

The effect of lycopene on semen quality in healthy men

Submission date 10/06/2016	Recruitment status No longer recruiting	☐ Prospectively registered
		☐ Protocol
Registration date 16/06/2016	Overall study status Completed	☐ Statistical analysis plan
		☒ Results
Last Edited 10/10/2019	Condition category Urological and Genital Diseases	☐ Individual participant data

Plain English summary of protocol

Background and study aims

Lycopene is a naturally occurring carotenoid (nutritional compound) found in a number of foods, such as tomatoes, watermelon and pink grapefruit. Lycopene has antioxidant properties and can protect against damage to cells. Studies have shown that lycopene reduces the risk of prostate cancer and is thought to have more general benefits to men's health including sperm quality. This study aims to investigate the effect of lactolycopene on semen quality in healthy men.

Who can participate?

Healthy male volunteers between the ages of 18-30

What does the study involve?

Participants are invited to attend the Clinical Research Facility, Royal Hallamshire Hospital, Sheffield on three occasions (week 0, 6 and 12). On each occasion they are asked to produce a semen sample at home (after three days of sexual abstinence) to bring with them to the clinic. At the clinic, a blood sample is collected from each volunteer to analyse blood levels of lycopene. At the start of the study data is collected on weight, height, diet, smoking and type of underwear worn. At the 1st visit participants are randomly allocated to receive either a placebo (dummy) tablet or lactolycopene in capsule form and are instructed to consume the capsules twice daily for 12 weeks while following their normal diet. The lactolycopene supplement is a commercially available product available from a range of UK retailers and pharmacists. The supplement is manufactured by Cambridge Nutraceuticals Ltd., UK who are providing the supplement and the placebo for this study. Participants are asked to provide semen and blood samples at the start of the study, week 6 and at the end of the intervention (week 12). Each semen sample is examined for sperm volume, concentration, sperm motility (movement) and morphology (shape). Damage to the DNA of the sperm is also assessed. Blood samples are used to analyse blood lycopene levels as a marker of compliance to the intervention. Participants' diet is analysed at the start of the study and in the final week of intervention using nutritional software. No information is passed back to the donors about semen quality. Participants are reimbursed £25 per clinic visit to compensate them for their time and to cover any travel expenses.

What are the possible benefits & risks of participating?

Participants gain no direct benefit from involvement in the study, but it is hoped that the study will increase our understanding of the relationship between diet and sperm quality. We hope that in future this knowledge will help us with the treatment of male infertility. Blood samples are taken by an experienced phlebotomist in the Clinical Research Facility of a major teaching hospital. Participants may experience some bruising as a result of having the blood sample taken, but we do not anticipate any other risks.

Where is the study run from?

The project will be carried out in the Academic Unit of Reproductive and Developmental Medicine and the Human Nutrition Unit, Department of Oncology and Metabolism, The University of Sheffield, UK. Face to face contact with volunteers will be within the Clinical Research Facility of the Royal Hallamshire Hospital, Sheffield, UK.

Who is funding the study?

The study is self-funded from the University of Sheffield and is being run as part of postgraduate student research projects. Cambridge Nutraceuticals Ltd will supply the supplement and placebo in kind and will also provide participant compensation.

When is the study starting and how long is it expected to run for?

April 2016 to December 2016

Who is the main contact?

Dr Liz Williams
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Contact information

Type(s)

Scientific

Contact name

Dr Liz Williams

ORCID ID

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Additional identifiers

Protocol serial number

147769

Study information

Scientific Title

The effect of lactolycopene on sperm quality in healthy men - a pilot study

Acronym

TomsTrial

Study objectives

It is hypothesised that dietary supplementation with lactolycopene will improve semen quality in healthy males.

Ethics approval required

Old ethics approval format

Ethics approval(s)

Medical School, University of Sheffield Research Ethics Committee, 22/03/2016, Ref: 008135

Primary study design

Interventional

Study design

12-week double-blind randomised placebo-controlled trial

Study type(s)

Other

Health condition(s) or problem(s) studied

Effect of lactolycopene on sperm health

Interventions

Participants are randomised to receive either twice daily supplementation with 7mg lactolycopene (i.e. 14mg/d) or a placebo of identically packaged microcrystalline cellulose, twice daily for 12 weeks. Participants are block randomised in blocks of 6.

Intervention Type

Supplement

Primary outcome(s)

Motile sperm concentration - assessed at week 0 (baseline), week 6 (interim) and week 12 (end of intervention) according to WHO (2010) methods

Key secondary outcome(s)

1. Sperm volume, sperm concentration, sperm motility and sperm morphology - analysed according to WHO (2010) methods
2. Sperm DNA fragmentation analysed using the TUNEL assay (Sharma et al. 2013)
3. Sperm DNA fragmentation analysed using the sperm chromatin dispersion test (Fernandez et al. 2003)
4. Plasma lycopene measured by HPLC (Thurnham et al. 1988)

The above outcomes will be measured at week 0 (baseline), week 6 (interim) and week 12 (end of intervention)

5. Dietary intake - measured using an 4-day estimated food diary at week 0 and during week 12 and analysed using WinDiets dietary analysis software
6. Habitual dietary intake - assessed at baseline only - using EPIC food frequency questionnaire, and analysed using FETA-EPIC software (<http://www.epic-norfolk.org.uk/>)

Completion date

31/12/2016

Eligibility

Key inclusion criteria

1. Healthy males
2. Age 18-30

Participant type(s)

Healthy volunteer

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 Years

Upper age limit

30 Years

Sex

Male

Total final enrolment

60

Key exclusion criteria

1. Previous testicular surgery
2. Treatment for cancer
3. Current consumption of lycopene supplements
4. Allergy to tomato, whey protein or soy derivatives

Date of first enrolment

29/04/2016

Date of final enrolment

01/10/2016

Locations

Countries of recruitment

United Kingdom

United States of America

Study participating centre

The University of Sheffield

Department of Oncology & Metabolism

Beech Hill Road

Sheffield

United States of America

S10 2RX

Sponsor information

Organisation

The University of Sheffield (UK)

ROR

<https://ror.org/05krs5044>

Funder(s)

Funder type

University/education

Funder Name

University of Sheffield

Alternative Name(s)

The University of Sheffield, Sheffield University, sheffielduni, University of Sheffield UK, theuniversityofsheffield, University of Sheffield in United Kingdom, University of Sheffield, UK

Funding Body Type

Government organisation

Funding Body Subtype

Universities (academic only)

Location

United Kingdom

Funder Name

Cambridge Nutraceuticals Ltd (UK)

Results and Publications

Individual participant data (IPD) sharing plan**IPD sharing plan summary**

Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	01/03/2020	10/10/2019	Yes	No