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## Popular article on *H. pylori*

### Title suggestion

*Helicobacter pylori* and the role of probiotics

Probiotics – the missing link in *Helicobacter pylori* treatment

Tackling the challenges of *Helicobacter pylori* treatment with probiotics

Tackling the challenges of *Helicobacter pylori* treatment with *Bifidobacterium* BB-12® and *Lactobacillus acidophilus* LA-5®

### Author

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### Bio

Mikkel Jungersen has more than 6 years of experience from the food ingredient and food supplement industry as well as medical device industry where he has held different positions within Scientific Affairs and Medical Marketing. He is currently holding a position as Scientific Advisor in Scientific Affairs at Chr. Hansen's Health & Nutrition Division where he is responsible for scientific issues for Chr. Hansen's probiotics as well as key opinion leader network, post-marketing studies and scientific marketing in general. Focus areas are the effects of probiotics on gastrointestinal health and the immune system. Mikkel Jungersen has an educational background as a biologist from University of Copenhagen in Denmark.

### Lead paragraph

*Helicobacter pylori* infection is a major cause of severe stomach trouble. It is a substantial public health problem and it is estimated that 20-50% of the adult population in industrialized countries and up to 80% in developing countries is infected with *H. pylori*. A harsh combination of antimicrobial drugs is currently the only effective treatment. However, this cure may be associated with side effects such as diarrhea and nausea, which may eventually result in discontinuation of the treatment. Consequently, an alternative treatment or a complementary remedy has been pursued with eager. Natural, good bacteria - the so called probiotics - may prove to be the solution to the challenge.

### Article

*H. pylori* bacteria are mainly located in the stomach. Infections with these pathogenic bacteria may cause stomach ulcer or chronic gastritis, an inflammation of the cell lining of the stomach. One of the first defenses in humans against intruding pathogens is the low pH of the gastric juice. To survive the environment in the stomach *H. pylori* uses its lash-like flagella to burrow into the mucus layer close to the cell lining of the stomach. Here, shielded from the acidic surroundings in the stomach, it can survive and grow, and it is able to aggregate into large communities, thus forming biofilms. As a consequence, *H. pylori* is capable of causing chronic infections. Not surprisingly, these chronic infections are detrimental not only to the state of health of the infected person, but also to the quality of life.

Correct diagnosis of infection with *H. pylori* is critical, and once a positive diagnosis is established, the next step is to select the appropriate treatment. Currently, best practice for eradication of *H. pylori* infection in humans is a combination of antimicrobials since no mono therapy has proven effective yet. A combination of two antibiotics and an acid-suppressive drug constitute the triple therapy. An eradication rate of triple therapy is estimated to around 80%. In case triple therapy fails, a quadruple therapy, which adds a bismuth colloid, may be used.

Both the triple and the quadruple therapy are harsh one week treatments that may cause side effects, such as antibiotic-associated diarrhea, constipation, bloating, nausea, vomiting and taste disturbance.

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These side effects seriously affect the daily life of the infected person and may sooner or later result in discontinuation of the treatment and consequently failure of treatment. An alternative treatment has been pursued, which could be an effective mono therapy, a vaccine, or a complementary remedy to enhance the effect of existing treatments.

Nobel Prize winner Elie Metchnikoff discovered early in the last century, that some lactic acid bacteria may have a positive effect on human health. This led to more and more research in the area, and in the 1960'ies the term 'probiotic' was used to designate these beneficial microorganisms. Today, probiotics are defined as live microorganisms, which when administered in adequate amounts, confer a health benefit on the host. Clinical trials have documented that some probiotics can be beneficial as a complement to antibiotics in the treatment of *H. pylori*.

Studies on probiotics suggest various beneficial effects, both in terms of reducing side effects of triple and quadruple therapies and by increasing compliance, but also a direct antagonistic effect on *H. pylori*. It is however important to note that different probiotics may have different effects, and that the effect is strain specific. A probiotic strain is a genetic variant or subtype of e.g. a bacteria species.

*Bifidobacterium* BB-12® is the world's most documented probiotic *Bifidobacterium* and in combination with the well-documented *Lactobacillus acidophilus* LA-5® they make up a thoroughly tested solution, backed by more than 100 scientific publications. Dating back to 1987, both BB-12® and LA-5® have been tested in clinical trials for more than 25 years and they have demonstrated beneficial effects both within immune health and gastrointestinal health.

A clinical study from 2006 tested whether prior treatment with BB-12® and LA-5® could improve the efficacy of quadruple therapy in eradication of *H. pylori* after failed triple therapy. The researchers found that study participants taking probiotics had a higher eradication rate than those who got placebo. Furthermore, probiotics reduced side effects, including diarrhea, constipation, vomiting, and metallic taste. The same beneficial effects were also seen in an earlier study from 2002. In addition, the researchers in this study also found that probiotics increased treatment compliance, and restored the intestinal flora after the antibiotic treatment.

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BB-12® and LA-5® effectively suppress *H. pylori* infection in humans and BB-12® can directly inhibit *H. pylori*. This was the conclusion from another group of researchers who tested whether BB-12® and LA-5® could inhibit growth of *H. pylori*. A test tube experiment in the laboratory and a clinical study in humans were used to demonstrate the effects, which seem very encouraging, not least from a health care professional's view. From the patient's perspective, reduction of side effects is central, and this was what another study from 2011 focused on by investigating the effect of BB-12® and LA-5® on triple therapy. This study showed that supplementation with BB-12® and LA-5® significantly decreased duration of antibiotic-associated diarrhea and improved gastrointestinal complaints.

To sum up, the above studies demonstrate that BB-12® and LA-5® can reduce antibiotic-associated diarrhea and other side effects of *H. pylori* treatment and help to restore the intestinal flora afterward, for the benefit of the patient. Moreover, BB-12® and LA-5® inhibit growth of *H. pylori*, increase *H. pylori* eradication and improve treatment compliance, which may prove to be a profitable solution not only for the patient, but also for the health care system and the society.

In times were people with *H. pylori* infections still struggle with the side effects of the treatment, probiotics such as *Bifidobacterium* BB-12® and *Lactobacillus acidophilus* LA-5® may prove to be part of the solution to the *H. pylori* challenge.

### **Fact box**

*Helicobacter pylori* is a bacteria that may cause serious stomach infections including stomach ulcer.

*H. pylori* infection affects 20-50% in industrialized countries and up to 80% in developing countries.

Probiotics are live microorganisms, which when administered in adequate amounts, confer a health benefit on the host.

Clinical studies have demonstrated positive effects of probiotics against *H. pylori* infections.