk proteins
- Regular consumption of protein supplements (e.g. protein powders)
- Musculoskeletal disorders
- Metabolic disorders
- Use of any medications known to affect protein metabolism (i.e. corticosteroids, non-steroidal anti-inflammatories, or prescribed acne medications).
- Chronic use of gastric acid suppressing medication or anti-coagulants
- Recent (<9 months) participation in amino acid tracer (L-[ring-13C6]-phenylalanine and L-[3,5-2H2]-tyrosine) studies
- Unstable weight over the last three months
- Diagnosed GI tract disorders or diseases
- Blood donation in the past 2 months

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Double blinded (masking used)
Control:	Placebo

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	03-06-2020
Enrollment:	45
Type:	Actual

IPD sharing statement

Plan to share IPD: Undecided

Ethics review

Positive opinion

Date:	03-06-2020
Application type:	First submission

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
NTR-new	NL8690
Other	METC academisch ziekenhuis Maastricht/Universiteit Maastricht : METC20-011, NL72586.068.20

Study results