Gastric emptying, regional cerebral blood flow & metabolic rate under (mis)matched sweetness and calories in beverages

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To test the hypothesis that the correspondence between orosensation of sweetness and post-oral sensation of calories influences REE, CBF and GE.

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

Summary

ID

NL-OMON43054

Source
ToetsingOnline

Brief title
Yale studie

Condition

- Other condition

Synonym
effect of the mismatch between sweetness and calories

Health condition

fysiologie

Research involving
Human

Sponsors and support

Primary sponsor: Wageningen Universiteit
Source(s) of monetary or material Support: EU F7

Intervention

Keyword: carbohydrates, cerebral blood flow, Gastric emptying, metabolic rate

Outcome measures

Primary outcome

1. Change in resting energy expenditure in kcal/day

2. Change in gastric emptying rate in mm3/min

3. Change in cerebral blood flow in mL/100*g·min

Secondary outcome

n/a

Study description

Background summary

The aim of this study is to test the hypothesis that orosensation influences carbohydrate metabolism (as measured by resting energy expenditure (REE)) and regional cerebral blood flow (CBF) by regulating gastric emptying (GE). Preliminary data from Dr. Small*s laboratory show that when the sweetness of a flavored beverage is too strong or too weak for a given carbohydrate load (i.e. *mismatched*), REE and GE are decreased compared to isocaloric beverages where sweetness and calories are appropriately *matched*.

Study objective

To test the hypothesis that the correspondence between orosensation of sweetness and post-oral sensation of calories influences REE, CBF and GE.

Study design

2x2 factorial within-participants double blind design, with the factors sweetness and calories (sweet and high caloric, low sweet and low caloric,

sweet and low caloric (mismatched), and low sweet and high caloric (mismatched))

Intervention

Calories are manipulated with non-sweet polymer maltodextrin content at two levels: 75 and 150 kcal. Sweetness is manipulated with sucralose at 2 levels: equivalent to sweetness of a 75 kcal or 150 kcal beverage sweetened with sucrose. This yields four combinations. The drinks also have a commercial flavoring.

Study burden and risks

Each participant will partake in 9 sessions of approximately 1.5 hours each. During the 4 resting energy expenditure and 4 MRI sessions the participant is lying down in a comfortable position, but may experience discomfort due to the MRI coil, and metablic hood which restricts movement. These measurements are non-invasive and carry minimal risk. The study is non-therapeutic to the participants.

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

* Right handed
* Age 18 * 35yr
* BMI 18.5 - 25 kg/m2
* Being healthy (self-reported)
* Having given written informed consent (see E2)

Exclusion criteria

* Not meeting the inclusion criteria
* Drug use or medical conditions which may interfere with normal functioning of the digestive tract
* Drug use or medical conditions which may interfere with normal functioning of the circulatory system
Drug use or medical conditions which may lead to unreliable fMRI results (including, but not limited to neurological conditions)
* Food allergy to or unwillingness to consume the study products
* Reported unexplained weight loss or weight gain of > 5 kg in the month prior to pre-study screening
* Presence of non-removable metal objects in the mouth
* Personnel of Wageningen University, department of Human Nutrition
* Current participation in other research from the Division of Human Nutrition
* Having a contra-indication to MRI scanning
* Disliking the food items.

Study design

Design

Study type:	Interventional
Intervention model:	Crossover
Masking:	Open (masking not used)

Control:	Uncontrolled
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	15-05-2017
Enrollment:	15
Type:	Actual

Ethics review

Approved WMO

Date:	15-12-2016
Application type:	First submission
Review commission:	METC Wageningen Universiteit (Wageningen)

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
CCMO	NL59671.081.16