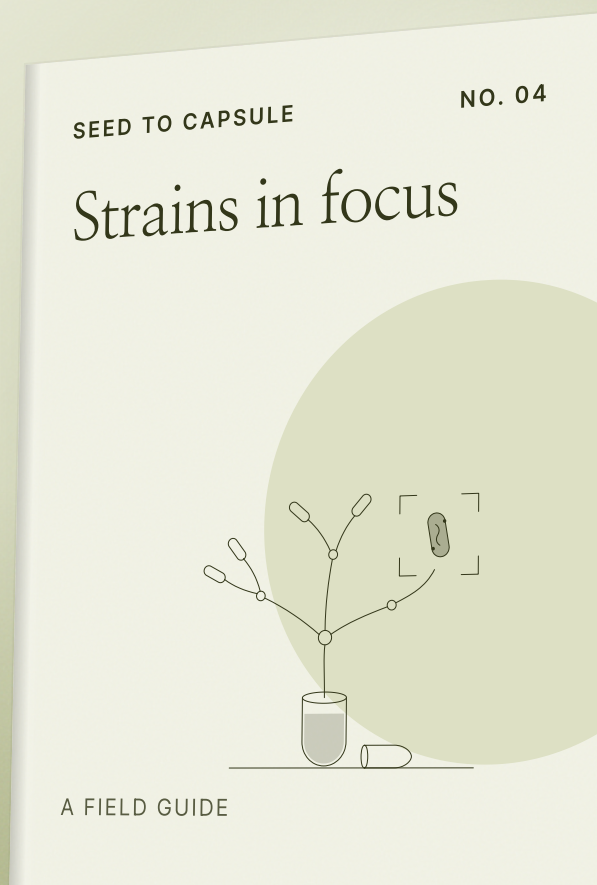




SOURCING GUIDE · EXTRACTION

# Probiotic labels, decoded strain by strain

This guide is for careful buyers who read Supplement Facts and want proof behind the strain names. After reading it you will be able to compare strain tables, viable counts and formats, and ask sharper questions about testing and storage.

- **Strain codes**  
Genus plus species plus strain links a bottle to trial evidence.
- **Viable counts**  
CFU through expiry matters more than billions at manufacture.
- **Format choices**  
Capsules, powders and liquids face different survival pressures.

By Dana Kessler · Updated Sep 23, 2026 · 10 min read

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You can hold two probiotic bottles with the same front label claims and find two different products inside. One lists full strain codes and a viable count through expiry with storage directions. The other lists only species and a count at manufacture. By the end of this guide you will know how to read that difference, compare delivery formats, and decide when a fermented food fits better.

01

Read the strain table like a researcher

A probiotic name has three parts: genus, species and strain. *Lactobacillus rhamnosus* GG is the textbook example, where GG is the strain. Species alone tells you the family. The strain code ties a product to the specific culture used in laboratory testing and in trials indexed on PubMed and reviewed by Examine.

Taxonomy has shifted, which makes older and newer labels look different for the same organism. New taxonomy may list *Lacticaseibacillus rhamnosus* instead of *Lactobacillus rhamnosus*, and *Lactiplantibacillus plantarum* instead of *Lactobacillus plantarum*. *Bifidobacterium lactis* is also labeled as *Bifidobacterium animalis* subsp. *lactis*, with strain examples HN019 and BI-04 or BI-04. *Bifidobacterium infantis* may be listed as *B. longum* subsp. *infantis* with strain example 35624. Other codes to learn to spot include 299v, BB536 and NCFM, each attached to a defined strain history.

The reason this matters is practical. FAO and WHO labeling guidance from 2002 asks for genus, species and strain for each strain, plus minimum viable numbers of each strain at end of shelf life in CFU, serving size, storage conditions and contact details. In Washington DC surveys, 45 percent of supplement products lacked strain designations and 45 percent lacked end of shelf life potency, and only 35 percent could be linked to evidence by strain and dose. Without the third part of the name and a through expiry count, label reading alone cannot connect a bottle to a study.

#### FROM THE EDITORS

Think of genus and species as surname and given name, and strain as the individual. Two products can share the first two parts and contain different strains with different documentation.

## 02

### Understand CFU without chasing billions

CFU stands for Colony-Forming Unit and refers to live and active microorganisms per serving measured by laboratory testing. It is a count of viable organisms, not weight. Milligrams alone do not show dose, because the same weight of powder can hold very different numbers of living cells depending on the strain, the fermentation and drying method, and how the lot was handled after encapsulation.

