Adult ENT-Pro™ and Children's ENT-Pro®

Target-Specific Probiotic Formulations with Lysozymes
Nutritional Support for Otolaryngeal Health

Adult ENT-Pro™ and **Children's ENT-Pro®** are pleasant-tasting strawberry-flavored probiotic lozenges that supply newly isolated *Lactobacillus delbrueckii* LE and *Lactobacillus rhamnosus* LB3 strains, along with *Lactobacillus plantarum* LM, *Bifidobacterium longum* and *Bifidobacterium bifidum*, combined to support otolaryngeal health and overall immune health.

Probiotics are classically defined as a "preparation of, or a product containing viable, defined microorganisms in sufficient numbers, which alter the microbiota in a compartment of the host, and exert beneficial health effects in the host". Traditionally, probiotics are used to influence the microbial balance specifically in the gastrointestinal tract, which is host to billions of diverse and metabolically active organisms. These microorganisms have been found to influence metabolic function, inform the immune system, protect against pathogens, affect brain function and even steer genetic expression through epigenetic mechanisms. Probiotics have played a key role in the competitive inhibition mechanism where the "good bacteria" outweigh the "bad bacteria," and theoretically shift the microbial balance towards benefitting the host's overall health.

However, with acute infections, such as those afflicting the ear, nose and throat areas, antibiotics are often prescribed in order to address the pathogens. In some cases of persistent infection, surgery may even become necessary to avoid further complications such as hearing loss. Otitis media (OM) is one of the most common diagnoses made by pediatricians. Other diagnoses affected by viral and bacterial pathogens within the otolaryngeal cavity include tonsillitis (inflammation of the pharyngeal tonsils), sinusitis, pharyngitis (sore throat), and inflammation of the adenoids.

In search of natural and potent ways to support otolaryngeal health, with no negative side effects, renown microbiologist Liubov Sichel, PhD, created the target-specific probiotic formulations, **Adult ENT-Pro™** and **Children's ENT-Pro®**. Target-specific probiotic formulations are designed to promote the biological mechanisms that support the health of specific tissues and organs.

Adult ENT-Pro™ and **Children's ENT-Pro®** provide specific probiotics targeted to support sinus structures and surrounding tissues. These strains also promote overall immune-modulating qualities.[1]

BIOTICS® RESEARCH CORPORATION

(800) 373-1373

Metabolic Management
P.O. Box 715 • Grant Park, IL 60940
www.metabolicmanagement.com

LIT-252 Rev. 05/20

Unlike other probiotic strains targeting otolaryngeal health, such as *Streptococcus salivarius*, the strains found in **Adult ENT-Pro™** and **Children's ENT-Pro®** are not considered opportunistic pathogens, which can be detrimental under certain circumstances.[2] Rather, they are safe and well-researched strains, exhibiting high levels of pathogen-specific activity and immune-modulating behavior. Safety assessments confirm the strains are non-toxic and have no embryotoxic, mutagenic, teratogenic or carcinogenic effects.

ENT Health Clinical Data

Clinical testing was performed in the Hospital of Institute of Otolaryngology Academy of Medical Sciences, Kiev, 2002-2006, for State Program "New Probiotics for Otolaryngology". Strains of *L. delbrueckii* LE and *L. rhamnosus* LB3, as well as combination blends, were found to demonstrate high levels of antagonistic activity towards the microbes most frequently found in chronic and recurring ENT infections. In addition to showing a high degree of adhesion to the mucous coat of the upper air passages, application of the formulation resulted in a statistically reliable increase of the number of tonsillar cells producing IgA, as well as increased activity of the natural cytotoxic tonsillar cells, and increased number of tonsillar cells with surface antigens CD25 and CD56.

Probiotic formulations based on these strains also induced a proficient immune response by TH1-type cytokines, inhibited fatty cellular infiltration of tonsils tissue, and stimulated progression of B-cell lymphocytes and high glycogen macrophages. It was observed that this probiotic formulation stimulated IFN up to 4.5-fold, induced production of the IL-4, increased IgG and IgA up to 2.5-fold, and intensified glycogen synthesis in phagocytes. *L. rhamnosus* LB3 demonstrated more effective activation of humoral immune response; whereas, *L. delbruekit* LE showed mostly cell-mediated immune response.

In one study, tonsillar cells from patients with adenoid disease were cultivated with *L. rhamnosus* LB3. After four hours, *L. rhamnosus* LB3 had increased the number of cells with membrane antigen CD25 (activated cells), increased the number of IgA producers by 30%, and intensified the functional activity of the natural cytotoxic cells 3.4 times as much.

