



VITAMINS / SUPPLEMENTS

Are Probiotics Doing More Harm Than Good?

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Editor's Note: The [first article](#) in this short series by Dr. Swann appeared in the August 2016 issue.

Considerable controversy exists concerning the efficacy of probiotic supplements. Very few human studies show any real positive impact on the microbiome or health.¹ The "promise" of probiotics is based on the few animal studies that suggest a positive effect. Probiotic supplement manufacturers have leveraged the results of these studies to insinuate their products will provide similar benefits. That's the promise.

The reality, however, is quite different. Research studies are performed in controlled environments that are often not representative of the "real world." Examining the hard facts (which I'll outline in a minute) leads to the conclusion that the vast majority of probiotics sold in stores at best, do little or nothing for your health; and at worst, might in fact be damaging the lining of the colon,² leading to dysfunction and disease - *unless* you are concurrently ingesting an adequate amount of *prebiotic* soluble fiber. Let me explain...



For probiotic bacteria to help you, they must arrive in your colon alive, where they can grow and multiply, secreting substances and influencing regulatory systems that improve your health. Unfortunately, there are many reasons to believe ingested probiotic bacteria seldom, if ever, arrive in your colon intact.

Challenge #1: Manufacture and Transportation Issues

At the manufacturing plant, probiotic bacteria begin their trip to your colon alive. They are then placed in capsules, tablets, food and drinks, and transported to places where you can buy them. To arrive alive, they must be alive during the entire process of manufacture and transportation, all the way to your mouth. If they dry out or get too hot, they can easily die. Live, fermenting bacteria are also metabolically active. They must have a continuously available food supply.

Let's look at different categories of probiotics through this "survival" lens:

1. *Unrefrigerated probiotic capsules*: These are dry "powders" of probiotic bacteria. They have no water and no bacterial food supply, two factors all bacteria need. They are also subjected to variations in temperature and humidity. Further evidence for their questionable viability is evident from examining their metabolism. If they were alive and metabolically active, they would produce gases such as CO₂, methane and hydrogen (a natural part of their [fermenting metabolism](#).)³ If hydrogen gas were being produced, the capsules, bottles or other containers would burst on the shelves.
2. *Refrigerated probiotics*: Refrigeration slows bacterial growth and metabolism.⁴ Refrigerated probiotics, therefore, solve the problem of "exploding probiotic containers."
3. *Capsules / dry probiotics*: As noted previously, these dry preparations lack both water and bacterial food, so it's not hard to imagine many of those bacteria might perish before they get to you.
4. *"Wet" probiotics* (in liquid form or in wet foods such as yogurt): Assuming these have been refrigerated from the time of manufacture all the way through the transportation system

until they arrive at your mouth (not necessarily a reliable assumption), they could have both the temperature and humidity control, water, and bacterial food needed for the probiotics to survive transport. However, they would shortly run out of food or be poisoned by their own metabolic byproducts (e.g., pH).

Even manufacturers of probiotics note the vast majority of the bacteria perish before consumption. One of the best-selling probiotic supplements contains the following statement on its FDA-required "Supplement Facts," [right on the package](#): "*Probiotic strain: Bifantis (Bifidobacterium infantis 35624), contains 1 x 10⁹ (one billion) live bacteria/CFU when manufactured, and provides an effective level of bacteria (1 x 10⁷ CFU) until at least the 'best by' date.*"⁵ Translated into English, that means the manufacturer acknowledges that 99 percent of the bacteria are already dead by the time you ingest them.

Challenge #2: Your Gastrointestinal System

There are other serious hurdles to get past in order for the probiotics to arrive alive at your colon. Probiotics must survive their encounter with your stomach and small intestines. Let's take a closer look at those areas.

The stomach produces hydrochloric acid with a pH of 1.5 to 3.5. Besides helping with food digestion, stomach acid is an efficient barrier to bacteria since most bacteria (including most probiotic bacteria) perish at low pH. As such, stomach acid is nature's way of keeping bacteria in our food from getting into the body.⁶⁻⁷

The small intestines: For the sake of this analysis, let's assume some bacteria make it through the hydrochloric acid. As they exit the stomach, these bacteria immediately enter the small intestines, where pH soars and powerful digestive enzymes are produced.⁸ The quick change in pH is deadly to most bacteria, as are the digestive enzymes designed to digest the organic matter that comes by.

A Stacked Deck?

In summary, after manufacture, transportation, shelf storage and their encounter with stomach acid, pH swings and digestive enzymes, it is highly unlikely a significant number of the probiotics you ingest are still alive. And if they're dead when they reach the colon, those probiotics won't help your health.

These conclusions are supported by current research. Scientists at the University of Copenhagen recently performed a systematic review of the best randomized, controlled trials investigating the effect of probiotic products on healthy adults, published in the open-access journal *Genome Medicine*. (A systematic review pulls together the best studies on a subject and examines them together, ensuring the highest level of evidence.) They concluded there is little evidence to support any consistent effect of probiotics on the gut microbiota of healthy individuals.⁹

Even if some of the probiotic bacteria you ingest make it into the colon alive, their first hurdle is the trillions of bacteria that are already there, adapted to the environment, just waiting to out-compete the newcomers.

When existing bacteria "out-compete," it's not just for food. In fact, the existing bacteria produce natural antibiotics intended to kill off not only pathogens, but also "newcomer probiotics" as a way to protect their niche in the gut ecosystem.¹⁰ The deck is stacked against "bacterial immigrants."

Where Prebiotics Come In

More importantly, if those surviving bacteria are not fed the *prebiotic* soluble fiber they need to survive (and modern diets have very little prebiotic soluble fiber), they feed on the mucus lining the colon,¹¹⁻¹² which is the primary protective barrier between all the bacteria in the colon and the inside of your body. They are also unable to produce the short-chain fatty acids that nourish the colonic epithelium and attenuate inflammation through a variety of mechanisms.¹³

As the mucus layer is degraded, bad bacteria and their metabolic products breach the colon wall (this is where the term *leaky gut* comes from), creating severe inflammation¹⁴ that is linked to many "diseases" of Western society,¹⁵ including heart disease, diabetes, Alzheimer's, arthritis, fibromyalgia, asthma, allergies, psoriasis and eczema, to name a few.

So, if you take probiotics, despite the logic and evidence presented above that they don't work as advertised, you really need to add prebiotic soluble fiber into your diet to make sure they have the food needed to survive and thrive, and keep them from damaging the lining of your colon. We all have probiotics that already live in our digestive system, so prebiotic soluble fiber is important whether or not you take probiotic supplements or eat foods containing probiotics.

Before modern methods of food preservation, our ancestors ate a diet high in prebiotics via fermented foods and naturally fermented sourdough bread. These foods contain maltosyl-isomaltooligosaccharides (MIMO), a type prebiotic soluble fiber. To get enough, it is important to eat several servings each day or take a small amount of a MIMO prebiotic soluble fiber supplement, which as been shown to be well-tolerated.¹⁶⁻¹⁷

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