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Effects of short-term consumption of retail-available fermented foods on cognition, mood, and the gut microbiome: an exploratory pilot study.

Submission date
03/02/2026

Recruitment status
No longer recruiting

Registration date
04/02/2026

Overall study status
Completed

Last Edited
04/02/2026

Condition category
Other

[_] Prospectively registered
[X] Protocol
[X] Statistical analysis plan
[_] Results
[_] Individual participant data
[X] Record updated in last year

Plain English summary of protocol

Background and study aims
This study aims to investigate the health benefits of readily available commercial fermented foods in healthy adults, both the physiological and the psychological effects. Fermented foods can comprise up to 40% of the human diet; many people consume such products daily, and their effects on human health can be assessed by their influence on the gut microbiota level. We know that fermented food consumed in our diet modulates the bacteria that live in our gut, and the functions of these bacteria influence a great number of systems in the human body, including the brain.
This study will measure emotional well-being, general mood, anxiety, stress and cognitive function; it will also measure biomarkers that indicate the health and function of the gastrointestinal system by utilising stool samples.
Many researchers are suggesting that fermented foods should become part of the National Dietary Guidelines. This information will help towards identifying personalised nutritional solutions for a healthy brain and gut.

Who can participate?
Healthy volunteers aged between 18 and 55 years with a BMI between 18.5 and 29.9, not presently taking antibiotics (or within the last 2 weeks), not diagnosed with an inflammatory bowel disease, not have a known allergy to histamine, not have a history of migraines or cancer, and not allergic to cow's milk.

What does the study involve?
Participants will be randomly assigned to be in either the fermented food group or the control group. If they are in the fermented food group, they will be required to eat the fermented foods given to them every day for 30 days and visit London South Bank University (LSBU) 3 - 4 times to undertake several different testing protocols that will take around an hour (visit 2 and 4), or half an hour (visit 1 and 3) of their time. The fermented foods will comprise a normal portion that would usually be expected to be consumed. For example, 125 ml, or 250 ml, or 125 g (one

heaped, or two level table spoons). They will also need to take stool samples at home 2 times with a special kit provided. The control group will not be given fermented foods during the trial, but as a goodwill gesture, will receive a selection of the fermented foods at the end of the trial. They will be required to undertake the same testing protocols as all the other participants.
Participation acceptance in the study involves the following: return the signed consent form; receive a Health Screening Questionnaire to complete, which determines eligibility.
If eligible, they will be invited to come to the LSBU for the first study session. They will be asked before the study starts to write down every plant food they eat for 7 days. On the first study session day, the study will collect general diet and lifestyle information and complete a series of paper and computer-based assessments. This will take around 60 minutes. Participants will be provided with a description of how to use the stool sampling kit and how to make arrangements with the courier company to collect the completed sample kit. The stool collection kit comprises special collection containers, gloves and plastic tubes with an attached spoon in the lid to put the stool samples in.
If they are in the fermented food group, they will be given a 15-day supply of the fermented food.
Everyone taking part in the study will receive their first stool sample kit. It takes 3 consecutive days to complete the stool sampling. Once they have done this, you start your 15-day fermented foods.
Everyone taking part in the study will be asked to come back after 15-days to repeat the series of paper and computer-based assessments. Those who are in the fermented food groups will receive the next 15-day supply of fermented foods.
Everyone taking part will be asked to come back at the end of the 30-day trial to repeat the same assessments that we took at the first session. Everyone taking part will receive their second stool sample kit.

What are the possible benefits and risks of participating?
Possible benefits from participation:
By taking part in this study, participants will gain an understanding of the health of their gastrointestinal system, and they may improve their general health. If they are interested in receiving the data report from the GastroIntestinal Health Biomarker screen, they need to consent to being contacted after the study to receive these results. They will also receive a £30 Amazon voucher for completing the study.