The specific combination of lactobacilli and bifidobacteria strains found in **Adult ENT-Pro™** and **Children's ENT-Pro®** also demonstrate antagonistic action in relation to a number of ENT pathogens, and help support a healthy immune response.

Table 1 Antagonistic Activity Against ENT Pathogens

Test-culture	Zone of growth inhibition, mm			
	L. delbrueckii subsp. bulgaricus 51	*L. delbrueckii LE*	*L.rhamnosus LB3*	*L. delbrueckii NCDO 213*
Escherichia coli M-17	20 ± 1	28 ± 1.2	32 ± 2	20 ± 1.4
Enterobacter cloacea	21 ± 1	26 ± 1.2	32 ± 1.8	18 ± 0.9
Citrobacter freundii	19 ± 1	25 ± 1.1	30 ± 1.1	18 ± 1
Escherichia coli k12	21 ± 0.9	28 ± 1	19 ± 1.2	18 ± 0.8
Klebsiella pneumoniae K-1	15 ± 0.8	29 ± 1	32 ± 1	15 ± 0.9
Proteus vulgaris 72	8 ± 0.5	12 ± 0.1	27 ± 0.6	18 ± 1
Salmonella equiabortus 202	40 ± 1.3	48 ± 3.2	45 ± 3.6	15 ± 3.9
Salmonella typhimurium 11	28 ± 1.1	35 ± 1.3	26 ± 1.9	27 ± 2.1
Serratia marcescens 10	39 ± 1.8	46 ± 3.1	45 ± 3.8	42 ± 3.8
Pseudomonas aeruginosa 103	16 ± 0.7	22 ± 1	36 ± 1	21 ± 1
Pseudomonas alcaligenes CC2655	17 ± 1	22 ± 1.2	29 ± 1	21 ± 1.4
Micrococcus puogenes	39 ± 2.1	46 ± 2.6	35 ± 3.4	35 ± 3.2
Staphylococcus aureus 209P	25 ± 2.1	33 ± 1.2	31 ± 2.4	21 ± 1.7
Staphylococcus epidermidis	18 ± 2.3	24 ± 1.1	28 ± 2	31 ± 2.3
Candida albicans 212	0	8 ± 0.6	32 ± 2.4	0

O. Volska, D. Zabolotna. Study of the mechanisms of antagonistic activity in different probiotic strains. Journal of ear, nose, and throat diseases, No3-c, 2003,p.164-165.

Adult ENT-Pro™ and **Children's ENT-Pro®** consist of probiotic strains that are resistant to gastric secretions, bile salts, gastrointestinal enzymes and acids, giving them very high survivability ratings. They are described as perfect strains to support optimal otolaryngeal immune health.[3]

Lysozymes

In addition to the probiotic strains, these probiotic formulas include lysozymes. A lysozyme is an enzyme often used to lyse bacterial cells by hydrolyzing the peptidoglycan in the cell walls.

Lysozymes, first discovered by Alexander Fleming in a search for something to slow bacterial growth, exhibit selective antibacterial properties for oral microorganisms, and are naturally found in the saliva and tears as part of the innate immune system[4]. Lysozymes are considered especially advantageous in the support of a healthy respiratory tract (US Patent 9,950,041), and have recently received Novel Food Status in the European Union (EU) 2018/991.

Adult ENT-Pro™ and Children's ENT-Pro®

- Promote the biological mechanisms that support otolaryngeal tissues and organs
- Adhere to oral cavity mucous coat
- Demonstrate high survivability under both acidic and alkaline environments
- Show antagonist activity towards opportunistic microflora, including Candida strains
- Exhibit immuno-modulating effects
- Activate immunocompetent cells by CD25+, CD56+ antigens, NK cells, IFNs
- Stimulate production of B cell lymphocytes, IgA
- Demonstrate high clinical result with positive effect on the microbiocenosis of the upper air passages
- Possess activating effect on a wide range of responders on tonsillar cells

Recommended Use:

- As a daily probiotic, take 1 lozenge per day.
- When needing extra immune support, take up to 4 lozenges per day.
- For best absorption, place under the tongue to dissolve. Hold in the oral cavity for about 60 seconds.

Adult ENT-Pro™ is available in a 30-count bottle (#1146).