Timing matters as much as the number. A count at manufacture describes what went into the bottle. Stored as directed, the count through expiry or end of shelf life describes what should remain. Industry guidance says probiotics are often made with overages to meet the claimed count at end of shelf life when stored as directed. That extra fill at the start compensates for expected loss during distribution and home storage.

Most clinical studies with probiotics use 1 to 20 billion CFU, and different amounts are effective for different health outcomes. A 2012 meta-analysis in PLoS ONE of randomized controlled trials across eight gastrointestinal diseases reported a pooled relative risk of 0.58 with 95 percent CI 0.51 to 0.65 favoring probiotics. The same analysis found significant effects for six conditions including pouchitis, infectious diarrhea, irritable bowel syndrome, *H. pylori*, *C. difficile* disease and antibiotic associated diarrhea, but not for traveler diarrhea or necrotizing enterocolitis. That pattern is a reminder that effects are strain and dose specific, and higher CFU is not automatically better. Match the studied strain and dose and keep a steady routine, rather than assuming more billions equal more value.

What the evidence does not show is which exact strain and CFU dose fits a specific person or health goal, since effects are strain and dose specific and often need clinician input. It also does not show whether a given bottle still holds the labeled viable count on the day it is used, unless the label guarantees CFU through expiry and storage was followed.

# Compare survival and choose a format

Once swallowed, a probiotic meets acid, bile, heat, moisture and time. Delayed release or enteric capsules, microencapsulation and spore forming Bacillus strains are described as ways to help survival past stomach acid and bile. Survival of some strains may be only 10 to 20 percent through stomach acid, with up to 96 percent loss in some cellulose coated capsules on acid contact. Format matters for stomach acid survival, with acid adapted liquids and protected capsules each used to help cultures survive. Format alone does not guarantee survival to the colon.

## Capsules and shelf stable powders

Capsules protect against oxygen and handling and allow delayed release coatings. Probiotic powders contain freeze dried bacteria that typically lack a protective capsule coating, increasing vulnerability to heat and moisture in storage. Controlled manufacturing for powders is described as below 25 C and below 30 percent relative humidity, with water activity at 0.2 or lower to extend viability. Fermented powders in stick packs and drink mixes follow the same rule: the drier and cooler the environment, the longer viability holds.

## Refrigerated liquids and fermented foods

Lacto-fermentation creates lactic acid and keeps vitamins, minerals, enzymes and amino acids without heating, according to a liquid probiotic source. Refrigerated liquids and foods start hydrated, so pH, oxygen and temperature control viability in a different way than in a dry powder. Refrigeration at retail is suggested for highly unstable strains, including most of the Bifidobacterium genus. Some fermented foods marketed as probiotic have undefined microbial content and lack studies on health effects, and may instead be labeled as containing live, active cultures. That phrase signals live microbes without naming defined strains at defined doses.

| FORMAT                              | WHAT IT IS                                                       | VIABILITY PRESSURE                                 | WHAT TO LOOK FOR ON THE LABEL                                                 |
|-------------------------------------|------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------|
| Capsule, delayed release or enteric | Freeze dried strains in a coated capsule                         | Acid and bile transit, then moisture after opening | Full strain codes, CFU through expiry, storage range, lot number              |
| Dry powder or stick pack            | Freeze dried strains or fermented powder without capsule coating | Heat, moisture, oxygen, water activity             | Water activity target or dry storage note, CFU through expiry, sealed sachets |
| Refrigerated liquid                 | Acid adapted cultures or fermented liquid kept cold              | pH, oxygen, temperature breaks                     | Keep refrigerated range, viable count with date, strain list if probiotic     |

A study of probiotic instant coffee with *Lactiplantibacillus plantarum* subsp. *plantarum* Dad-13 kept viability above 10 to the 7 log CFU per g during storage across tested packaging and temperatures. The same coffee study estimated about two years shelf life in vacuum aluminium foil at 4 C and about 3 months at 30 C using cell viability as the critical parameter. Packaging and temperature set the clock. The consensus definition describes probiotics as live microorganisms that, when administered in adequate amounts, confer a health benefit on the host. Adequate amounts points back to strain, count and survival, not to format marketing.

