siftlink

INNOVATION SPRINT

TECHNICAL CASE STUDY

DESIGNED FOR VEGAN NUTRITION

Wheat bran. Reimagined.

AI-designed fermentation for vitamin B12 enrichment and lower phytic acid.

From an ingredient challenge to an AI-designed protocol validated in the laboratory.



86.44

µg B12 / 100 mL

Selected fermentation sample

Wet basis; context on p. 3

34.8%

lower phytic acid

vs standard-medium reference

Descriptive comparison; context on p. 3

From a nutritional brief to a testable protocol.

The brief: produce vitamin B12 and reduce phytate in wheat bran, with iron availability as the longer-term nutritional objective.

01

Siftlink's AI fermentation process design model

Candidate biology, nutrient requirements and a staged fermentation architecture translated into a starting protocol.

SIFTLINK

→

02

Test and refine

HAFL tested our predicted protocol alongside variants with different settings and parameters. Our protocol performed best.

BFH-HAFL

→

03

Measure outcomes

BFH-HAFL measured vitamin B12; ETH Zurich measured phytic acid to evaluate the protocol and guide next steps.

BFH-HAFL / ETH ZURICH

PROTOCOL DESIGN

Two nutritional objectives

AI-DESIGNED PROTOCOL

Vitamin B12 enrichment

Lower phytic acid

Protocol performance and study context on p. 3.

A COLLABORATION CONNECTING DESIGN, DEVELOPMENT AND ANALYSIS

SNH

Project scientific partner

FH BFH-HAFL

Fermentation experiments and vitamin B12 measurement

ETH zürich

Phytic acid measurements

Laboratory validation.

The generated protocol led to 86.44 µg vitamin B12/100 mL and 34.8% less phytic acid than the standard-medium reference. [1-3]

B12 / NUTRITIONAL CONTEXT

21.6×

EFSA adult Adequate Intake

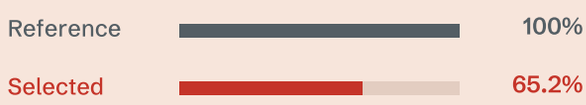
in 100 mL of laboratory sample

86.44 µg ÷ 4 µg/day (EFSA) [1,9]

PHYTIC ACID / REFERENCE COMPARISON

34.8%

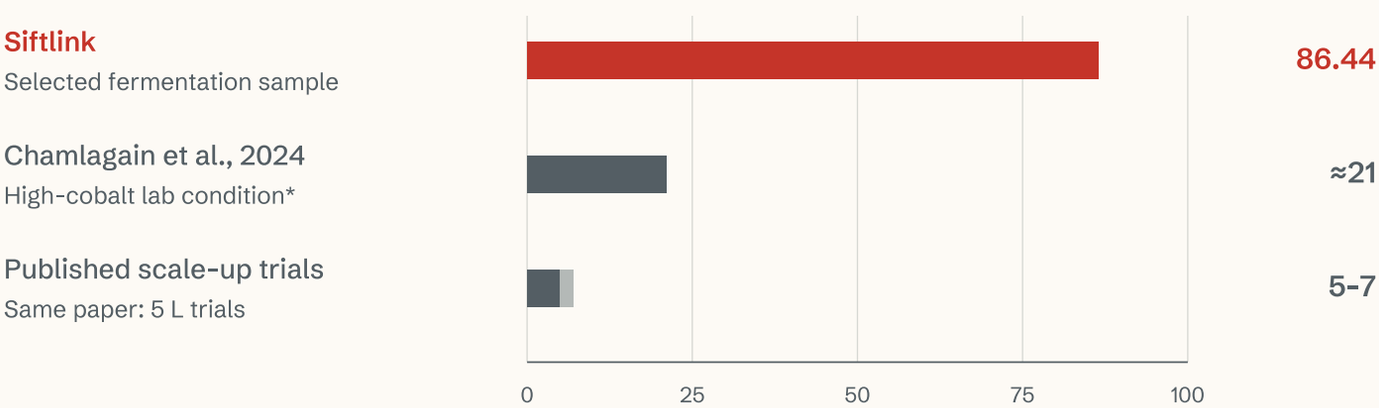
lower than supplied reference



B12 comparison is measured content, not absorbed dose or a recommended serving.

B12 CONCENTRATION / SELECTED PUBLISHED CONDITIONS

µg / 100 mL of wet fermentation material



*≈21 estimated from Fig. 4; 5-7 reported for scale-up. Same volumetric unit, but different substrates, supplementation, processes and assays. This is a comparison of reported concentrations, not a controlled head-to-head result. [8]

Study basis: B12 86.44 ± 0.57 µg/100 mL by immunoaffinity/HPLC. Phytic acid: VIS assay, n = 3 analytical replicates. The 34.8% compares 0.859 with 1.318 mg/mL; it is not paired before/after data. A process-control deviation was recorded. Batch reproducibility, ingredient suitability and processing retention require validation. Iron bioavailability has not been measured. [1-3]

[1] Bonhôte, BFH-HAFL FNH-7, 7 Feb 2025, Table 6. [2] HAFL results, 18 Dec 2024. [3] C. Zeder, ETH Zurich, phytic acid analysis, 11 Feb 2025.

[8] Chamlagain et al. LWT 192 (2024), 115731. Fig. 4 and Conclusions.

[9] EFSA (2015), vitamin B12 reference values: adult adequate intake 4 µg/day.

A route into premium vegan nutrition.

A fermentation-derived B12 ingredient could help millers and food brands pursue premium vegan cereals, granolas and nutrition-led foods.

GERMANY / 2025

€1.71bn

Plant-based retail sales

Across six tracked categories.
GFI Europe / Circana. [4]

EUROPE / 2025

9.2bn

Fortified cereal servings

Sold by CEEREAL members.
60.1% of their cereals were fortified. [5]

Market context: these figures cover broader plant-based categories and cereal fortification of all types. They do not size the B12-fortified vegan segment.

B12 FORTIFICATION IS ALREADY ON SHELF

Vegan retail examples • UK	Declared vitamin B12
ASDA Free From Corn Flakes [6]	0.75 µg / 30 g
Alpro Soya Original [7]	0.38 µg / 100 mL

Products labelled suitable for vegans; cereal value excludes added milk. These label examples establish existing use of B12 fortification, not performance benchmarks for the study material.

Co-develop a B12-enriched cereal ingredient.

Discuss a joint development project.

Technical discussion under NDA

EP priority filed

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[4] GFI Europe / Circana [5] CEEREAL [6] ASDA [7] Alpro UK

Sources accessed 6 Nov 2026. Premium positioning is an opportunity to validate.