What is Pylopass™?

Pylopass™ is made from a proprietary strain of *Lactobacillus reuteri* which specifically coaggregates with *Helicobacter pylori* in the stomach to reduce the bacterial load. Pylopass™ is comprised of spray-dried *Lactobacillus reuteri* cells and is stable in a wide range of applications for the end consumer market.

What is *H. pylori*?

*Helicobacter pylori* is a gram-negative, spiral shaped bacteria that colonizes in the stomach. *H. pylori* can cause gastritis and peptic ulcers, and if untreated it could lead to gastric cancer. The bacteria secretes enzymes that neutralize stomach acid, creating a fit environment for it to survive and “burrow” through the stomach lining. The damaged lining is therefore irritated by both the stomach acid and the various chemicals secreted by the bacteria itself. According to the Center for Disease Control and Prevention (CDC), it is estimated that two thirds of the world’s population is infected with *H. pylori*.

The route of transmission for *H. pylori* is oral-oral and fecal-oral, meaning that an infected person could pass the bacteria to others through sharing water or food and through poor hygiene. Children are at higher risk due to a lack of proper hygiene.

Most people with an *H. pylori* infection do not show severe symptoms of gastritis or peptic ulcers, but instead experience chronic inflammation and a compromised immune system in during the presymptomatic period. The current standard of care does not advise eradication treatment until the infected becomes symptomatic, for which the standard treatment is a combination of three antibiotics. However, this treatment method is typically associated with side-effects and could lead to antibiotic resistance.

A unique mode of action

Scientists in Germany succeeded in identifying the Pylopass™ strain of *L. reuteri* after a detailed, multi-year screening process. It was selected for its anti-*H. pylori* characteristics from a culture collection of 8,000 different food grade strains. Through a specific mechanism, Pylopass™ forms coaggregates with *H. pylori* to decrease the overall load in the stomach, thereby decreasing the risk of developing gastritis and peptic ulcer disease. The surface structures on Pylopass™ contain adhesion molecules that recognize and adhere to surface receptors on *H. pylori*. After coaggregation in the stomach has occurred, the entire coaggregate is excreted from the body through the digestive tract. Figure 1 shows the formation of a coaggregate in the presence of Pylopass™ and *H. pylori*. Pylopass™ specifically binds to *H. pylori* and does not alter the microflora of the gut.

Advantages over current *H. pylori* treatments

**Pylopass™ vs. Probiotics**

*Product stability*

Unlike probiotics, Pylopass™ consists of inactivated cells which can withstand environmental fluctuations. For shipment and storage, Pylopass™ does not require temperature controls.

*Specificity for *H. pylori***

While probiotics cater to general gut health, improves immunity to guard against the damages caused by *H. pylori*, they act on the different site away from the “ground zero” of the problem. However, Pylopass™ specifically binds *H. pylori* in the stomach and attacks the origin of the problem directly. Furthermore, Pylopass™ does not disturb the natural gut microbial balance.

*Stability in gastric conditions*

In contrast to probiotics, Pylopass™ employs a mechanism which is not dependent on binding sites or survival in the gastric environment. Probiotics can be beneficial because they may replace harmful bacteria in the gastrointestinal tract. However, it is uncertain whether such living probiotic strains can withstand the acidic environment in the stomach. This concern is not a challenge for Pylopass™ as the coaggregation depends only on the binding of surface structures between Pylopass™ and *H. pylori*.

**Pylopass™ vs. Antibiotics**

*Good tolerability*

Triple and even quadruple antibiotic therapies are non-specific and have numerous side effects such as diarrhea and taste disturbances.

Figure 1. Coaggregation of Pylopass™ to *H. pylori*
On the contrary, there are no side effects related to Pylopass™ ingestion or administration.

**No risk of antibiotic resistance**

Research shows that the number of antibiotic resistant strains of *H. pylori* is increasing globally. In Asia, an estimated 37% of cases are resistant to metronidazole and in Africa, 65% of cases are resistant to amoxicillin. Pylopass™ offers an alternative management modality that does not contribute to the problem of antibiotic resistance.

**Clinical efficacy via the UBT test**

Two human studies have shown that Pylopass™ can decrease *H. pylori* load, measured via the urea breath test. This effect continues to be seen even six months after the end of the two week supplementation period.

**Figure 2. *H. pylori* reduction after two weeks of taking Pylopass™**

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**UBT test – how it works**

The Urea Breath Test (UBT) is a non-invasive method of testing for *H. pylori* infection that has been cited as one of the most important non-invasive tests for *H. pylori* detection.

*H. pylori* produces urease (an enzyme that acts on urea) to neutralize the acidic stomach environment in order to survive. In the presence of urease, urea is converted to carbon dioxide and ammonia. Ammonia serves to neutralize the pH of the stomach.

By labeling a urea pill with an isotope, the carbon dioxide produced as a result of urease activity will also be isotope-labelled and thus detectable by a breath analyzer.

**Figure 3. UBT TEST**

**Patient ingests an isotope-labelled urea pill**

**The urea is converted to CO₂ and ammonia by the urease produced by *H. pylori***

**The labelled CO₂ travels up to the lung and detected by a breath analysis**

**Pylopass™ quality and safety**

- Self-affirmed GRAS
- Vegetarian
- Non-GMO
- Shelf-stable
- Manufactured according to HACCP guidelines
- Batch standardization of coaggregation capacity

**References**


