The temporal development of sensory perception of carbonated soft drinks with Stevia

Published: 04-03-2014
Last updated: 23-04-2024

The main objective is to gain insight into the temporal differences between the perceived sweetness and irritation of carbonated beverages with sucrose and/or Stevia. More specifically, objectives of part 1 of the study are:- To assess the overall...

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

Summary

ID

NL-OMON40246

Source
ToetsingOnline

Brief title
Sensory perception of carbonated drinks with Stevia

Condition

- Other condition

Synonym
sensory perception, taste profile

Health condition

smaakperceptie

Research involving
Human

Sponsors and support

Primary sponsor: Stichting Dienst Landbouwkundig Onderzoek (DLO)
Source(s) of monetary or material Support: Het onderzoek wordt gefinancierd in het kader van WageningenUR/Chili samenwerking subsidie CORFO Chile

Intervention

Keyword: irritation, perception, sweetener, taste

Outcome measures

Primary outcome

The main study parameters/endpoints for the continuous time-intensity

measurements used in part 1 are:

- Maximum intensity (Imax) of sweetness and irritation

- Time required to reach the maximum intensity (Tmax).

- Total duration of sweetness or irritation sensations (Dtot)

- Area under the curve for sweetness or irritation sensations (AUC).

The main study parameters/endpoint for the pulsated time-intensity measurements

used in study 2 is:

- Areas under the curve for sweetness or irritation sensations (AUC)

Secondary outcome

not applicable

Study description

Background summary

Food industry and governmental efforts are aimed at the reduction of the amount of dietary sweeteners in our diets. Specific food reformulations replace for

example (part of the) natural sugars by other natural sweeteners such as Stevia which provides the sweet taste without the calories. Unfortunately, sweet taste is only one of the criteria for market success of reformulated products. Another important criterion is that the taste profile over time for sweeteners is similar to that of natural sugars. Consumers may avoid foods or drinks with alternative low-caloric sweeteners where the sweet taste appears too quickly or too slow or lingers for too long oor too short compared to the same product with a natural high caloric sweetener.

Study objective

The main objective is to gain insight into the temporal differences between the perceived sweetness and irritation of carbonated beverages with sucrose and/or Stevia. More specifically, objectives of part 1 of the study are:
- To assess the overall temporal taste and irritation profiles for carbonated drinks with different amounts of sucrose and Stevia (part 1a);
- To assess the effect of saliva on the overall temporal taste and irritation profiles for carbonated drinks with different amounts of sucrose and Stevia (part 1b).
- To assess the temporal profiles during the on- and off-set phase for carbonated drinks with different amounts of sucrose and Stevia (part 2).

Study design

A single blind, randomized, crossover study.

Intervention

Commercially available carbonated water will be used that is either undiluted (100%) or diluted to 50% with plain water (to vary the carbonation level) to which different amounts of sucrose and Stevia are added (100% sucrose, 70% sucrose + Stevia, 50% sucrose + Stevia, 30% sucrose + Stevia,100% Stevia). Plain water from the same source as the carbonated water will be used for the 0% carbonation condition. In total 15 different combinations of carbonation (3) and sweetener (5) will be tested.

Study burden and risks

Participants will participate in a total of 12 2-hr sessions (including 3 practice sessions).
In each session of part 1A, participants will take one sip per 15 mins of an carbonated beverage with either an artificial or a natural sweetener and records the perceived sweetness and irritation with the technique of time-intensity. Each recording will take a maximum of five minutes, leaving the participants with sufficient time to relax between sips. Part 1B is similar to part 1A, excpet that a Lashley cup will be used to prevent saliva enter the

mouth. The subjects can drink water if she wishes.
In part 2, the subjects will place a small teflon straw (diameter appr. 2 mm) in their mouth, through which a small continuous flow of liquid is presented to the tongue using a gustometer. The flow alternates between either water or the sweetened beverage at different frequencies. Subjects are free to swallow at will.
Time-intensity recordings and 2-hr sessions are routinely used in sensory science and do rarely cause discomfort. All test beverages are screened with regard to their palatability .

Contacts

Public
Stichting Dienst Landbouwkundig Onderzoek (DLO)

Bornse Weilanden 9
Wageningen 6708 WG
NL
Scientific
Stichting Dienst Landbouwkundig Onderzoek (DLO)

Bornse Weilanden 9
Wageningen 6708 WG
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

- Vrouw

- Age: 18-50 years
- BMI: 19 - 27 kg/m2 (self reported)
- Healthy (as judged by the participants)
- Used to drink sweetened carbonated soft drinks
- Voluntary participation
- Signed informed consent
- Willing to comply with the study procedures.

Exclusion criteria

Participants will be excluded if:
- she does not meet the inclusion criteria
- weight gain or loss of 5 kg or more during the last two months
- allergy to artificial or natural sweeteners.
- Smoking
- Pregnancy
- Chronic use of medication that could influence taste perception, such as antihypertensives, NSAIDs, medication for lowering blood glucose
- Metabolic disorders that could influence taste perception, such as diabetes, liver and kidney disorders.

Study design

Design

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

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	01-09-2014
Enrollment:	16
Type:	Actual

Ethics review

Approved WMO Date:	04-03-2014
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	NL47299.081.13