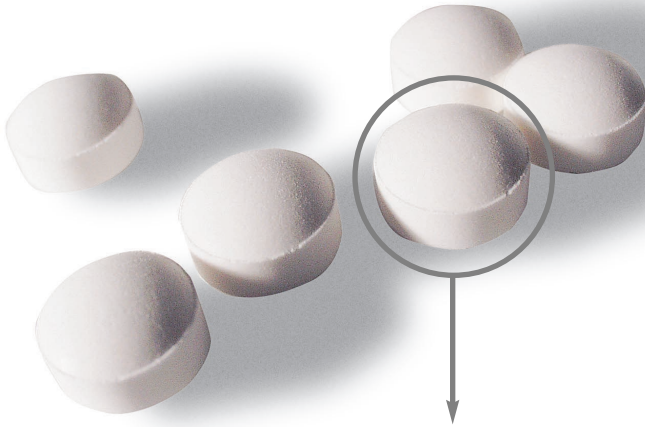


A blue-tinted scanning electron micrograph (SEM) showing a dense field of rod-shaped bacteria, likely Lactobacillus, with some flagella visible. The bacteria are arranged in various orientations, some in chains and others individually. The background is dark, making the lighter-colored bacterial structures stand out.

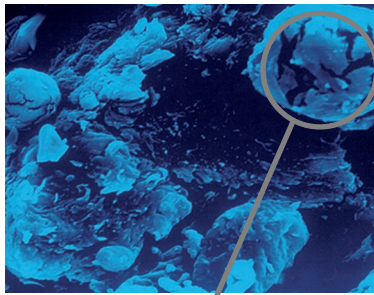
Probion[®]

————— for better living —————

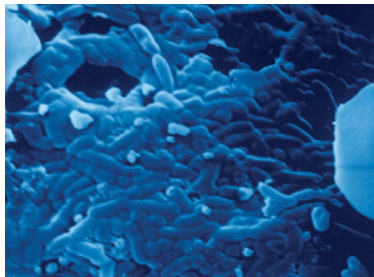
Wasa Medicals presents the smart tablet



Electron-microscopic photo from the inside of a ProBion® tablet produced according to Wasa Medicals "low-compression-technique". The fibres of inulin form round cavities in which the living probiotic cultures are sheltered until they reach the intestine. The tablet is unique and is the only tablet that can deliver high counts of viable lactic acid cultures to the right place in the body.



The photo shows what it looks like within one of the cavities on the photo above. The bacteria are viable but freeze dried and are activated when they reach the intestine. The tablet dissolves slowly and the viable bacteria are spread over a large area of the intestine. Together with the inulin fibres the bacteria start rebalancing the intestinal microflora.



Wasa Medicals is a company working with research and development in the field of probiotics and prebiotics.

Wasa Medicals produces tablets containing probiotics - viable lactic acid bacteria and prebiotics - nutrition for the healthy bacteria.

The tablets are produced according to a unique, patented "low-compression-technique" where less than 10% of the conventional compression force is used. The production method is patented "world-wide".

There are many advantages with this production technique. The cultures remain viable during the production. This is not the case when using conventional compression forces. The cultures are protected from oxygen and humidity within the tablet, which improves the stability.

The bacteria in the tablet are also protected from the gastric- and bile acids. The tablet has a slow and regulated disintegration profile in the small intestine, spreading the bacteria over a large area. This increases the beneficial effects. The bacterial strains available to pack in the tablet are numerous since cultures that are sensitive to gastric- and bile acids can be used.

Research

Today research about the effect of probiotics on health is ongoing throughout the world. Some of the beneficial effects of probiotic supplementation that have been seen are listed below:

- Increased nutritional value
- Promotion of intestinal lactose digestion
- Positive influence on the intestinal microflora
- Prevention of intestinal tract infections
- Regulation of gut motility
- Improvement of the immune system
- Prevention of cancer
- Reduction of catabolic products eliminated by kidney and liver
- Prevention of atherosclerosis by the reduction of serum cholesterol
- Prevention of osteoporosis
- Improved well being

Why you should eat probiotics?

