

Does umami taste enhance appetite and satiety?

Submission date 14/11/2013	Recruitment status No longer recruiting	☐ Prospectively registered ☐ Protocol
Registration date 26/11/2013	Overall study status Completed	☐ Statistical analysis plan ☒ Results
Last Edited 20/06/2014	Condition category Other	☐ Individual participant data

Plain English summary of protocol

Background and study aims

The fifth sense of taste, the savoury taste known as umami, has been thought to have evolved as a way of signalling the potential presence of protein in foods. One of the chemicals that generates the umami taste is monosodium glutamate (MSG), which occurs naturally in many foods, but the umami taste is further enhanced by the presence of other compounds including inosine monophosphate (IMP). It is well established that protein suppresses appetite more effectively than do carbohydrate or fat, and recent studies suggest that the presence of MSG may be partly responsible for the effects of protein on appetite. No study has looked at the effects of a combination of MSG and IMP and this study sets out to test this since new ways of making foods more filling may be helpful in the future treatment of overeating.

Who can participate?

Healthy volunteers aged 18-40.

What does the study involve?

Volunteers will come to the test centre on four non-consecutive days. They will be served a standard breakfast, and then can leave the test centre for 3 hours. When they return, they will consume a bowl of soup, and then 45 minutes later will be provided with a lunch. They will make ratings of their appetite before, during and after they eat the soup and lunch.

What are the possible benefits and risks of participating?

Participants will benefit by receiving the free test food and will be paid a small sum (£45) on completion of the final day to compensate them for their time.

As the study involves consuming food, potential participants who have specific conditions that require special dietary controls (those with diabetes, or with allergies or aversions to any of the foods and drinks used) are excluded for their safety. The foods and ingredients used are standard products used within the concentrations normally used by consumers, and pose no risk to the study population.

Where is the study run from?

The study is conducted at the Ingestive Behaviour Unit at the University of Sussex, Brighton, UK.

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

The study started in May 2013 and ran for 5 months.

Who is funding the study?
Ajinomoto Co., Inc., Japan.

Who is the main contact?
Professor Martin Yeomans
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Contact information

Type(s)
Scientific

Contact name
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Additional identifiers

Study information

Scientific Title
Acute effects of a combination of inosine monophosphate (IMP) and monosodium glutamate (MSG) on appetite and satiety in healthy volunteers

Study objectives
The addition of a combination of IMP/MSG to a neutral low-energy soup will enhance flavour and appetite when ingested but also signal the presence of protein, thereby enhancing protein-induced satiety.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Science and Technology Cross-Schools Research Ethics Committee (C-REC) at Sussex University, 01/05/2013, MYUM0413

Primary study design
Interventional

Study design
Within-participant design

Study type(s)

Screening

Health condition(s) or problem(s) studied

Satiety

Interventions

The study uses a preload-satiety design. On each of four test days, participants attend the research centre (Ingestive Behaviour Unit at Sussex University) between 0800 and 1000h to consume a fixed breakfast. They return 3 hours after breakfast to consume a test soup, and then 45 minutes later consume as much as they like of a test lunch. The key manipulations are the energy content (low-energy or high-energy protein) and the flavour characteristics (control or with added umami taste) of the soup.

Intervention Type

Other

Phase

Not Applicable

Primary outcome(s)

Satiety is indexed by amount consumed at the ad libitum test lunch, while the acute stimulation of appetite by umami is measured as the immediate change in desire to eat on tasting the test soup. This will be measured on all four test sessions.

Key secondary outcome(s)

1. Calculated compensation for additional energy in protein-soups relative to low energy control
2. Changes in the rated experience of appetite post-ingestion
3. Rate of eating and duration for ingestion of the soup

Outcomes will be measured on all four test sessions.

Completion date

27/10/2013

Eligibility**Key inclusion criteria**

Healthy men and women aged 18-50 and who score less than 7 on the restraint scale of the Three Factor Eating Questionnaire

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 Years

Upper age limit

50 Years

Sex

All

Key exclusion criteria

1. Individuals who were taking prescription medication (excluding the contraceptive pill)
2. Who smoked more than 5 cigarettes per week
3. Diabetic
4. Had a diagnosed eating disorder
5. Allergies or dietary intolerances to the foods used

Date of first enrolment

08/05/2013

Date of final enrolment

27/10/2013

Locations**Countries of recruitment**

United Kingdom

England

Study participating centre

School of Psychology

Brighton

United Kingdom

BN1 9QH

Sponsor information**Organisation**

Ajinomoto Co., Inc (Japan)

ROR

<https://ror.org/044mkdq33>

Funder(s)

Funder type

Industry

Funder Name

Ajinomoto Co., Inc (Japan) - PhD studentship

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?
Results article	results	01/08/2014		Yes	No