Acute dietary nitrate supplementation to improve performance in endurance trained athletes

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To assess time trial performance following 1x140 mL dose of concentrated beetroot juice containing ~8 mmol of nitrate (NO3-) ingested 3 h prior to the onset of exercise.

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

Summary

ID

NL-OMON35728

Source
ToetsingOnline

Brief title
Acute nitrate and endurance performance

Condition

- Other condition

Synonym
performance cycling

Health condition

prestatie

Research involving
Human

Sponsors and support

Primary sponsor: Universiteit Maastricht
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: beetroot juice, cycling

Outcome measures

Primary outcome

cycling performance

Secondary outcome

plasma nitrate/nitrite concentrations

plasma lactate, insulin, glucose and free fatty acids

Study description

Background summary

Six days of dietary nitrate supplementation in the form of beetroot juice (~0.5 L•d-1) has been purported to reduce pulmonary oxygen uptake (VO2) during submaximal exercise and increase tolerance to high-intensity workloads. These results suggest that dietary nitrate supplementation has the potential to act as an ergogenic aid. Recently, we assessed submaximal oxygen uptake and 10 km time trial performance after 6 d of dietary nitrate supplementation in trained cyclists. We demonstrated an improvement in time trial performance compared to the nitrate-depleted placebo. However, the minimal dosage and duration of nitrate supplementation that is needed to elicit these performance effects remain largely unknown. Therefore, the purpose of the study is to assess performance capacity following an acute dose of nitrate supplementation consumed 3 h prior to the onset of exercise in trained cyclists. We will test the hypothesis that a single dose (140 mL; ~8 mmol NO3-) of dietary nitrate supplementation (beetroot juice) ingested 3 h prior to exercise will improve time trial performance in trained cyclists compared to the nitrate-depleted placebo

Study objective

To assess time trial performance following 1x140 mL dose of concentrated beetroot juice containing ~8 mmol of nitrate (NO3-) ingested 3 h prior to the onset of exercise.

Study design

Double-blind, randomized cross-over placebo controlled study

Intervention

beetrootjuice

Study burden and risks

small risk of haematoma

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

healthy young males (18-30y)
well trained cyclists (>3x/week training for more than a year)
VO2 max >50 ml/kg/min

Exclusion criteria

use of medication
smoking
chronic beetroot supplementation

Study design

Design

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

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	13-01-2012
Enrollment:	20
Type:	Actual

Ethics review

Approved WMO

Date:	13-07-2011
Application type:	First submission
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	ID
ClinicalTrials.gov	NCT01384968
CCMO	NL36851.068.11