Today we store our food in refrigerators or in the freeze. Modern preservation techniques leads to the situation that we do not get enough of lactobacilli in our daily food.

Why do we need lactobacilli?

They are vital since they protect us from the damages that are caused by the influence from physical and mental distress. They are to be considered as a natural part of our diet.

Wasa Medicals Information.

Wasa Medicals develops production technique and selects new bacterial cultures together with universities and a number of different companies around the world. Due to the new technique and the new galenic formula the possibility to develop pharmaceutical products is improved.

The smart tablet is marketed in Sweden and some other European countries under the trademark ProBion.

For more information:

E-mail: info@wasamedicals.se
www.wasamedicals.com



Indication

Designed for those with an active lifestyle like sports people and those under stress.

Dosage

For general well being and health care and after short periods of non health or disorders: 1 tablet twice a day for 3 days. Slowly increase the dose to 2-3 tablets twice a day. The tablets ought to be taken together with food. For acute disorders: 6 tablets 3 times per day until you recover. Then decrease the dose to 2-3 tablets twice a day. Take the tablets together with food.

Contents

Viable lactic acid cultures min 350 million bacteria/gram of *Lactobacillus bulgaricus*, *Lactobacillus casei* and *Lactobacillus plantarum* and Inulin fibres.

Pharmaceutical filling: Inulin (fructooligosaccharides/FOS and fructopolysaccharides/FPS), xanthan and magnesium stearate (veg.)

Inulin

Inulin consists of natural fructooligosaccharides and fructopolysaccharides derived from the root *Cichorium intybus*.

Carbohydrates like inulin stimulate the growth of probiotic bacteria and have many positive effects on human health. Substances that stimulate the growth of probiotic bacteria are referred to as prebiotics.

Xanthan

Xanthan is a mucus forming substance that forms a protective cover around the bacteria during their passage towards the intestine preventing the damaging effects of bile- and gastric acids.

Cleaning and purging the system

When starting to take ProBion[®] active changes in defecation habits may occur such as loose stools or slight constipation and gases. Some people experience other signs of detoxification such as headache. This is just the body's way to "clean and purge" the system. These disorders normally disappear within 1-2 weeks. If they appear, you are advised to reduce the dose to half amount for approximately 2 weeks. Then slowly increase the dose again.

Shelf life

The shelf life of ProBion[®] active is 18 months at room temperature and 24 months in refrigerator. Keep out of heat and humidity.



Wasa Medicals



Indication

A gentle start for someone with long periods of health problems, which will help you regain your health by supporting your digestive system.

Dosage

After long periods of non health or disorders:

1 tablet per day for 3 days. Slowly increase the dose to 2-3 tablets twice a day. The tablets ought to be taken together with food.

Contents

Contains viable cultures of *Lactobacillus bulgaricus*, *Lactobacillus plantarum* and *Bifidobacterium lactis* min 350 million bacteria/gram and Inulin fibres.

Pharmaceutical filling: Inulin (fructooligosaccharides and fructopolysaccharides), xanthan and magnesium stearate (veg.)



Inulin

Inulin consists of natural fructooligosaccharides and fructopolysaccharides derived from the root *Cichorium intybus*. Carbohydrates like Inulin stimulate the growth of probiotic bacteria and have many positive effects on human health. Substances that stimulate the growth of probiotic bacteria are referred to as prebiotics.

Xanthan

Xanthan is a mucus forming substance that forms a protective cover around the bacteria during their passage towards the intestine preventing the damaging effects from the bile and the gastric acids.

Cleaning and purging the system

When starting to take ProBion[®] basic changes in defecation habits may occur such as loose stools or slight constipation and gases. Some experience other signs of detoxification such as headache. This is just the body's way to "clean and purge" the system. These disorders normally disappear within 1-2 weeks. If they appear, you are advised to reduce the dose to half amount for approximately 2 weeks. Then slowly increase the dose again.