Supplement Facts
Serving Size: 1 Lozenge

	Amount Per Serving	% Daily Value
Proprietary blend Lactobacillus rhamnosus LB3*, Lactobacillus delbrueckii LE*, Lactobacillus plantarum LM*, Bifidobacterium longum*, Bifidobacterium bifidum*	6 billion organisms	
Lysozyme	15 mg	*
Fructooligosaccharides	25 mg	*

*** Daily Value not established**

Other ingredients: Mannitol, sorbitol, natural flavor, citric acid, modified cellulose gum, magnesium stearate and silica.

This product is gluten free.

RECOMMENDATION: One (1) lozenge each day as a dietary supplement or as otherwise directed by a healthcare professional.

Formulated to provide support for healthy EN&T function. This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

CAUTION: May contain trace amounts of milk and egg protein.

KEEP OUT OF REACH OF CHILDREN
Store in a cool, dry area. Sealed with an imprinted safety seal for your protection.
Product # 1146 Rev. 02/20

Children's ENT-Pro® is available in a 60-count bottle (#1145).

Supplement Facts
Serving Size: 1 Lozenge

	Amount Per Serving	% Daily Value
Proprietary blend Lactobacillus rhamnosus LB3*, Lactobacillus delbrueckii LE*, Lactobacillus plantarum LM*, Bifidobacterium longum*, Bifidobacterium bifidum*	2 billion organisms	
Lysozyme	10 mg	*
Fructooligosaccharides	25 mg	*

*** Daily Value not established**

Other ingredients: Mannitol, sorbitol, natural flavor, citric acid, modified cellulose gum, magnesium stearate and silica.

This product is gluten free.

RECOMMENDATION: One (1) lozenge each day as a dietary supplement or as otherwise directed by a healthcare professional.

Formulated to provide support for healthy EN&T function. This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

CAUTION: May contain trace amounts of milk and egg protein.

KEEP OUT OF REACH OF CHILDREN
Store refrigerated.
Sealed with an imprinted safety seal for your protection.
Product # 1145 Rev. 09/18

