

YOGUTIDE BREAKFAST GLUCOSE STUDY — APPENDIX & METHODOLOGY

The raw data, methods, and limitations behind reports v1–v5 and the transparency one-pager (v9).

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1. STUDY DESIGN

This is a single-site, self-conducted pilot. Two healthy adult participants wore continuous glucose monitors (CGM) for ten days and recorded their morning glucose. Each of five breakfasts was consumed twice — once without Yogutide (day 1) and once with it (day 2), on consecutive mornings. Each pair used the identical breakfast menu.

Participants: two healthy adults not taking medication — Eva (female) and Rahmad (male), both with a BMI in the healthy weight range (below 25).

Intervention dose: on each Yogutide day, one 330 ml can of Yogutide (natural flavor with a hint of yuzu) was consumed 10–20 minutes before breakfast.

The pre-registered analysis window is 06:00–12:00 (six hours from the start of the morning, covering the full breakfast response). The primary comparison is paired: for each participant, each Yogutide day is compared with its own no-Yogutide control day, which controls for the different breakfast menus between pairs.

2. DATA SOURCES

Raw CGM export files: `EvaSmorodina_glucose_5-8-2026.csv` and `RahmadAkbar_glucose_5-8-2026.csv` (both in `dataset/`). Readings are recorded every ~5 minutes; only glucose values of type 0/1 (Historic and Scan Glucose, columns 5–6) are used. Where a Scan reading coincides with an automatic Historic reading at the same timestamp, only the Historic reading is retained, so each minute enters the analysis once.

Schedule: `Schedule and menu.xlsx`. Days and menus are listed in the tables below. Pairing is consecutive-day: 2026-07-27↔2026-07-28, 2026-07-29↔2026-07-30, 2026-07-31↔2026-08-01, 2026-08-02↔2026-08-03, 2026-08-04↔2026-08-05.

3. METHODS & METRIC DEFINITIONS

Peak-aligned analysis. For each participant-morning, the maximum glucose reading in the window is located. All readings are then expressed as minutes relative to that peak (window -120 to +180 min, 5-minute grid, linear interpolation). Averaging across mornings therefore aligns the peaks rather than the clock times.

Metrics (all computed from aligned series):

- peak — the maximum morning glucose (mmol/L).
- t_{peak} (tpk) — clock time of the peak (HH:MM).
- pre — mean glucose in -60...0 min relative to the peak.
- post — mean glucose in 0...+60 min relative to the peak.
- wmean — mean glucose in -60...+90 min relative to the peak (a rounded morning average).

Aggregation. A condition mean is the simple mean across that condition's mornings. The headline difference is the mean of the five within-pair differences (Yogutide minus control), averaged across both participants, so every pair counts equally regardless of menu.

4. PER-DAY DATA — MORNING WINDOW (06:00–12:00, RAW READINGS)

Mean, peak, and range of the raw morning readings per participant and day. t_peak is the clock time of the day's highest morning reading.

DATE	MENU	YOGUTIDE	EVA MEAN	EVA PEAK	EVA RANGE	RAHMAD MEAN	RAHMAD PEAK	RAHMAD RANGE
27 Jul	Bublik + oat milk	No	5.55	9.60	5.80	4.63	6.60	3.70
28 Jul	Bublik + oat milk	Yes	5.10	6.90	3.10	5.98	8.50	5.50
29 Jul	Choco bun + apricot jam + oat milk	No	4.21	7.00	4.00	5.35	8.80	4.40
30 Jul	Choco bun + apricot jam + oat milk	Yes	4.37	5.70	2.80	4.64	6.10	2.80
31 Jul	Granola + soy milk + dromekage + watermelon	No	4.39	5.60	1.90	4.95	6.70	2.60
01 Aug	Granola + soy milk + dromekage + watermelon	Yes	4.37	5.10	1.70	4.75	6.30	3.20
02 Aug	Mochi (7 pcs) + nectarine + pineapple juice	No	5.45	9.10	4.90	5.16	8.80	5.50
03 Aug	Mochi (7 pcs) + nectarine + pineapple juice	Yes	5.11	6.00	2.70	4.72	7.50	4.40
04 Aug	Kimchi-cheddar sandwich + drumstick + plum + Oreo x2 + biscuit	No	4.15	4.90	1.30	4.30	6.20	3.10
05 Aug	Kimchi-cheddar sandwich + drumstick + plum + Oreo x2 + biscuit	Yes	4.41	5.00	0.80	4.76	5.90	2.20

Aggregate (plain window): Eva mean 4.75 → 4.67 mmol/L, peak 7.24 → 5.74; Rahmad mean 4.88 → 4.97, peak 7.42 → 6.86. The peak falls with Yogutide while the mean stays flat — the effect is on the sharp rise, not the baseline.

5. PER-PAIR DATA — PEAK-ALIGNED METRICS

Each row is one consecutive-day pair; the value shown is the Yogutide-day value minus its control day. Δ peak and Δ post are in mmol/L, Δ t_peak in minutes.

PAIR	MENU	EVA Δ PEAK	EVA Δ T_PEAK	EVA Δ POST	RAHMAD Δ PEAK	RAHMAD Δ T_PEAK	RAHMAD Δ POST
27/28 Jul	Bublik + oat milk	-2.70	+202	+1.16	+1.90	+12	+1.74
29/30 Jul	Choco bun + apricot jam + oat milk	-1.30	-94	-0.92	-2.70	+15	-0.84
31 Jul/1 Aug	Granola + soy milk + dromekage + watermelon	-0.50	-225	-1.09	-0.40	+27	-0.17
2/3 Aug	Mochi (7 pcs) + nectarine + pineapple juice	-3.10	+145	-0.52	-1.30	+15	-1.00
4/5 Aug	Kimchi-cheddar sandwich + drumstick + plum + Oreo x2 + biscuit	+0.10	+75	-0.08	-0.30	+20	+0.37

Mean of the five pairs, then averaged across participants: Δ peak -1.03 mmol/L, Δ t_peak 19 min, Δ post -0.13 mmol/L.

6. CONFOUNDS & LIMITATIONS

Noted events (from participant logs):

- Rahmad, 28 Jul — a five-hour train journey began mid-morning; a higher peak on that day (the only paired day without a reduction) is plausibly travel-related.
- Eva, 27 Jul — sparse morning readings (first -07:43), so that morning's aligned series rests on fewer points.
- Activity logs: Eva was sedentary for two hours after breakfast on every study morning; Rahmad followed the same routine except for a five-hour train journey on 28 Jul and working days on 4–5 Aug. Post-breakfast activity therefore differed across pairs and could contribute to between-pair variation.

Limitations:

- Small sample — 2 participants, 5 paired mornings each. This is a pilot, not a clinical trial.

- No blinding, no randomisation, no independent laboratory measurements.
- Both participants were aware of the intervention and the study's hypothesis.
- Single site, single CGM device family; results may not generalise.
- The peak-aligned window assumes the breakfast is the main driver of the morning peak, which is reasonable for these menus but not controlled for diet outside the pair.

Every number in this appendix is computed from the raw CSV files by the shared module `study_core.py`, which also backs reports v1–v5, the transparency one-pager (v9), and the source-of-truth document (v8). Any report can be regenerated from the same code and data.

Results are from a small, self-conducted 2-participant, 10-day pilot study, not a clinical trial. Yogutide is a food product, not a medicine, and is not intended to diagnose, treat, cure, or prevent any disease. Individual results may vary.