# PIONEERING INNOVATIVE PROBIOTIC SOLUTIONS



# PROBIOTICS SPECIALIST WITH 30 YEARS OF EXPERIENCE

# FROM LAB TO SHELF AND MARKETING SUPPORT

Since its foundation by microbiologists in 1995, we have over 3 decades of experience in the pharmaceutical industry and are **ready to provide a full service** to our partners with personalized, innovative, scientifically documented probiotic solutions and marketing services. Each market presents its distinct characteristics, from regional trends and regulatory requirements to specific preferences in dosage and flavor. We take pride in having customers all over the world, and **our full team of specialists is ready to offer customized services** tailored to understand each customer's individual needs.

### **PROBIOTICS ONE STOP SOLUTION**



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# RIGOROUSLY RESEARCHED TOP-QUALITY STRAINS

# U.S. FDA GRAS NOTIFIED SAFE STRAINS: The highest number of probiotics notified for GRAS status.

				World No.1		
Genus	Name	Species	Origin	U.S. FDA GRAS	Whole Genome Sequencing	<b>Clinical Trials</b>
Bacillus sp.	CBT-LA1	Lactobacillus acidophilus	Healthy Human	•	0	0
	CBT-LH5	Lactobacillus helveticus	Healthy Human		0	
	CBT-LC5	Lacticaseibacillus casei	Healthy Human	•	0	0
	CBT-LG1	Lactobacillus delbrueckii subsp. bulgaricus	Mother's Milk		0	
	CBT-LP3	Lactiplantibacillus plantarum	Fermented Food (Kimchi)	•	0	0
	CBT-LPC5	Lacticaseibacillus paracasei	Fermented Sea food		0	0
	CBT-LU4	Limosilactobacillus reuteri	Healthy Human		0	0
	CBT-LR5	Lacticaseibacillus rhamnosus	Healthy Human	•	0	0
	CBT- LGA1	Lactobacillus gasseri	Mother's milk		0	0
	CBT-LR6-Feminine	Lacticaseibacillus rhamnosus	Healthy Women		0	
Bifidobacte- rium sp.	CBT-BT1	Bifidobacterium longum bv. infantis	Healthy Infant	•	0	0
	CBT-BL3	Bifidobacterium lactis	Healthy Infant	•	0	0
	CBT-BR3	Bifidobacterium breve	Healthy Infant	•	0	0
	CBT-BF3	Bifidobacterium bifidum	Healthy Infant	•	0	0
	CBT-BG7	Bifidobacterium longum	Healthy Infant	•	0	0
<i>Coccus</i> sp.	CBT-SL6	Lactococcus lactis subsp. lactis	Healthy Human	•	0	
	CBT-EF4	Enterococcus faecium	Healthy Human		0	
	CBT-EFL2	Enterococcus faecalis	Healthy Human		0	
	CBT-SL5	Enterococcus faecalis	Healthy Human		0	0
	CBT-ST3	Streptococcus thermophilus	Healthy Human	•	0	0
	CBT-SL4 (PP1)	Pediococcus pentosaceus	Fermented Food (Kimchi)		0	0

# **ACROSS BOTH** B2B & B2C **SECTORS**

### **OUR REAL-WORLD EXPERIENCE**

Through real-world examples and business cases, our B2C experience provides valuable insights into consumer behavior, preferences, and market trends. This understanding can be applied in B2B contexts to offer tailored solutions and marketing support considering end-customers of partners. Our marketing team, with diverse skills and expertise in branding, digital marketing, and customer relationship management, can provide marketing advice and support to B2B customers.

### B2B BUSINESS OEM & ODM

### **A** RAW MATERIAL

Single Strain A broad selection of single strains to meet customers' specific needs.

#### Premix Formula A base probiotic formulation for further processing by the customers.

### 

### **Tailored Formula**

Special probiotic formulations tailored to meet the needs of particular customers.

### **FINISHED PRODUCT**

Ready-to-Market Formula Well-documented pre-formulated probiotics requiring no further development.

### 

#### Brand Elements for B2B

All Cell Biotech probiotics, including single strains, premix powders, and finished concepts, are branded as LAB2PRO<sup>®</sup> to communicate their uniqueness and high quality.



### **DUOLAC®**

### **Premium Probiotics** Brand Thanks to dual coating

technology, all DUOLAC® products ensure the highest quality and survival of probiotics, highly recommended by healthcare professionals.

### **DUOLAB®**

#### For Better Absorption of Nutrients

Inspired by 30 years of probiotic formulation expertise, the world's first synergy probiotics are specifically developed to enhance the absorption rate of nutrients in the intestine.