References

1. Liubov Sichel, Diana Zabolotna, Dmytriy Zabolotny. Perspectives of Probiotic Therapy in Sinus Infection, Lytic Enzymes, Academy of Medical Sciences of Ukraine prof. O.S. Kolomychenko Institute of Otolaryngology, 3 Zoologichna str., Kiev, 03680, Ukraine.
2. Tunkel, A. R. and Sepkowitz, K. A. 2002. Infections Caused by Viridans Streptococci in Patients with Neutropenia. Clinical Infectious Diseases 34:1524-9.
3. Zabolotny D., Melnilkov O., Zabolotnaya D., Shinkarenko L. Probiotic modulation of the immunogenesis in the experiment; Immunology and allergology No1, 2006, p.19-21
4. Vincent J. Iacono, Bruce J. MacKay, Sharon DiRienzo, and Jerry J. Pollock. Selective Antibacterial Properties of Lysozyme for Oral Microorganisms. Infect Immun. 1980 Aug; 29(2): 623–632.
5. Report on clinical use of the probiotic cells Lactobacillus delbrueckii LE and their lysate. A.S. Prylutskyy, MD, PhD, Clinical Immunology and Allergy Department, Donetsk State Medical Univerity, 1000.
6. Savtsova Z.D., Shplevaya S.I., Tarutinov V.I., Rogatskaya V.P., NMeniok T.A., Nikolsky I.S., Mosienko V.S., Shynkarenko L.M., Chekhun V.F. Immune correction by an Immunomodulator from Lactobacillus delbrueckii LE in a combine therapy of breast cancer at stages II and IV. Oncology 2000; 22:211-214.
7. Shplevaya S.I., Tarutinov V.I., Mosienko V.S., Rogatskaya V.P., Ponomarev I.O., Shynkarenko L.M., Chekhun V.F. Coreectionof leucopenia by a new probiotic immunomodulatory Lactobacillus delbrueckii product in combined treatment of breast cancer. Oncology, 2000;2(1-2):83-86.
8. D. Zabolotny, L. Shynkarenko, O. Melnikov, L. Volosevich, I. Zarytska, O. Goloborodko, G. Karpenko, O. Bolyska, D. Zabolotna. Application of the probiotic medication "Acidolor" in patients with chronic tonsillitis and evaluation of its efficacy; Journal of ear, nose and throat diseases. No5, 2003, pages 2-9.
9. L. Shynkarenko, N. Dehtyrenko. Research of the Chemotherapy drugs influence on Lactic Acid Bacteria cells. Scientific news of the NUT "KPI", 2004, 1(33), pp. 135-140.
10. O. Volska, L. Shynkarenko, I. Zarytska, D. Zabolotna. Study of the possibility of the using of the Lactobacilli for treatment and prevention of the Candida infections in the ENT-organs. Odessa Medical Journal, 2006, 4(96), pp. 32-3.
11. Starovoytova S., Gorchakov V. Lactic Acid Bacteria strain Selection for Effective Probiotics Compositions. 2006, Scientific News of NUT "KPI", v5, pp. 100-103.
12. Starovoytova S. Timoshok N, Gorchakov V, Spivak N. Interferon induction activity of Lactic Acid Bacteria; 2007, Immunology and Allergy (Ukrainian), #4, pp. 24-27.
13. Starovoytova S., Oryabinska L, Gorchakov V. Cholinesterase and protease activity of Lactic Acid Bacteria in vitro; 2007, Environment and Health, #4 (43), pp. 68-71.
14. Starovoytova S, Timoshok, N, Spivak N. Influence of Lactic Acid bacteria associated cultures at mice experimental meningoencephalytic herpes infection; 2008, In Abstracts of International Conference "Antibacterial and anti-viral therapy on hospital treatment", Charkob, Ukraine, pp. 316-317.
15. Timoshok N, Shynkarenko L, Staroboytova S, Spivak N. Investigation of interferon induction activity of new Probiotic composition and strains L. Delbrueckii 86, L. rhamnosus to compare with Del-Immune V and Lactoberterin (L. plantarum): 2009, IIX Congress of Ukrainian Microbiological Society, Abstracts Book, p. 264.
16. Starovoytova S, Timoshok N, Gorchakov V, Spivak N. Immunomodulating abilities of Lactic Acid Bacteria. 2009; Microbio.J., 71, #3, pp. 41-47.
17. D. Zabolotny, L. Volosevich, I. Zarytska, V.D. Zabolotna. Perspectives of biotherapy in ENT disease; Journal of ear, nose and throat diseases, No3-c, 2003, p. 180-181.
18. O. Volska, D. Zabolotna. Study of the mechanisms of antagonistic activity in different probiotic strains. Journal of ear, nose and throat diseases, No3-c, 2003, p. 164-165.
19. Shynkarenko L., Dehtyrenko N. Adhesion potency of lactic acid bacteria as factor for section of Probiotic strains. Scientific News of NUT "KPI", 2004, 3(35), pp. 102-106.
20. Zabolotny D., Melnilkov O., Zabolotnaya D., Shynkarenko L. Probiotic modulation of immunogenesis in the experiment. Immunology and allergy, 1, 2006., p. 19-21.
21. O. Melnikov, D. Zabolotnaya. Experimental investigation of the Probiotic influence on the palate tonsils cells in patients with chronic tonsillitis in vitro. The journal of ear, nose and throat diseases, 2006, 3. pp. 24-27.
22. O.Volska, L. Shinkarenko, I.Zarytska, D. Zabolotna Study of the possibility to use lactic acid bacilli in prevention and treatment of the candidiasis of ENT organs; Odessa medical journal, No4 (96), 2006, 32-36.
23. O. Melnikov, D Zabolotnaya, L. Kalinovskaya, V. Simonenko. Study of the functional and morphochemical characteristics of cells and tissues under the conditions of the co-cultivation with lactic acid bacilli medication LB3, 2007, 170-172.
24. Timoshok N, Shynkarenko L, Staroboytova S, Spivak N. Investigation of interferon induction activity of new Probiotic composition and strains L. Delbrueckii 86, L. rhamnosus to compare with Del-Immune V and Lactoberterin (L. plantarum): 2009, IIX Congress of Ukrainian Microbiological Society, Abstracts Book, p. 264.
25. O. Melnikov,D. Zabolotnaya. In vitro experimental study of the probiotic effect on the tonsillar cells in the patients with adenoid disease: The journal of ear, nose and throat diseases, 3, 2006, p.24-27.
26. Akhremenko YA, Cheremkina AS, Tarasova LA, Ushnitsky ID. MICROBIOCENOSIS IN INFLAMMATORY PROCESSES OF MARGINAL GUM AMONG CHILDREN. Wiad Lek. 2015;68(4):493-5.
27. Zabolotny D., Melnilkov O., Zabolotnaya D., Shinkarenko L. Probiotic modulation of the immunogenesis in the experiment; Immunology and allergology No1, 2006, p.19-21

To place your order for **Adult ENT-Pro™** and **Children's ENT-Pro®** or for additional information please contact us below.

BIOTICS® RESEARCH CORPORATION

(800) 373-1373

Metabolic Management
P.O. Box 715 • Grant Park, IL 60940
www.metabolicmanagement.com

LIT-252 Rev. 05/20