

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

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

Ethische beoordeling	Positief advies
Status	Werving gestopt
Type aandoening	-
Onderzoekstype	Interventie onderzoek

Samenvatting

ID

NL-OMON22985

Bron

NTR

Verkorte titel

MusLy study

Aandoening

- Milk protein
- Protein digestion
- Muscle protein synthesis

Ondersteuning

Primaire sponsor: Maastricht University

Overige ondersteuning: FrieslandCampina

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

Toelichting onderzoek

Achtergrond van het onderzoek

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.

Doel van het onderzoek

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

Onderzoeksopzet

- 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.

Onderzoeksproduct en/of interventie

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

Contactpersonen

Publiek

Maastricht University
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Wetenschappelijk

Maastricht University
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Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

- 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)
- $18.5 \leq \text{BMI} \leq 30 \text{ kg/m}^2$
- No physical limitations (i.e. able to perform all activities associated with daily living in an independent manner).

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

- 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- $^{13}\text{C}_6$]-phenylalanine and L-[3,5- $^2\text{H}_2$]-tyrosine) studies
- Unstable weight over the last three months
- Diagnosed GI tract disorders or diseases
- Blood donation in the past 2 months

Onderzoeksopzet

Opzet

Type:	Interventie onderzoek
Onderzoeksmodel:	Parallel
Toewijzing:	Gerandomiseerd
Blinding:	Dubbelblind
Controle:	Placebo

Deelname

Nederland	
Status:	Werving gestopt
(Verwachte) startdatum:	03-06-2020
Aantal proefpersonen:	45
Type:	Werkelijke startdatum

Voornemen beschikbaar stellen Individuele Patiënten Data (IPD)

Wordt de data na het onderzoek gedeeld: Nog niet bepaald

Ethische beoordeling

Positief advies	
Datum:	03-06-2020
Soort:	Eerste indiening

Registraties

Opgevolgd door onderstaande (mogelijk meer actuele) registratie

Geen registraties gevonden.

Andere (mogelijk minder actuele) registraties in dit register

Geen registraties gevonden.

In overige registers

Register	ID
NTR-new	NL8690
Ander register	METC academisch ziekenhuis Maastricht/Universiteit Maastricht : METC20-011, NL72586.068.20

Resultaten