Sugar, non-caloric sweeteners and reward.

No registrations found.

Ethical review	Positive opinion
Status	Pending
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON23659

Source
NTR

Brief title
SweetER

Health condition

Eating behaviour

Sponsors and support

Primary sponsor: Wageningen University, Department of Human Nutrition
Source(s) of monetary or material Support: AgentschapNL

Intervention

Outcome measures

Primary outcome

The primary 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) on reward value reflected in preferences and brain responses after repeated exposure.

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:

1. Explicit and implicit liking and wanting of these products;

2. Implicit associations of these products with feelings of satiety;

3. Expected satiety of these products;

4. Ad libitum intake of these products.

Study description

Background summary

Rationale:

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 The development of new and healthier food products, e.g. products in which sugar has been replaced by non-caloric sweeteners, may provide solutions to help people to meet dietary guidelines.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.

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 reward value after repeated exposure.

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.

Study population:

The study population consists of 40 (20 males/20 females) apparently healthy, normal weight, unrestrained, adults between the ages of 18 to 35. Only the males will participate in the fMRI part of the study.

Primary outcomes:

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

Study objective

It is hypothesized that foods that have an intrinsic nutrient-rich matrix are less susceptible to changes in reward value due to replacing the sugar content than foods that have intrinsic a nutrient-empty matrix. Thus we expect that the reward value of the non-caloric sweetened yoghurt drink will not change over time and will remain similar to that of the sugar sweetened version. It is hypothesized that the non-caloric sweetened soft drink will decrease in reward value over time compared to its sugar-sweetened counterpart.

Study design

Every participant will visit the laboratory every day during the intervention periods.

Intervention

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.

Contacts

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Eligibility criteria

Inclusion criteria

1. Age: 18-35 years;

2. BMI: 18.5 – 25.0 kg/m2;

3. Healthy (as judged by the participant).

Exclusion criteria

1. Restraint eating (men: score > 2.25; women: score > 2.80);

2. Lack of appetite;

3. Having difficulties with swallowing/eating;

4. Usage of an energy restricted diet during the last two months;

5. Weight loss or weight gain of 5 kg or more during the last two months;

6. Stomach or bowel diseases;

7. Diabetes, thyroid disease, other endocrine disorders;

8. Having a history of neurological disorders;

9. Having taste or smell disorders;

10. Usage of daily medication other than birth control pills;

11. For females: Being pregnant or lactating;

12. Smoking more than one cigarette a day;

13. Being allergic/intolerant for products under study;

14. Exclusive consumption of ‘light’ versions of yoghurt and/or soft drinks;

15. Working at the division of human nutrition (WUR);

16. Current participation in other research from the division of human nutrition (WUR);

17. For males: Having a contra-indication to MRI scanning (including, but not limited to):

A. Claustrophobia;

B. Epilepsy or a family history of epilepsy;

C. Serious physical or mental illnesses;

D. Pacemakers and defibrillators;

E. Intraorbital or intraocular metallic fragments;

F. Ferromagnetic implants;

G. Presence of any other metal object e.g. in the mouth;

H. Being lefthanded.

Study design

Design

Study type:	Interventional
Intervention model:	Crossover
Allocation:	Randomized controlled trial
Masking:	Single blinded (masking used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	26-03-2012
Enrollment:	40
Type:	Anticipated

Ethics review

Positive opinion

Date:	14-02-2012
Application type:	First submission

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
NTR-new	NL3145
NTR-old	NTR3289
Other	MEC Wageningen / ABR : 11/40 / NL38562.081.11;
ISRCTN	ISRCTN wordt niet meer aangevraagd.

Study results

Summary results
N/A