Shelf life

The shelf life of ProBion[®] basic is 18 months at room temperature and 24 months in refrigerator. Keep out of heat and humidity.



Indication

For your general well being, in times of acute disorders and after short periods of health problems. Will help you regain your health by supporting your digestive system.

Dosage

Always start slowly with probiotics to adjust the microbial balance in a gentle way. Start with 1 tablet per day for 3 days. Then gradually increase the dose to 1-2 tablets twice daily. In times of infection or other disorders increase the dose to 3 tablets twice daily. Take the tablets together with food.

Contents

Viable lactic acid cultures min 500 million bacteria/gram of *Lactobacillus plantarum*, *Lactobacillus acidophilus*, *Lactobacillus casei*, *Lactobacillus bulgaricus* and *Bifidobacterium lactis*

Pharmaceutical filling: Inulin (fructooligosaccharides/FOS and fructopolysaccharides/FPS), xanthan and magnesium stearate (veg.)



Inulin

Inulin consists of natural fructooligosaccharides and fructopolysaccharides derived from the root *Cichorium intybus*. Carbohydrates like inulin stimulate the growth of probiotic bacteria and have many positive effects on human health. Substances that stimulate the growth of probiotic bacteria are referred to as prebiotics.

Xanthan

Xanthan is a mucus forming substance that forms a protective cover around the bacteria during their passage towards the intestine preventing the damaging effects of bile- and gastric acids.

Cleaning and purging the system

When starting to take ProBion[®] daily changes in defecation habits may occur such as loose stools or slight constipation and gases. Some people experience other signs of detoxification such as headache. This is just the body's way to "clean and purge" the system. These disorders normally disappear within 1-2 weeks. If they appear, you are advised to reduce the dose to half amount for approximately 2 weeks. Then slowly increase the dose again.

Shelf life

The shelf life of ProBion[®] daily is 24 months at room temperature or in refrigerator. Keep out of heat and humidity.

The production technique of the smart tablet - ProBion®

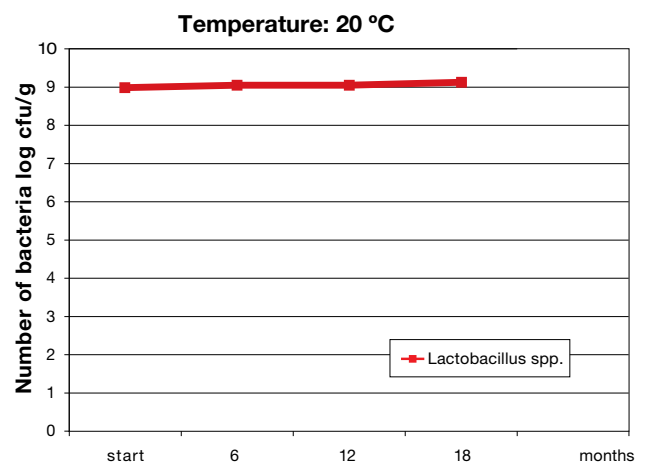
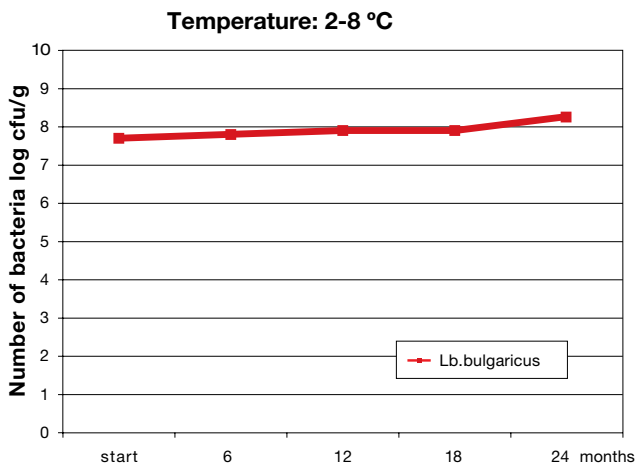
Wasa Medicals focus on producing synbiotic tablets, containing both probiotics - viable lactic acid cultures and prebiotics - nutrition for the healthy bacteria.

