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How sourdough bread compared with white bread affects blood sugar, digestion and appetite in adults

Submission date
18/03/2026

Recruitment status
Recruiting

Registration date
19/03/2026

Overall study status
Ongoing

Last Edited
18/03/2026

Condition category
Nutritional, Metabolic, Endocrine

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

Plain English summary of protocol

Background and study aims
Sourdough bread is often perceived as a healthier alternative to standard white bread, but evidence is mixed and the reasons for any differences are not fully understood. This study aims to compare sourdough bread and white or yeast bread and measure how they affect blood sugar levels after a meal, as well as feelings of hunger and fullness, in adults.

Who can participate?
Adults aged 20-45 years. Participants will be eligible for one of two cohorts: (1) metabolically healthy adults or (2) adults with two or more symptoms of the metabolic syndrome (such as raised blood pressure, raised blood glucose, or body mass index (BMI) ≥30 kg/m²).

What does the study involve?
Each participant will attend two full-day (8-hour) study visits, separated by at least 7 days. On each visit, participants will consume a bread-based breakfast test meal (either sourdough bread or white/yeast bread, with the order assigned at random). Blood sugar will be monitored using a small wearable glucose sensor. Participants will also complete short questionnaires about appetite (hunger/fullness) during the visit. Standardised refreshments or meals may be provided as part of the visit schedule.

What are the possible benefits and risks of participating?
Participants may learn how their blood sugar responds to different bread products, but there may be no direct health benefit. Risks are minimal and may include mild skin irritation or discomfort from wearing the glucose sensor and typical minor inconvenience associated with attending two long study visits and following the study instructions (e.g., fasting before visits).

Where is the study run from?
University College Dublin (UCD) (Ireland)

When is the study starting and how long is it expected to run for?
March 2026 to September 2026

Who is funding the study?
This study is supported through the Enterprise Ireland Innovation Partnership Programme, in collaboration with Aryzta Bakeries Ireland, with UCD as the lead academic partner and Teagasc as a partner institution.

Who is the main contact?
Dr Emma Feeney, emma.feeney@ucd.ie

Contact information

Type(s)
Principal investigator, Public, Scientific

Contact name
Dr Emma Feeney

Contact details
School of Agriculture and Food Science, University College Dublin, Belfield
Dublin
Ireland
D04 V1W8
+353 (0)17162247
emma.feeney@ucd.ie

Additional identifiers

Study information

Scientific Title
The acute glycaemic, digestive and appetite response to sourdough bread versus white bread: a randomised crossover trial

Study objectives

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 10/02/2026, UCD Human Research Ethics Committee - Sciences (UCD Office of Research Ethics, UCD Research Building, University College Dublin, Belfield, Dublin, D04 V1W8, Ireland; +353 (0) 1 716 7777; research.ethics@ucd.ie), ref: LS-25-70-Feeney-2

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Open (masking not used)

Control
Active

Assignment
Crossover

Purpose
Prevention

Study type(s)

Health condition(s) or problem(s) studied
Postprandial glycaemic response and metabolic health in adults with and without increased metabolic risk

Interventions
This is a randomised, controlled, crossover study comparing two bread interventions: sourdough bread (intervention) and white/yeast bread (control). Participants will be randomised to the order in which they receive each bread type using a randomised crossover design.

Each participant will attend two full-day study visits (approximately 8 hours each) at the UCD Institute of Food and Health, separated by a washout period of at least 7 days. On each visit, participants will consume a standardised bread-based breakfast test meal containing either sourdough bread or white/yeast bread, as assigned by randomisation. The quantity of bread provided will be standardised across both visits. A standardised lunch will also be provided during each visit. Blood glucose will be monitored continuously throughout each visit using a wearable continuous glucose monitor (CGM). Appetite and satiety will be assessed at regular intervals using a Visual Analogue Scale (VAS) questionnaire measuring hunger, fullness, thirst, desire to eat, and prospective food consumption. Participants will be required to fast prior to each visit in accordance with study instructions.

Intervention Type
Behavioural

Primary outcome(s)
1. Postprandial glycaemic response measured using continuous glucose monitor (CGM) at continuously throughout each 8-hour study visit, following consumption of the bread-based breakfast test meal

Key secondary outcome(s))

Completion date
30/09/2026

Eligibility

Key inclusion criteria

1. Adults aged 20–45 years
2. Eligible for one of two cohorts:
2.1. Metabolically healthy adults, or
2.2. Adults with body mass index ≥30 kg/m² (metabolic health risk cohort)
3. Willing and able to attend two full-day (8-hour) study visits separated by ≥7 days
4. Willing to consume the provided bread test meals and to wear a glucose sensor for blood glucose monitoring
5. Able to provide written informed consent

Healthy volunteers allowed
Yes

Age group
Adult

Lower age limit
20 years

Upper age limit
45 years

Sex
All

Total final enrolment
0

Key exclusion criteria
1. Diagnosed diabetes or other clinically significant metabolic disease
2. Use of medication known to affect glucose metabolism (e.g., glucose-lowering drugs, systemic corticosteroids)
3. Coeliac disease or wheat/gluten allergy/intolerance, or other food allergy relevant to the test breads
4. Gastrointestinal disease or major gastrointestinal surgery (excluding uncomplicated appendectomy)
5. Pregnancy or breastfeeding
6. Current smoker or high alcohol intake (as defined by the study team)
7. Acute illness at the time of study visits
8. Any condition that, in the investigator’s opinion, makes participation unsafe or affects study outcomes

Date of first enrolment
15/03/2026

Date of final enrolment
31/07/2026

Locations

Countries of recruitment

Ireland

Sponsor information

Organisation
University College Dublin

ROR
https://ror.org/05m7pjf47

Funder(s)

Funder type

Funder Name
Enterprise Ireland

Alternative Name(s)
The Enterprise Ireland

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
Ireland

Funder Name
Aryzta Bakeries Ireland

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available