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## 04

### Store for viability and check third party testing

USP packaging definitions list refrigerator as 2 to 8 C, cool as 8 to 15 C, controlled room temperature as 20 to 25 C, warm as 30 to 40 C and dry place as not more than 40 percent average humidity at 20 C. Use those numbers to translate a label. Room temperature on a warehouse pallet in summer is not the same as controlled room temperature in a stability file. A dry place means humidity control, which matters for powders without a capsule coating.

After opening, practice counts. Reseal promptly, keep desiccant if included, avoid the bathroom cabinet and the shelf above the stove, and return refrigerated products to 2 to 8 C after each use. Probiotic powders without a capsule coating are described as more vulnerable to heat and moisture, which makes storage claims more dependent on packaging and handling. Vacuum foil and glass or metal packaging limit oxygen and moisture better than thin plastic tubs or paper sachets. If a brand names a stability program, ask what it would take to show the data by lot through expiry.

Third party checks confirm identity and viability through shelf life. Strain verification uses DNA methods including species and strain specific PCR, high throughput sequencing and digital PCR for detection and enumeration. Third party certification typically includes GMP audit, document review, stability substantiation, finished product testing and verification of the certificate of analysis. Reported quality problems include products not meeting claimed counts, incorrect strain identification and contamination such as *Rhizopus oryzae* linked to an infant death. That history is why lot numbers and certificates of analysis matter. Red flags include blend only labels with a total CFU but no per strain counts, no strain codes, a count only at manufacture, no storage range, and no contact or lot traceability. As Dirk Gevers, Ph.D., Chief Scientific Officer, said: We use tools like SHIME to help validate our probiotic survivability through the intestinal tract which is essential for efficacy.

#### FROM THE EDITORS

A certificate of analysis is a lot specific test record. A seal without a lot number and a date range tells you less than a certificate that names genus, species, strain, CFU method and storage conditions.

## 05

### Decide food first or a defined supplement

Fermentation changes raw material in general ways, by producing lactic acid and forming other metabolites, with general nutrient access and postbiotic formation but not complete composition for every product. How fermentation changes each specific raw material remains incompletely documented. How well multi strain powders keep their original strain ratios through shelf life is also uncertain, since robust methods to count viable individual strains in mixtures are limited.

That is where the food first question helps. Fermented foods with live cultures offer variety and kitchen tradition but often have undefined microbial content. A defined supplement names each strain, states minimum viable numbers at end of shelf life, and points to storage and contact details. When strain and dose link to evidence, the supplement format is easier to compare. When they do not, a food with live, active cultures may fit better for daily use, with a supplement reserved for a defined, time limited routine discussed with a clinician.

Questions to ask before buying include the full strain list with codes, CFU per strain through expiry, the storage range that supports that date, whether the count was tested by a third party lab, and how to get the certificate for your lot. Track a steady routine for 2 to 4 weeks with storage as directed, note lot number and expiry, and keep packaging until the routine ends. If symptoms or medications are involved, point those notes to a professional rather than adjusting dose by CFU alone.

# The checklist

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- ☐ Copy the full three part name for each strain including the code
  - ☐ Translate legacy names to new taxonomy before comparing
  - ☐ Look for CFU per strain through expiry, not only at manufacture
  - ☐ Check that dose falls near the studied 1 to 20 billion CFU range
  - ☐ Note storage as refrigerator 2 to 8 C, cool, room temp or dry place
  - ☐ Choose capsules for protection, powders for flexibility, liquids for cold chain
  - ☐ Favor vacuum foil, glass or metal packs for moisture control
  - ☐ After opening, reseal fast and return cold products to the fridge
  - ☐ Ask for lot number and certificate of analysis with DNA identity
  - ☐ Avoid blend only labels with no per strain counts or codes
  - ☐ Decide food with live cultures versus defined strain supplement
  - ☐ Track lot, dose and storage daily for 2 to 4 weeks
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## Sources and further reading

- Probiotic Strains Guide: Strain IDs, Families, Delivery & How to Choose · [mtangelvitamins.com](https://mtangelvitamins.com)
- Study of Viability, Storage Stability, and Shelf Life of Probiotic Instant Coffee Lactiplantibacillus plantarum Subsp. plantarum Dad-13 in V · [pmc.ncbi.nlm.nih.gov](https://pmc.ncbi.nlm.nih.gov)
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- Probiotic Supplements: Refrigerate or Not? · [ipa-biotics.org](https://ipa-biotics.org)

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Dana runs the news desk and the sourcing guides at Seed to Capsule. She files every certificate of analysis a brand sends her by lot number, and keeps a second list of the ones that never arrived.

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