Sugar, non-caloric sweeteners and reward

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To determine the effect of replacing added sugar by non-caloric sweeteners in a nutrient-rich matrix (dairy drink yoghurt) and in a nutrient-empty matrix (soft drink) on long-term reward value.

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

Summary

ID

NL-OMON35205

Source
ToetsingOnline

Brief title
SweetER

Condition

- Other condition

Synonym
obesity, overweight

Health condition

obesitas

Research involving
Human

Sponsors and support

Primary sponsor: Wageningen Universiteit
Source(s) of monetary or material Support: AgentschapNL en Wageningen Universiteit,Friesland Nutrition

Intervention

Keyword: non-caloric sweeteners, reward, sugar

Outcome measures

Primary outcome

The primary outcome measures of this study are 1) the shift in product preference, i.e., the difference in choice for the sugar sweetened and non-caloric sweetened yoghurt drinks and the sugar sweetened and non-caloric sweetened soft drinks (males and females) after repeated exposure and 2) the change in brain reward responses to the sugar sweetened and non-caloric sweetened drinks after repeated exposure (males).

Secondary outcome

The secondary objective of this study is to determine the effect of replacing added sugar by non-caloric sweeteners in a nutrient-rich matrix (dairy drink yoghurt) and in a nutrient-empty matrix (soft drink) after repeated consumption on:

• Explicit and implicit liking and wanting of these products.

• Implicit associations of these products with feelings of satiety.

• Expected satiety of these products.

• Ad libitum intake of these products

Study description

Background summary

The prevalence of overweight and obesity is still increasing. The development of new and healthier food products, e.g. products in which sugar has been replaced by non-caloric sweeteners, may provide solutions to help people to meet dietary guidelines. However, besides taste, sugar also provides metabolic reward, which is important for consumer acceptance on the longer term. A reduced consumer acceptance on the longer term may reduce the effectiveness of non-calorically sweetened products for weight management.

Study objective

To determine the effect of replacing added sugar by non-caloric sweeteners in a nutrient-rich matrix (dairy drink yoghurt) and in a nutrient-empty matrix (soft drink) on long-term reward value.

Study design

The study will use a randomized crossover design whereby subjects are repeatedly exposed to sugar sweetened and non-caloric sweetened versions of a yoghurt drink and a soft drink. The study consists of 2 periods with 3 parts: pre-measurements, a conditioning period, and post-measurements. In the conditioning period (5 days a week for 4 weeks), subjects will be offered a sugar sweetened or a non-caloric sweetened version of either a yoghurt drink or a soft drink 10 times in random order. Before and after this repeated exposure, reward value will be assessed with behavioural tasks and fMRI measurements. The behavioural tasks will assess the preference for the sugar sweetened and the non-caloric sweetened versions after repeated consumption. With the fMRI measurements, responses to the drinks in brain reward areas will be measured. In period 1, subjects receive either the sugar sweetened or the non-caloric sweetened versions of the yoghurts or the sugar sweetened and non-caloric sweetened versions of the soft drinks. In period 2, these conditions are switched.

Intervention

sugar sweetened and non-caloric sweetened versions of a yoghurt drink and a soft drink

Study burden and risks

The study duration will consist of 2 periods of 4 weeks where subject will daily be given drinks at the laboratory site in Wageningen (in total 40 times).

Before and after the 4 weeks the reward value will be assessed with behavioural tasks at the laboratory site in Wageningen in both males and females (in total 4 times). In addition, before and after the 4 weeks the males will visit the fMRI facility in Ede (Hospital Gelderse Vallei) to undergo fMRI measurements (in total 4 times). Before inclusion, participants will have a training session. The study is non-therapeutic to the participants. The risk associated with participation is negligible.

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

Zie pag. 11 van protocol;• Age: 18-35 years
• BMI: 18.5 - 25.0 kg/m2
• Healthy (as judged by the participant)

Exclusion criteria

Zie pag. 11 van protocol
• Restraint eating (men: score > 2.25; women: score > 2.80) [8]
• Lack of appetite
• Having difficulties with swallowing/eating
• Usage of an energy restricted diet during the last two months
• Weight loss or weight gain of 5 kg or more during the last two months
• Stomach or bowel diseases
• Diabetes, thyroid disease, other endocrine disorders
• Having a history of neurological disorders
• Having taste or smell disorders
• Usage of daily medication other than birth control pills
• For females: being pregnant or lactating
• Smoking more than one cigarette a day
• Being allergic/intolerant for products under study
• Exclusive consumption of *light* versions of yoghurt and/or soft drinks
• Working at the division of human nutrition (WUR)
• Current participation in other research from the division of human nutrition (WUR)
• For males: having a contra-indication to MRI scanning (see page 11 of the protocol)

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):	01-03-2012
Enrollment:	40
Type:	Anticipated

Ethics review

Approved WMO Date:	21-12-2011
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	NL38562.081.11