

Growth of skeletal muscle in response to feeding different amounts of protein

Submission date 13/09/2012	Recruitment status No longer recruiting	<input type="checkbox"/> Prospectively registered
		<input type="checkbox"/> Protocol
Registration date 01/10/2012	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan
		<input checked="" type="checkbox"/> Results
Last Edited 15/09/2015	Condition category Musculoskeletal Diseases	<input type="checkbox"/> Individual participant data

Plain English summary of protocol

Background and study aims

Exercise and diet affect the muscles' ability to make new proteins (muscle protein synthesis). Consuming protein after resistance exercise increases muscle protein synthesis (e.g., for building muscle). However, the best dose of protein to consume is not currently known. If too much protein is consumed, then the excess will be used for energy rather than for building muscle. This information is needed to improve diet and exercise strategies to increase muscle mass not only for healthy young exercisers, but also for helping more vulnerable groups, such as the elderly, to maintain muscle mass. The aim of this study is to determine the response of muscle protein synthesis to different doses of whey protein consumed at rest and following resistance exercise.

Who can participate?

Trained male weightlifters aged between 18-35, who have been doing resistance training for at least 6 months.

What does the study involve?

Participants are randomly allocated to consume one of four doses of whey protein after exercise. Chemical tracers are injected into the bloodstream for delivery to the muscle, and blood and muscle samples are taken to determine the rate at which muscle proteins were made following each dose of protein.

What are the possible health benefits and risks of participating?

The results of this study may help both young and old people who would benefit from muscle growth. The risks of participation include the potential for pain due to the vigorous exercise. However, we used trained experienced weightlifters for this study. Taking a muscle sample may cause pain or discomfort. Injecting the tracers can cause pain or discomfort through infection. However, this is extremely rare.

Where is the study run from?

University of Birmingham (UK).

When is the study starting and how long it is expected to run for?
December 2008 to June 2011.

Who is funding the study?
GlaxoSmithKline Nutritional Healthcare (UK).

Who is the main contact?
Dr Oliver C Witard
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Contact information

Type(s)
Scientific

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Additional identifiers

Study information

Scientific Title
Response of myofibrillar muscle protein synthesis to increasing doses of whey protein at rest and following exercise subsequent to a meal in resistance trained males

Study objectives
Twenty grams of whey protein will be sufficient for the maximal stimulation of myofibrillar-muscle protein synthesis (MPS) rates at rest and after resistance exercise in trained, young adult males.

Ethics approval required
Old ethics approval format

Ethics approval(s)
National Research Ethics Service, Black Country, Birmingham, 08/02/2012, ref: 08/H1202/131

Study design
Parallel research design single-blind intervention study

Primary study design

Interventional

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Metabolic health of muscle / sarcopenia (age-related muscle loss)

Interventions

Each participant was randomly assigned to one of four groups. Each participant ingested one of four doses (0, 10, 20 or 40g) of whey protein after the exercise.

Intervention Type

Supplement

Primary outcome(s)

Myofibrillar (contractile proteins) muscle protein synthesis

Key secondary outcome(s)

Amino acid concentrations

Completion date

01/06/2011

Eligibility

Key inclusion criteria

1. Male, aged 18-35 years
2. Healthy (no known metabolic disorder)
3. Experienced weight lifter for more than 6 months (at least 2 leg resistance training sessions per week)

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 years

Upper age limit

35 years

Sex

Male

Key exclusion criteria

Not simultaneously taking part in another scientific / clinical study

Date of first enrolment

01/01/2008

Date of final enrolment

01/06/2011

Locations**Countries of recruitment**

United Kingdom

Scotland

Study participating centre**University of Stirling**

Stirling

United Kingdom

FK9 4HG

Sponsor information**Organisation**

GlaxoSmithKline Nutritional Healthcare (UK)

ROR

<https://ror.org/01xsqw823>

Funder(s)**Funder type**

Industry

Funder Name

GlaxoSmithKline Nutritional Healthcare (UK)

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	01/01/2014		Yes	No