



 pharmaceutical
biotechnology

What we do?

- Manufacture of biotechnology products with focus on food, pharmaceutical, sanitary, cosmetic and environmental applications
- **Our goal is to discover new ideas and implement them**



Our Preparations

Probiotics

- Biofilm probiotics – Probiolact
- Oral probiotic – Bactoral

Immunomodulatory preparations

- Bacterial lysates – NefroVaxin

Antimicrobial preparations

- Larypront with lysozyme
- IgY – Dermagel

Caring sanitary napkins

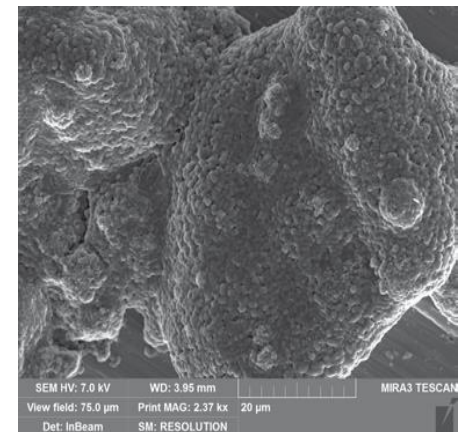
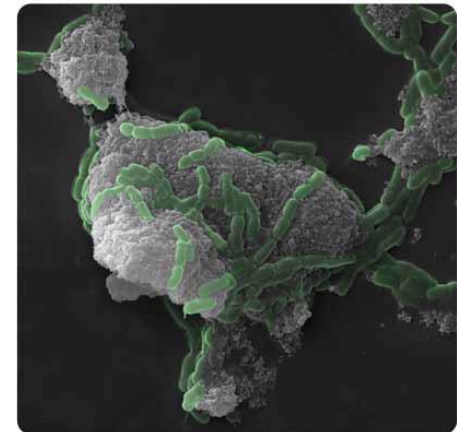
- ProBiotic with probiotics
- ANTISEPTIC with active oxygen



BIOFILM PROBIOTICS - PATENTED TECHNOLOGY!

Principle

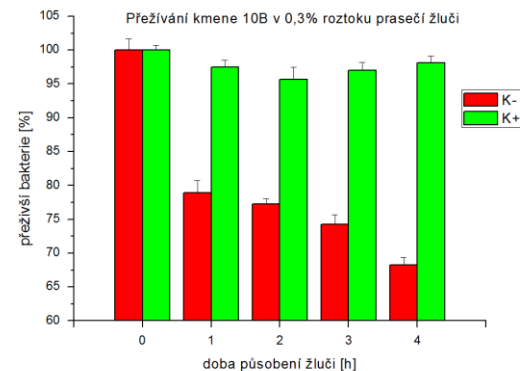
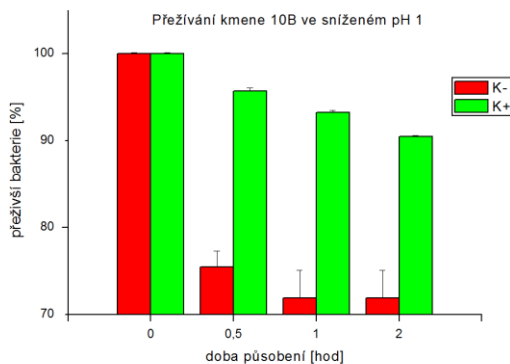
- During their manufacture, bacteria are cultivated on a special food grade carrier in order to create a continuous layer – **biofilm** – that is their natural state of occurrence in the intestine.
- This allows them easier adhesion to the intestinal mucosa, the crucial point for function of probiotics.



BIOFILM PROBIOTICS - PATENTED TECHNOLOGY!

Advantages over common probiotics

- 1) Higher ability of biofilm bacteria to **survive in the human digestive tract** because of proven:
 - ✓ higher resistance to acidic pH of the stomach
 - ✓ higher resistance to bile acids



- 2) Initiated genes for quick **adhesion** to the intestinal epithelium
- 3) higher **resistance to selected antibiotics**

Probiolact®

Dietary supplement ProbioLact is the only product containing biofilm probiotics on the market!

