

Plasma amino acid response after the ingestion of collagen versus collagen with whey protein during post-exercise recovery in healthy young men

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To compare the plasma amino acid responses after the digestion of whey vs different ratios whey and collagen protein following a single bout of exercise in healthy young men.

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

Summary

ID

NL-OMON55037

Source

ToetsingOnline

Brief title

Whey collagen study

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, Gelita AG, Gelita AG; TKI Health-Holland, TKI health-Holland

Intervention

Keyword: Amino acids, Exercise, Protein, Skeletal muscle

Outcome measures

Primary outcome

Plasma amino acid response

Secondary outcome

Plasma insulin-, and glucose responses

Study description

Background summary

Protein ingestion stimulates muscle protein synthesis and augments the muscle protein synthetic response to a single exercise session. In support, protein supplementation has been shown to augment the gains in muscle mass and strength following resistance exercise training. The force generated by contracting muscle is transferred through a network of connective tissue proteins towards the bone. Consequently, remodeling of skeletal muscle connective tissue represents an essential component of skeletal muscle adaptation to exercise. The anabolic effect of a protein supplement is mainly determined by the plasma amino acid response after ingestion. Although whey protein is considered the preferred protein source to maximize myofibrillar protein synthesis rates, it contains insufficient glycine and proline to support the post-exercise increase in connective tissue protein synthesis rates. In contrast, collagen protein is rich in glycine and proline and has, therefore, been proposed as a preferred protein source to support connective tissue remodelling. Hence, the combined ingestion of whey plus collagen protein increase may therefore be preferred to stimulate both myofibrillar and collagen protein synthesis rates in skeletal muscle tissue. However, the ratio of collagen vs whey protein within one drink for an optimal post-prandial rise in amino acid concentrations remains to be determined.

Study objective

To compare the plasma amino acid responses after the digestion of whey vs different ratios whey and collagen protein following a single bout of exercise in healthy young men.

Study design

Randomized, double-blinded, crossed-over experiment

Intervention

Following a single bout of resistance exercise subjects will be randomly assigned to consume one of the following test beverages per test day

- a test beverage of 600 mL containing 30 g whey protein in water,
- a test beverage of 600 mL containing 25 g whey + 5 g collagen protein in water,
- a test beverage of 600 mL containing 20 g whey + 10 g collagen protein in water,
- a test beverage of 600 mL containing 15 g whey + 15 g collagen protein in water,

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

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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 < 30 kg/m²
- No physical limitations (i.e. able to perform all activities associated with daily living in an independent manner).

Exclusion criteria

- Female
- Allergies to milk proteins
- Musculoskeletal disorders
- Use of any medications known to affect protein metabolism (i.e. corticosteroids, non-steroidal 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

Study design

Design

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

Recruitment

NL	
Recruitment status:	Recruitment stopped
Start date (anticipated):	24-02-2021
Enrollment:	15
Type:	Actual

Ethics review

Approved WMO	
Date:	04-08-2020
Application type:	First submission
Review commission:	METC academisch ziekenhuis Maastricht/Universiteit Maastricht, METC azM/UM (Maastricht)
Approved WMO	
Date:	26-01-2021
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

No registrations found.

In other registers

Register

CCMO

ID

NL74226.068.20