Possible risks from participation:
They may experience changes in bowel movements, such as an increase in the number of movements and a change in stool consistency. They may experience increased intestinal gas. Results from the stool sample test may indicate an underlying health condition that they may not be aware of, and this could cause distress. The results will be discussed with them in private, and it will be recommended that they show the results to their Health Care Provider, such as Dr for further discussion.
Some of the paper assessments ask them to rate their psychological state, such as anger, anxiety and how they are feeling. This may cause them distress.

Where is the study run from?
London South Bank University (LSBU), UK

When is the study starting and how long is it expected to run for?
September 2019 to March 2020.

Who is funding the research?
This research was funded by

1. South Bank Innovation's London Agri-Food Innovation Clinic (LAFIC)
2. Co-funded by LSBU and the European Regional Development Fund (ERDF)
3. Carr Foods Ltd, Rhythm Health Ltd, and Filthy Healthy Ltd provided the fermented food products.

Who is the main contact?
Adri Bester, bestera@lsbu.ac.uk, supervised by Professor Katya Mileva and Dr Nadia Gaoua.

Contact information

Type(s)
Principal investigator, Scientific, Public

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Additional identifiers

European Regional Development Fund (ERDF) grant number
23R17P01763

Study information

Scientific Title
Integrated multi-omics of the gut microbiome: assessing the beneficial effects of fermented foods to human health.

Study objectives

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 02/08/2019, Ethics Committee, School of Applied Science, London South Bank University (103 Borough Road, London, SE10AA, United Kingdom; +44 02078158047; rycroftn@lsbu.ac.uk), ref: ETH1819-0142

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Blinded (masking used)

Control
Placebo

Assignment
Parallel

Purpose
Basic science

Study type(s)

Health condition(s) or problem(s) studied
No health conditions, healthy cohort only, not obese.

Interventions
This study is the main interventional element of the applicant's doctoral thesis, and the supervisory team and Ethics Committee, at the time (2019), considered this to be an observational feeding study and not an intervention trial; consequently did not view trial registration as required.

This pilot study adopts a multi-arm, randomised control, blinded at one level, parallel group, pre-, mid- and post-intervention assessment design to investigate the feasibility of three different fermented foods containing live bacteria in comparison to a control group on emotional health, cognitive function, and gastrointestinal health, as well as self-reported physiological and or psychological symptoms in healthy adults. The 4 arms consist of one for each of the fermented foods, and one for the control group with no intervention.

Intervention products:
The three commercially available (in the UK) fermented food products with live bacteria are: (1) Life Shot 200 (Rhythm Health Ltd, UK), containing 100% pure organic coconut milk (coconut water and coconut pulp) fermented with a proprietary vegan starter culture and preserved with high hydrostatic pressure. (2) Organic dairy kefir (Carr Foods Ltd, UK) representing pasteurised organic cow's milk fermented with proprietary dairy kefir grains. (3) Bottle Brush Ferments, The Purple One (Filthy Healthy Ltd, UK) is a fermented vegetable mix (red cabbage, beetroot and caraway seeds), traditionally fermented with pink Himalayan salt.

Methodology:
The researcher conducting data collection and analyses is blinded to the group allocation of the participants. The researchers administering the interventions and the participants cannot be blinded due to the physical differences of the intervention products. Group sample size is restricted by available funding. Enrolment is on a rolling 'first-come-first-served' basis until the target number (n=45) is reached. Participants start the trial immediately upon enrolment.

Participants are advised to consume their habitual diet throughout the study period. They are required to visit the laboratory 5 times, 1 week apart, during a 5-week study period and are required to avoid caffeine 2 hours before visits 1 – 4.

At visit 1, participants will complete diet and lifestyle questionnaires, and a health and well-being questionnaire (MYMOP®) and undergo a familiarisation session with the cognitive function assessment. They then receive their first (pre-intervention) stool test kit.

At visit 2 (3-4 days after their first visit), participants return their filled stool test kit, and undertake the battery of tests for baseline assessments of cognitive function, emotional and gastrointestinal health. Participants are then given a 15-day Bristol Stool Scale chart capture document and 2 x 1-week MYMOP® follow-up documents to take home, complete, and return at visit 3. Another member of the research team provided the participant with a 15-day supply of the product, according to their allocation.

