ISRCTN27860457 https://doi.org/10.1186/ISRCTN27860457

ON-EPIC Oral nitrate supplementation to enhance pulmonary rehabilitation in chronic obstructive pulmonary disease

Submission date
22/09/2014

Recruitment status
No longer recruiting

Registration date
29/10/2014

Overall study status
Completed

Last Edited
19/11/2020

Condition category
Respiratory

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Chronic obstructive pulmonary disease (COPD) is the name of a group of lung diseases (including emphysema and chronic bronchitis) that cause breathing difficulties due mostly to narrowing of the airways. It is most often caused by smoking and results in breathlessness, persistent coughing and recurrent chest infections. Even with excellent treatment, patients often find themselves significantly disabled by the disease. Pulmonary rehabilitation is a proven therapy for COPD where patients are placed on a 8 week programme which includes supervised exercise sessions and learning about their condition. However, places are limited and so its important to get as much benefit from them as possible. A number of studies have shown that increasing the amount of dietary nitrate in the diet makes exercise easier and less tiring. This is because dietary nitrates are converted into another compound called nitric oxide which widens blood vessels and reduces the amount of oxygen needed the muscles. Beetroot juice is a good source of dietary nitrate. We want to find out whether increasing the amount of nitrate in the diet (in the form of beetroot juice) can help to improve how patients respond to the pulmonary rehabilitation programme.

Who can participate?
Patients with COPD that may benefit from the pulmonary rehabilitation programme.

What does the study involve?
Participants are randomly allocated into one of two groups. Those in group 1 are given beetroot juice to drink. Those in group 2 are given a placebo (without nitrate). We then compare improvements in the amount of exercise they can do after they have all attended a pulmonary rehabilitation programme. This is tested with a shuttle walking test which measures how far and how fast each participants can walk without having to stop and rest. The participants are also asked to fill in questionnaires designed to assess their state of health. Flow mediated dilatation measurements, which see how responsive their blood vessels are also taken from some participants.

What are the possible benefits and risks of participating?
No risks are anticipated. Possible benefits include general improvement to health and being able to exercise for longer periods.

Where is the study run from?
Royal Brompton and Harefield NHS Foundation Trust (UK)

When is the study starting and how long is it expected to run for?
January 2015 to April 2018

Who is funding the study?
The JP Moulton Medical Foundation (UK)

Who is the main contact?
Dr Nicholas Hopkinson
n.hopkinson@ic.ac.uk

Contact information

Type(s)
Scientific

Contact name
Dr Nicholas Hopkinson

Contact details
Royal Brompton Hospital
Fulham Rd
London
United Kingdom
SW3 6NP

Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
2

Study information

Scientific Title
ON-EPIC Oral nitrate supplementation to enhance pulmonary rehabilitation in chronic obstructive pulmonary disease: a multi-centre, double blind, placebo-controlled, cross-over study

Acronym

ON-EPIC

Study objectives
The purpose of this study is to investigate the effects of administration of beetroot (BR) juice versus placebo beverage ingestion on exercise tolerance, health status, blood pressure, plasma NO2- levels, after attendance at a pulmonary rehabilitation.
The following hypotheses are to be tested:
1. BR would increase incremental shuttle walk test distance after completion of PR
2. BR would increase health related quality of life scores after completion of PR
3. BR would decrease fat mass after completion to PR
4. BR would increase plasma NO2- levels (a biomarker of NO production and availability)

Ethics approval required
Old ethics approval format

Ethics approval(s)
NRES Committee London - London Bridge, 1/10/2014, Ref: 14/LO/1474

Study design
Multi-centre double-blind placebo-controlled cross-over study

Primary study design
Interventional

Secondary study design
Randomised cross over trial

Study setting(s)
Hospital

Study type(s)
Treatment

Participant information sheet
Not available in web format, please use the contact details to request a patient information sheet

Health condition(s) or problem(s) studied
Chronic obstructive pulmonary disease (COPD)

Interventions
Beetroot juice drink or matched nitrate-depleted placebo.

Intervention Type
Other

Phase
Not Applicable

Primary outcome measure

Incremental shuttle walking test (ISWT) distance

Secondary outcome measures
All outcomes measured at 8 weeks:
1. Health status measured by the COPD assessment test score (CAT) and the Hospital Anxiety and Depression scale (HADs)
2. Fat free mass determined by bioelectrical impedance analysis
3. Flow mediated dilatation (FMD)

Removed 16/04/2018:
4. Blood plasma NO2 levels (a marker of NO production and availability) as an exploratory variable

Overall study start date
15/01/2015

Completion date
01/04/2018

Eligibility

Key inclusion criteria
Patients will need to have a clinical and spirometric diagnosis of COPD, GOLD stage II-IV and with an MRC score of 3-5 or to be functionally limited

Participant type(s)
Patient

Age group
Adult

Sex
Both

Target number of participants
140

Total final enrolment
165

Key exclusion criteria
1. Clinically unstable patients (within one month of exacerbation)
2. Within one month of completing pulmonary rehabilitation
3. Significant comorbidity limiting exercise tolerance
4. Significant renal impairment (estimated glomerular filtration rate (eGFR) <50 ml.min-1)
5. Hypotension (systolic blood pressure <100 mmHg)
6. Pregnancy
7. Use of nitrate based medication

8. Other reason for benefit from nitrate supplementation (ischaemic heart disease, peripheral arterial disease)
9. Use of long-term oxygen therapy

Date of first enrolment
26/01/2015

Date of final enrolment
01/11/2017

Locations

Countries of recruitment
England

United Kingdom

Study participating centre
Royal Brompton Hospital
London
United Kingdom
SW3 6NP

Sponsor information

Organisation
Imperial College, London (UK)

Sponsor details
c/o Christine Buicke
AHSC Joint Research Compliance Office
510, 5th Floor Lab Block
Imperial College
London
England
United Kingdom
W6 8RF
-
c.buicke@imperial.ac.uk

Sponsor type
University/education

ROR
https://ror.org/041kmwe10

Funder(s)

Funder type
Research organisation

Funder Name
JP Moulton Medical Foundation (UK)

Results and Publications

Publication and dissemination plan
Publication is planned in a high-impact peer reviewed journal.

Intention to publish date
01/06/2020

Individual participant data (IPD) sharing plan
The datasets generated and/or analysed during the current study during this study will be included in the subsequent results publication.

IPD sharing plan summary
Other

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	01/07/2020	19/11/2020	Yes	No
HRA research summary			28/06/2023	No	No