The tablet makes it possible to conduct dissolution of the cultures in the gut, activating them properly in the right place and thereby achieving an optimal biological effect.

The tablets are produced according to a unique, patented low compression technique, which implies that less than 10% of the conventional compression forces are used.

The cultures remain viable during the production. When using conventional compression forces the bacterial cultures are destroyed by the splint forces. The cultures in the ProBion® tablet are protected from oxygen and moisture within the tablet. This supports good viability and stability.

Stability - lactobacilli in tablet



The bacteria in the tablet are also protected from the gastric- and bile acids. The tablet has a slow and regulated dissolution profile in the small intestine, exposing the bacteria to a large area. This increases the beneficial effects of the probiotics. The bacterial strains available to pack into the ProBion® tablet are numerous since cultures that are sensitive to gastric- and bile acids can be used.

The low compression technique makes it possible to vary the time of dissolution. This greatly improves the ability to direct probiotic products to different areas of the intestinal tract.

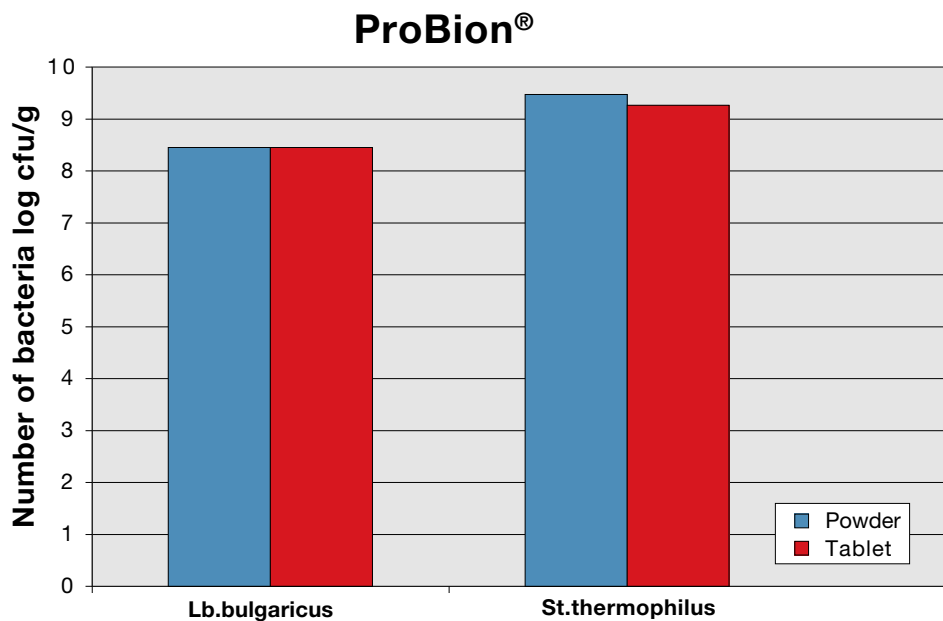
Xanthan

Xanthan is a mucus-forming agent used in the tablet. It forms a sheltering cover around the bacteria. It is important for controlling the dissolution profile of the tablet. Xanthan is a naturally derived substance produced when the bacteria *Xanthomonas campestris* digest (ferment) carbohydrates.

The survival of the bacteria during production

The survival of bacteria during production with the low compression technique is on average 80%. The rate of survival differs between different bacterial strains.

The survival of the bacteria during production



GMP

Wasa Medicals produces according to GMP standards, which means that the demands from the Swedish Medical Agency on the production are fulfilled.

Packaging

To keep the optimal quality, the tablets are packed in bottles with screw caps and drying agents. This is to keep the moisture away.