### **LACTO CLEAR**®

#### **Microbiome Skincare**

LactoPad<sup>®</sup> , our signature bacteriocin peptide derived from Enterococcus faecalis CBT-SL5, has been clinically proven by dermatologists to show antimicrobial activity against C. acnes.













# **GLOBALLY RECOGNIZED PROBIOTICS**

# **EXPORTING TO 53 COUNTRIES WORLDWIDE**

Cell Biotech is Korea's leading probiotics company, exporting to over fifty countries around the world and managing brands in South Korea, Denmark, and Singapore. We have established partnerships with global pharmaceutical companies and local retailers to distribute our products. With almost 30 years of experience in the probiotics business, we have tailored our products to meet the needs of diverse cultures, ethnicities, regions, and climates.

# **INVEST 10% OF REVENUE TO** R&D

# FROM STRAIN RESEARCH TO CLINICAL TRIALS **: INTEGRATED PROBIOTICS RESEARCH** INFRASTRUCTURE

We have established a future-oriented R&D infrastructure, actively conducting joint research projects with overseas institutions. Additionally, we continuously strive to globalize our R&D competitiveness and research capabilities by expanding our R&D pipeline and developing biopharmaceuticals (a new first-in-class colorectal cancer drug) and cosmetics.

### **RESEARCH TEAM**



### **PROBIOTICS RESEARCH**

Whole Genome Sequencing (NGS) Identification of core and specific genes at the strain level

**Gut Microbiome** Identification of intestinal microorganisms through the data

**Comparative Genomics** Identification of unique genes in each strain

### PHARMA-BIOTICS RESEARCH

#### Anti-Colorectal Cancer Treatment

A novel therapeutic approach for colorectal cancer using a *P. pentosaceus* SL4-based drug delivery system (DDS) installing P8 protein secretion system

**Clinical Trial** Obtained approval for a phase I clinical trial from the South Korea's Ministry of Food and Drug Safety(MFDS)

# 

Establish Strain Library Database for each strain based on genomic research / Develop and manage strains

**Optimize Each Strain** Establishing the optimal culture conditions

Efficacy & Safety Test Evaluation of the efficacy and safety of strains

# **FORMULATION** DEVELOPMENT

#### **Commercializing Proven** Scientific Data

Developing proven formulations into finished products / Creating innovative products that meet market needs











# GROUNDBREAKING PROBIOTICS RESEARCH

772	ACADEMIC ACHIEVEMENTS	214
	PUBLICATIONS	115
	PATENTS	99
Ø	IN VITRO	48
ET C	ΙΝ VIVO	47
20	CLINICAL TRIALS	32

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**Clinical Trials** IBS, IBD, Constipation, Acute diarrhea

#### In vivo

Relief of gastrointestinal side effects induced by medicine (NSAIDs)

#### **BONE HEALTH**

In vivo Osteoporosis. Rheumatoid arthritis

### **BABY HEALTH**

**Clinical Trials** Indigestible oligosaccharide utilization (HMO), Acute rotaviral diarrhea, Lactose intolerance

### **ANTI-CANCER**

In vitro. In vivo Anti-colorectal cancer effects

### BIOCONVERSION

In vitro, In vivo Bioconversion of multivitamin and minerals. Ginsenosides and Rutin, Protein Absorption

### **SKIN HEALTH Clinical Trials**

Pediatric atopic dermatitis

### In vitro Anti-aging,

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Skin microbiome

### LIVER HEALTH

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### In vitro. In vivo

Anti-menopause effect. Antimicrobial activity against vaginal pathogens

WOMEN HEALTH

Vaginal microbiota,

Vaginal Dysbiosis

**Clinical Trials** 

### **Clinical Trials**

Nonalcoholic fatty liver disease(NAFLD) In vivo

Anti-fatigue, Hepatoprotective effect, Alcohol and acetaldehyde metabolism, Nonalcoholic Steatohepatitis (NASH)

### MENTAL HEALTH

In viv Depressive behaviors

Genomic Research GABA

MICROBIOME

**Clinical Trials** 

Gene analysis

GENOME

SEQUENCING

**Genomic Research** 

Complete genome

genomic analyses

Comparative

Gastrointestinal

microbiome, Infant gut

microbiota, 16S rRNA

### Prevention of Salmonella, E.coli, S.typhimurium,

C. difficile infection, Food-borne pathogens

ANTIMICROBIAL

ACTIVITY

In vivo

# OBESITY

**Clinical Trials** Metabolic disorders, Cholesterol level,

Blood Glucose

### POSTBIOTICS In vitro, In vivo

Antibacterial activity. Bacteriocin, Heat-killed sequence of probiotic strain, bacteria, Prolac-T™

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# WORLDWIDE PATENTED COATING TECHNOLOGY