The same procedure is applied during visit 3, at day 15 after their second visit, when the participants return for mid-line assessments and deliver their 15-day Bristol Stool Scale chart capture, and 2 x 1-week MYMOP® follow-up documents to take home, complete, and return at visit 3. Notion of any adverse symptoms experienced is made, and the final 15-day supply of the respective product is given.

On day 30 from the start of product intake, visit 4, participants will return for the end of trial testing (end of intervention). They return their final 2 completed MYMOP® follow-up documents, the 15-day Bristol Stool Scale chart, and receive their second stool test kit, which they have to start completing the following morning.
Visit 5 took place 3 days later, when participants returned their filled stool test kits. It takes 3 days to complete the stool test.

Consumption details:
Participants receiving the fermented foods are asked to consume a portion each day for 30 days. Dairy kefir 250ml bottle, Coconut kefir 100ml bottle, and the fermented red cabbage and beetroot, one heaped tablespoon.

Randomisation:
Two people not directly involved in the study will use a simple randomisation web-tool which applies the stratified block randomisation method to allocate participants into 4 groups (A, B, C, D), stratified for gender (A Dairy Kefir, B Fermented red cabbage and beetroot, C Coconut Kefir, D Control). Blocks are small (size of 4) and balanced with predetermined group assignments, always keeping the number of participants in each group similar. This method is used to ensure a balance in sample size across groups over time.

Intervention Type
Supplement

Primary outcome(s)
1. Cognitive function measured using the CANTAB Cambridge Gambling Task (CGT), Delay Matching to Sample (DMTS), and the Rapid Visual Information Processing (RVP) Task at pre, mid (day 15) and study end (day 30)

2. Emotional health measured using the Profile of Mood States (Short Form, POMS-SF) and the Depression, Anxiety, and Stress Scale (DASS-21) at pre, mid (day 15) and study end (day 30)

3. Gastro intestinal health biomarkers and gut microbiota measured using the Genova Diagnostic GI Effects Stool Profile at pre and post study time points

Key secondary outcome(s))
1. Stool number and consistency measured using the Bristol Stool Scale at pre intervention and daily thereafter for 30 days

2. Self reported physical and/or psychological symptoms measured using the Measure Yourself Medical Outcome Profile (MYMOP) at pre, mid and post study

Completion date
11/03/2020

Eligibility

Key inclusion criteria
1. Healthy volunteer adults
2. BMI 18.5 - 29.9
3. Free of antibiotic use in the 2 weeks before the trial
4. Not on any prescription medication or any probiotic capsules

Healthy volunteers allowed
Yes

Age group
Adult

Lower age limit
18 years

Upper age limit
55 years

Sex
All

Total final enrolment
45

Key exclusion criteria
1. Pregnancy or breastfeeding
2. A history of cancer
3. Inflammatory bowel disease
4. A mental health condition
5. Intolerance to histamine, lactose, or on a vegan diet

Date of first enrolment
02/10/2019

Date of final enrolment

02/02/2020

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
London South Bank University
103 Borough Road
London
England
SE1 0AA

Sponsor information

Organisation
London South Bank University

ROR
https://ror.org/02vwnat91

Funder(s)

Funder type

Funder Name
London South Bank University

Alternative Name(s)
LSBU

Funding Body Type
Private sector organisation

Funding Body Subtype
Universities (academic only)

Location
United Kingdom

Funder Name
European Regional Development Fund

Alternative Name(s)
Fondo Europeo de Desarrollo Regional, Europäischer Fonds für regionale Entwicklung, Европейски фонд за регионално развитие, Evropský fond pro regionální rozvoj, Fundo Europeu de Desenvolvimento Regional, ERDF, FEDER, EFRE, ЕФРР, EFRR

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet			03/02/2026	No	Yes
Protocol file			03/02/2026	No	No
Statistical Analysis Plan			03/02/2026	No	No