Sucrose as a preferred carbohydrate source in sports nutrition

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To assess exogenous and endogenous carbohydrate oxidation rates during prolonged (3 h) endurance-type exercise (Part A) or muscle glycogen repletion following exercise (Part B) while ingesting glucose-only, or glucose plus fructose or glucose plus...

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

Summary

ID

NL-OMON40103

Source
ToetsingOnline

Brief title
CHO-sucrose

Condition

- Other condition

Synonym
sugar breakdown AND sugar loading

Health condition

carbohydrate oxidation and glycogen repletion

Research involving
Human

Sponsors and support

Primary sponsor: Academisch Medisch Centrum
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: endogenous oxidation, exercise, exogenous oxidation, glycogen

Outcome measures

Primary outcome

Part A: The main study parameter is exogenous and endogenous carbohydrate oxidation.

Part B: The main study parameter is muscle glycogen repletion.

Secondary outcome

Secondary parameters include substrate utilization (VO2, VCO2 and RER) (Part A only) and free fatty acids (Part B only) in addition to plasma lactate, insulin and glucose.

Study description

Background summary

Carbohydrates are an integral component of sports nutrition. Providing carbohydrate (CHO) during exercise delays the onset of fatigue and improves exercise performance by maintaining high rates of CHO oxidation. Traditionally, glucose, or glucose polymers have been the preferential CHO source found in sports drinks. However, during the intestinal absorption of large amounts of glucose (>1.2 g/min), sodium-dependent

Study objective

To assess exogenous and endogenous carbohydrate oxidation rates during prolonged (3 h) endurance-type exercise (Part A) or muscle glycogen repletion following exercise (Part B) while ingesting glucose-only, or glucose plus

fructose or glucose plus sucrose (1.8 g/min).

Study design

Double-blind, cross-over, randomized study.

Intervention

Ingesting 1.8 g/min of glucose or glucose-fructose (1.2 g/min + 0.6 g/min respectively) or glucose-sucrose (0.6 g/min + 1.2 g/min respectively) during 3 h of endurance-type cycling exercise (Part A) or during 6 h of post-exercise recovery (Part B).

Study burden and risks

Part A and B are each comprised of 4 laboratory visits, comprised of 1 screening visit and 3 experimental visits. Subjects will have to record their diet and activity patterns for 48 h prior to 3 visits and duplicate these patterns during visits 3 and 4. The potential risks and discomforts inherent to the exercise testing procedure during each visit are minimal and are similar to those associated with any form of strenuous physical activity including fatigue, fainting, abnormal blood pressure etc. Subjects will provide either 13 blood samples (Part A) or 16 samples (Part B) during visits 2-4. Insertion of the catheters in a vein is comparable to a normal blood draw and the only risk is a small local hematoma. This is also true for muscle biopsies (Part B). Three muscle biopsies (Part B) will be taken through a small (5 mm) incision, following local anesthetics of the skin and muscle fascia, and will heal completely during visits 2-4. Muscle biopsies will only be obtained by an experienced physician.

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
- Male
- 18 - 40 years of age
- Cyclist or triathlete
- VO2 max * 50 ml/kg/min
- BMI <25 kg/m2

Exclusion criteria

- Use of medication
- Smoking

Study design

Design

Study type:	Interventional
Intervention model:	Crossover
Masking:	Double blinded (masking used)
Control:	Uncontrolled
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	08-01-2014
Enrollment:	24
Type:	Actual

Ethics review

Approved WMO Date:	11-12-2012
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	NCT01709617
CCMO	NL41813.068.12