***Lactobacillus acidophilus* in the probiotical form (5 x 10⁹ CFU in one capsule)**



LARYPRONT®

THE POWER OF NATURAL LYSOZYME

Food supplement LARYPRONT® contains concentrated **egg white**, which is the natural source of antimicrobial enzyme lysozyme.

Lysozyme has strong antibacterial effects owing to its ability to disturb bacterial walls. In contrast to antibiotics, microorganisms do not develop resistance to lysozyme. Lysozyme has also antiviral and immunomodulatory effect.

Indication

- Sore throat, burning sensation in the throat
- Periodontitis, gum inflammations, increase of tooth caries
- Canker sores

Larypront® with essential oil of *Salvia officinalis*

Larypront® with propolis and lemon



Bacterial lysates

ORAL VACCINATION WITH FOOD SUPPLEMENTS

The product offers inactivated harmless antigens of pathogens to the body for stimulating the formation of active antibodies. **It uses the unique abilities of the human body to defend against infection on their own.**

Bacterial lysates are small parts of inactivated bacteria obtained from a mass culture of reference bacterial strains by using mechanical lysis of cells and subsequently lyophilized.

Indication:

Specific combinations of lysed microorganisms can be used for the prevention and treatment of:

- Respiratory infections
- Paradontosis
- Bacterial vaginosis
- Urinary tract infections
- Skin infection, acne



IMMUNOGLOBULIN Y (IgY)

IgY are the main birds' antibodies and functionally it is an equivalent to mammalian IgG. In high concentration, it is present in chicken egg yolk.

Pharmaceutical Biotechnology focuses on the use of **IgY in cosmetics**. Antibodies used in cosmetics are effective inhibitors of bacteria that cause inflammation and infection of the skin. **This is a natural way to restrict inflammation without using chemicals.**

Advantages of using of immunoglobulins from eggs

- Non-invasive method of antibody production
- High amount of IgY obtained from immunised hens' eggs

Dermagel

Dermagel cosmetic cream contains IgY against *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Propionibacterium acnes* and is used for treatment of acne vulgarit.

CARING SANITARY NAPKINS

Pharmaceutical Biotechnology has developed special modified superabsorbents for the production of caring sanitary napkins.

WITH PROBIOTICS

- **unique innovation in the world market that represent a natural way of dealing with vaginal inflammation**
- contain stabilised *Lactobacillus* culture - probiotics that naturally dominate the microbial environment of healthy vaginal mucosa. It prevent the growth of pathogen microorganisms by producing antimicrobial substances and lactic acid.

When it helps?

- In the case of vaginal inflammation
- During antibiotic therapy
- To eliminate intimate odour caused by yeast and pathogenic bacteria



CARING SANITARY NAPKINS

WITH ACTIVE OXYGEN

This superabsorbent gently disinfects the pad and intimate parts. Gentle release of active oxygen restricts the growth of microorganisms that may be a potential source of infection and may produce unpleasant odours.



TAČR

Pharmaceutical Biotechnology together with **MU (CCM)** has currently obtained the grant support from Technology Agency of ČR for 2 projects which will lead to development of 2 our basic/pilot products:

I.

Development of a new generation of biofilm probiotics on combined carriers with high bioactivity



II.

New generation of superabsorbent for manufacture of sanitary napkins



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I. Development of a new generation of biofilm probiotics on combined carriers with high bioactivity

The aim:

Development of a new generation of biofilm probiotics, which will represent a unique combination of a multicomponent prebiotic carrier and optimized spectrum of probiotic strains. Duration of the project is 4 years.

Pilot product

- ***Lactobacillus acidophilus in the probiotical form*** (5×10^9 CFU in one capsule)
- elementary single component **carrier**

TAČR



The project is focused on two topics:

- 1. Development of the bacterial component** – the aim is to extend the bacterial part of preparation by others important probiotic strains
- 2. Development of new carrier** – enriched with prebiotic component which promote the formation and stability of biofilm and subsequently increases the efficacy of the preparation

TAČR



The new generation of biofilm allows probiotics to launch a revolutionary product with great market potential.

Due to the expected high efficiency (because of high resistance to low pH, bile and antibiotics), and the experience of the pilot project, we assume that unique probiotics find their use in the prevention and treatment of :

- chronic inflammatory bowel disease**
- immune disorders**
- reduce side effects of antibiotic use**

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II. New generation of superabsorbent for manufacture of sanitary napkins