

The effect of odour exposure on appetite, appetite for smelled foods and salivation, investigated for different odours

Submission date 13/12/2012	Recruitment status No longer recruiting	<input type="checkbox"/> Prospectively registered
		<input type="checkbox"/> Protocol
Registration date 31/01/2013	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan
		<input type="checkbox"/> Results
Last Edited 31/01/2013	Condition category Nutritional, Metabolic, Endocrine	<input type="checkbox"/> Individual participant data
		<input type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aims

In view of the obesity epidemic, it is important to understand which factors determine the appetizing and/or satiating responses to food cues. It is well known that short exposure to food cues, e.g. the sight or odour of freshly baked bread or pizza, can enhance salivation and appetite feelings. On the other hand, people report to be less hungry after cooking a meal, which is exposure to sight and odour of food for a longer period of time. In this study, we want to investigate some aspects of this apparent paradox. The primary objective is to investigate the effect of exposure to several odours on appetite, appetite for the smelled food and salivation over time.

Who can participate?

Unrestrained healthy women, 18-45 yr old, BMI 18.5 25 kg / m²

What does the study involve?

Participants were expected in the lab for 6 times, around lunch time. During every visit, the response to two different test conditions was measured (two test sessions were conducted on one day), resulting in 12 sessions. The first session was a practice session to get the participants acquainted to the procedure. During the remaining 11 session, the participants were exposed to two control sessions with no odour and nine sessions with different odours. During each session, salivation, hunger, appetite, appetite for different kind of foods and food preference was measured. Each session started with baseline measurements in which participants answered the appetite questionnaire and salivation was measured, in a room with no odour present. Subsequently, each participant entered one of the test rooms that contained either one of the odours or no-odour. The participants were given instructions on a computer. The appetite questionnaire was filled out 1, 5 9, 13 and 18 minutes after entering the room and the saliva collected 0.5, 4, 8 and 17 minutes after entering the room. After 20 minutes, the participants entered another room with no odour to complete a food preference questionnaire. When finished, participants received a snack.

What are the possible benefits and risks of participating?

A fee of 90 euros was paid upon completion of the study. Compared to other studies the burden can be considered as low. No possible health benefits.

The risk associated with participation is negligible.

Where is the study run from?

Restaurant of the Future (Netherlands).

When is the study starting and how long is it expected to run for?

The start date was 2 May 2011. The duration of the trial was 8 weeks.

Who is funding the study?

Technology Foundation STW (Stichting Technische Wetenschappen) (Netherlands).

Who is the main contact?

Marielle Ramaekers

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Contact information

Type(s)

Scientific

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Additional identifiers

Protocol serial number

NL35493.081.11

Study information

Scientific Title

Effect of orthonasal odour exposure time on appetite, appetite for smelled foods and salivation, investigated for different odours: a cross-over study

Study objectives

1. One minute exposure to food odours increases appetite, appetite for the smelled food and salivation, compared to baseline (t=0).

2. Twenty minute exposure to food odours increases appetite and salivation, compared to baseline ($t=0$), but decreases the appetite for smelled foods.
3. Non-food odours evoke different appetite responses than food odours.

Ethics approval required

Old ethics approval format

Ethics approval(s)

Medical Ethical Testing Committee (METC), Wageningen University, April 2009, ref: NL35493.081.11

Study design

Cross-over study

Primary study design

Interventional

Study type(s)

Screening

Health condition(s) or problem(s) studied

Obesity

Interventions

Cross-over study with 8 odour conditions: 5 food odours, 2 odours in duplo (repeated two times), two non-food odours and no-odour (duplo). Each participant completed two sessions per day, in total 12 sessions.

Twenty minute odour exposure to eight different odour conditions: no-odour (duplo), bread odour, chocolate odour (duplo), banana odour, tomato soup odour, meat odour (duplo), grassy odour and pine tree odour. Exposure to one odour during one session.

Intervention Type

Other

Phase

Not Applicable

Primary outcome(s)

1. Appetite (on visual analogue scale) was filled out at baseline and 1, 5, 9, 13 and 18 minutes after onset of odour exposure
2. Appetite for smelled foods (on visual analogue scale) was filled out at baseline and 1, 5, 9, 13 and 18 minutes after onset of odour exposure
3. Appetite for smelled foods measured with food preference questionnaire was filled out 20 minutes after onset of odour exposure

Key secondary outcome(s)

Salivation at baseline and 0.5, 4, 8 and 17 minutes after onset of odour exposure

Completion date

23/06/2011

Eligibility

Key inclusion criteria

1. Women aged 18-45 years
2. Healthy, based on self report
3. Body mass index (BMI) 18.5-25 kg/m²

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 years

Upper age limit

45 years

Sex

Female

Key exclusion criteria

1. Smoking
2. Restrained eater
3. Lack of appetite
4. Dieting for the past 2 months
5. Change in body weight > 5 kg during last 2 months
6. Vegetarian
7. Hyper sensitivity or allergy to any food product
8. Pregnant or breast feeding during last 6 months

Date of first enrolment

02/05/2011

Date of final enrolment

23/06/2011

Locations

Countries of recruitment

Netherlands

Study participating centre

Bomenweg 2
Wageningen
Netherlands
6703 HD

Sponsor information

Organisation

Technology Foundation STW (Stichting Technische Wetenschappen) (Netherlands)

ROR

<https://ror.org/057tq3593>

Funder(s)

Funder type

Research organisation

Funder Name

Technology Foundation (STW) (Netherlands)

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes