

ONE SMALL DOSE for PREBIOTICS. ONE GIANT LEAP for GUT HEALTH.

# NEXT GENERATION PREBIOTIC SOLUTION

## What is PreforPro®?

PreforPro is a prebiotic bacteriophage cocktail that prepares the gut to ensure healthy probiotic bacteria have room to flourish. Because PreforPro is not fiber or starch-based, it requires a significantly smaller dosage than typical prebiotics, and goes to work in hours, not days.

## What are prebiotics?

Prebiotics are non-living, non-digestible ingredients that fuel the good probiotic microorganisms living inside us, helping them flourish. The FDA defines a prebiotic as “a non-digestible food ingredient that beneficially affects the host by selectively stimulating the growth and/or activity of one or a limited number of bacteria in the colon, and thus improves host health.”<sup>1</sup>

A proliferation of harmful bacteria in the gut can rob your body of the essential nutrients it needs by consuming those nutrients that your body would normally absorb. Symptoms of unbalanced bacterial flora include abdominal pain, indigestion, bloating, food sensitivities and more.<sup>2</sup> In many cases, good bacteria have a difficult time displacing the unwanted bacteria and require help; this is where prebiotics come into play.<sup>3</sup>



### Small dose

Is efficacious in a small dose of 15mg/day



### Fast-working

Starts working in hours, not days



### No gas

Doesn't cause gas or bloating



### Clinically proven

Positively influences microbial population of the gut



### What is bacteriophage?

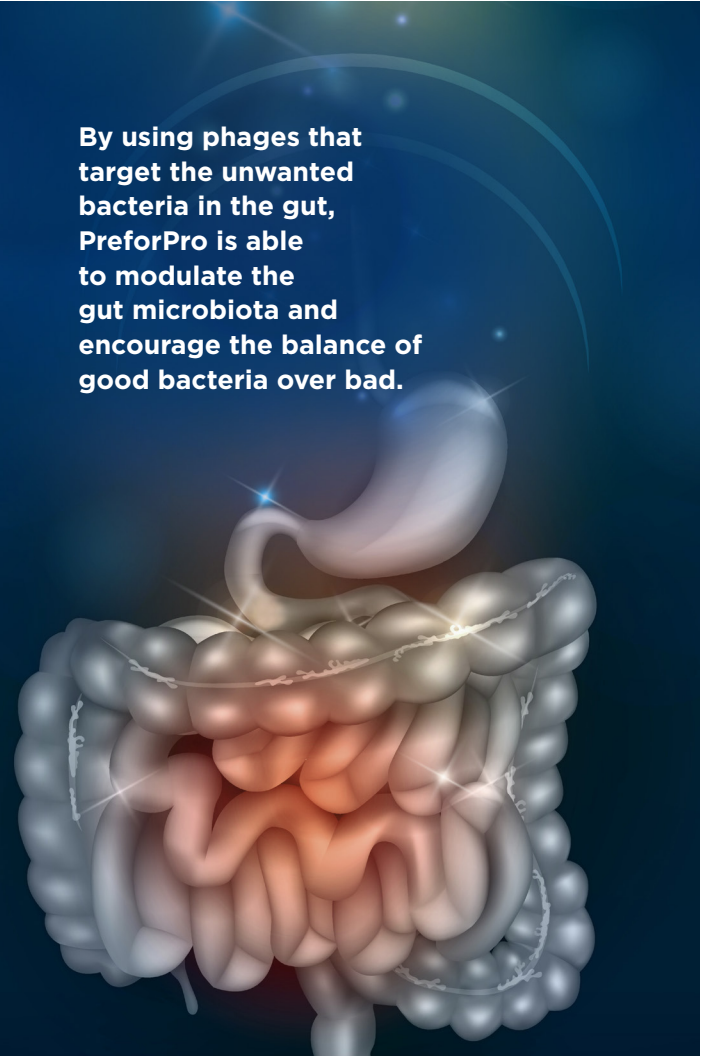
The prebiotic mechanism of action in PreforPro is a bacteriophage (phage). Phages are sub-microscopic bundles of DNA or RNA surrounded by a protein shell. Phages are abundant in the natural world, occurring in seawater, soil, humans and fermented foods. In fact, there are ten times more phages than the trillions of bacteria present in the human body. Phages exist in nature for one purpose--each to overtake a specific strain of bacteria. By using phages that target the unwanted bacteria in the gut, PreforPro is able to modulate the gut microbiota and encourage the balance of good bacteria over bad, taking full advantage of the nutrients now made available.

### How is PreforPro different from other prebiotics?

Prebiotics are often fibers or starches (e.g., oligosaccharides) that have been shown to be beneficial; however, these can have some drawbacks<sup>4</sup>, including:

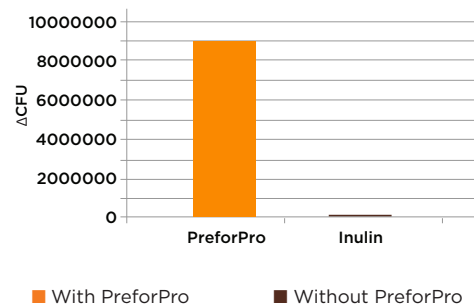
- They require large dosages to be effective
- They can cause flatulence
- They are sensitive to the nutrients present in their specific environment
- They only work in the colon

Unlike fiber or starch-based prebiotics, PreforPro does not require large doses to be effective, and does not cause gas. It functions in both the small and large intestines, and is not affected by the competing nutrients of varying gut environments. It works with a broad spectrum of probiotic species to give the digestive system an effective boost. Within hours of consumption, PreforPro goes to work on the undesirable bacteria in the gut by destabilizing the bacterial cell wall, releasing nutrients into the environment which can then be consumed by the good bacteria within the GI tract. PreforPro's innovative mechanism of action is patented for use as a prebiotic.



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*B. LONGUM*

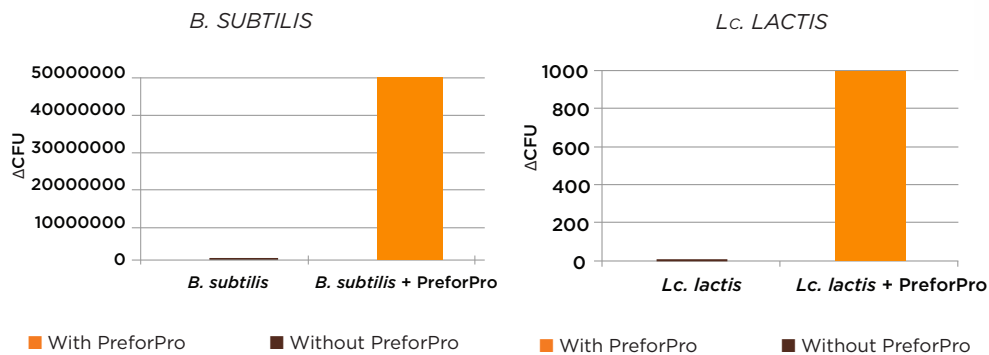


*Bifidobacteria longum* colony counts after 48 hours under physiological conditions when competing with *E. coli*, with the prebiotic inulin (5g) compared to PreforPro (15mg)



## Clinical Results: Safety and Efficacy

More than 20 studies have been performed to confirm the safety and efficacy of PreforPro. In-vitro and in-vivo tests have demonstrated the growth-promoting effect of PreforPro on a broad spectrum of beneficial bacterial strains, including *Lactococcus*, *Lactobacillus*, *Bifidobacterium* and *Bacillus subtilis* when competing with undesirable bacterial strains.



*B. subtilis* growth after 5 hours under physiological conditions, competing with *E. coli*

*Lactococcus lactis* growth after 5 hours under physiological conditions, competing with *E. coli*

### QUALITY CERTIFICATIONS

- Kosher
- Non-GMO Project Verified
- US Patent for Prebiotic Use

### PRODUCT APPLICATIONS:

- Capsules
- Tablets

### INDUSTRY APPLICATIONS:

- Digestive Health
- Immune Health

## Human Clinical Studies

In a human clinical study<sup>5</sup>, PreforPro was shown to positively influence the microbial population of the gut, without disrupting the global microbiota. Participants were administered one 15mg PreforPro capsule daily. When compared to the placebo group, results of the study indicated:

- PreforPro substantially enhanced the growth of beneficial bacteria, including *Bifidobacterium bifidum* and *Eubacterium* species (butyrate-producing bacteria)
- A significant decrease in the allergy-inducing interleukin 4 (IL-4) cytokine

In a second human clinical study<sup>6</sup> to investigate whether adding PreforPro with a probiotic would provide additional benefits to gastrointestinal function as well as augment the microbiota in the gut compared to the probiotic by itself, researchers found that participants consuming *B. lactis* plus PreforPro showed the following:

- Improvements in GI inflammation symptoms
- Reduction in colonic cramp discomfort
- Greater increase in the presence of *Lactobacillus* vs. placebo
- Decrease of strains *Citrobacter* and *Desulfovibrio*, which are associated with gut inflammation and GI disorders
- Reduction in *E. coli*

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  4. Cummings JH, Macfarlane GT, Englyst HN. Prebiotic digestion and fermentation. *Am J Clin Nutr*. 2001 Feb;73(2 Suppl):415S-420S.
  5. Febvre, H.P.; Rao, S.; Gindin, M.; Goodwin, N.D.M.; Finer, E.; Vivanco, J.S.; Lu, S.; Manter, D.K.; Wallace, T.C.; Weir, T.L. PHAGE Study: Effects of Supplemental Bacteriophage Intake on Inflammation and Gut Microbiota in Healthy Adults. *Nutrients* 2019, 11, 666.
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