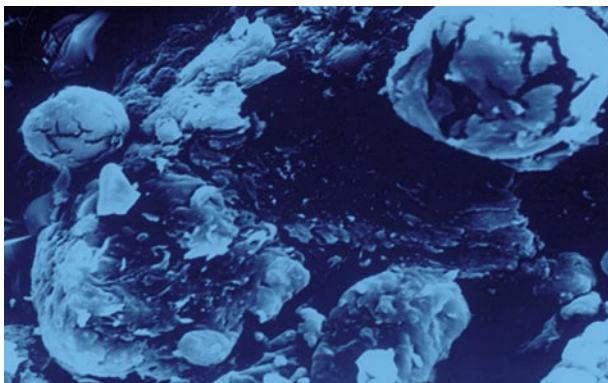
Distribution of microorganisms in the ProBion® tablet (the smart tablet)

Study performed at The Swedish Institute for Food and Biotechnology in 1999.

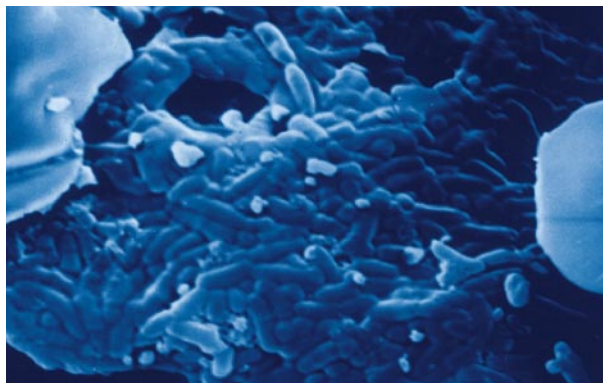
Goal

The goal of this study was to compare the bacterial content in the ProBion® tablet produced with the low compression technique with a reference tablet produced with “normal” compression forces. It was of great interest to see how different pressures in the production process effect the bacteria. Light microscopy and scanning electron microscopy have been used to carry out the investigation.

The ProBion® tablet

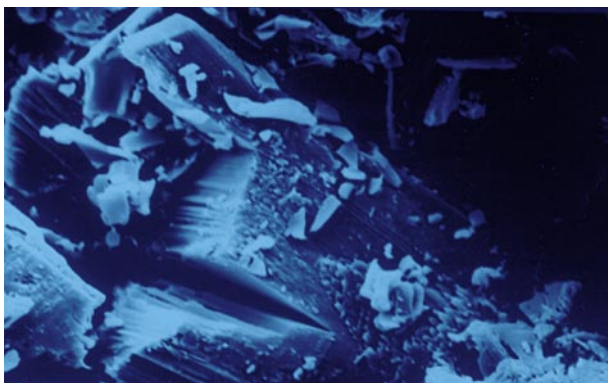


Electron-microscopic photo from the inside of a ProBion® tablet produced according to Wasa Medical Groups “low-compression-technique”. The fibres of inulin form round cavities in which the living probiotic cultures are sheltered until they reach the intestine. The tablet is unique and is the only tablet that can deliver high counts of viable lactic acid cultures to the right place in the body.



The photo shows what it looks like within one of the cavities on the photo to the left. The bacteria are viable but freeze-dried and are activated when they reach the intestine. The tablet dissolves slowly and the viable bacteria are spread over a large area of the intestine. Together with the inulin fibres the bacteria start rebalancing the intestinal microflora.

A tablet produced with “normal” compression forces.



When “normal” compression forces are used during production of tablets the major part of the bacteria are killed. The structure of the tablet is similar to blocks of cement in which there are no space for living bacteria.

Conclusion

It was obvious that the bacteria in the ProBion® tablets are better preserved than bacteria in the reference sample. It is likely that the lower pressure used during production has a less destructive influence on the bacteria. In ProBion® both bacilli and cocci are found while in the reference, most of the bacteria found are cocci.