## **100 TIMES HIGHER SURVIVAL RATE**

More than 90% of good bacteria are orally consumed but they are killed by gastric acid and bile salt. Our superior coating technology ensures a probiotic survival rate in the intestine that is **100 times higher** than that of uncoated probiotics. Yeun, Y., & Lee, J. (2015)

### **HOW DOES IT WORK?**

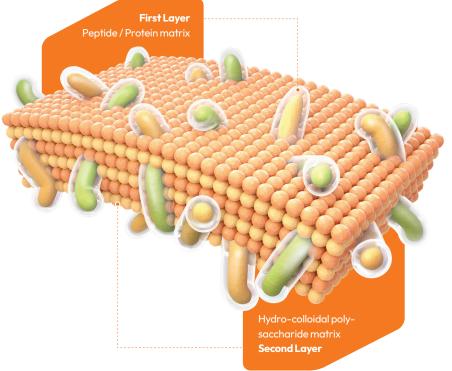
The combined interactions of the iso-electric point of the peptide/protein coating matrix and the beta linkage of the polysaccharide matrix ensure that our dual-coated probiotics are protected from the acidic pH environment of the stomach This protection allows them to safely reach the intestines, where they can colonize and proliferate.

### WORLDWIDE PATENTS

Our probiotics coating technology is patented worldwide, including in Korea, the USA, Europe, China, and Japan. These global patents enable us to export to 53 countries worldwide.

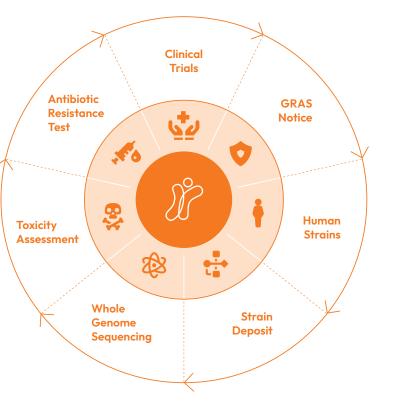


### **DUAL COATING MATRIX**



# **360-DEGREE** SAFETY ASSESSMENTS

### SAFETY EVALUATION FROM ALL ANGLES



# **GRAS NOTICE RECOGNIZED BY U.S. FDA**

Obtaining GRAS notification from the U.S. FDA involves a rigorous evaluation process, requiring numerous scientific data and evidence demonstrating the safety of a substance for its intended use in food products. With 11 strains, Cell Biotech has obtained GRAS notification, positioning itself as the global leader with the highest number of probiotics recognized for GRAS status. This milestone affirms the safety of Cell Biotech's probiotics in the worldwide market.

### HUMAN-DERIVED STRAINS

Strains derived from healthy humans are more likely to be compatible with the human body, leading to better colonization and survival in the gut environment compared to strains from other sources.

### **STRAIN DEPOSIT**

All of our probiotic strains are securely stored and managed in authorized microorganism institutions in South Korea (KCTC) and Germany (DSMZ). Furthermore, the entire genetic information of the strains is enlisted with the NCBI.

# **PRECISE EVALUATION**

Over 200 research studies, including clinical papers and genome sequencing papers, proved the safety and discovered the characteristics of the strains.

- In vitro, In vivo, Clinical Trials
- Whole Genome Sequencing (NGS)
- 16S rRNA Sequence Analysis
- Antibiotic Resistance Test

- Toxicity Assessment
- Physiological Function Test
- Heavy Metal Test

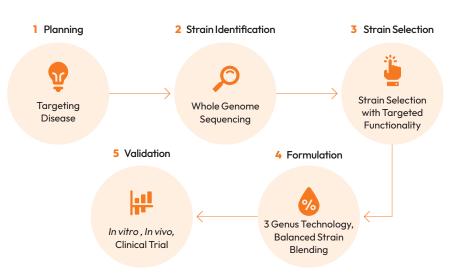
# **GENETIC-BASED** FORMULATION **TECHNOLOGY**

## **GENOME IDENTIFICATION FOR TARGETED FUNCTIONALITY**

As each strain has its own unique characteristics, we analyze them through various scientific assays and **genome-based predictions** to understand their properties. Combining knowledge of each strain with insights from scientific literature, we select different strains for specific health-promoting effects.

### **R&D LEADS THE FULL PROCESS OF** FORMULATION

As an integrated probiotic manufacturer, our laboratory takes pride in managing the entire development process to ensure the delivery of top-quality probiotic solutions. From strain selection to final solution formulation, each step is meticulously studied within a laboratory solely dedicated to probiotics. As a result, we have developed a range of probiotics solutions clinically shown to meet specific needs. From children to adults aged 65 and above, every formulation is based on scientific documentation.



The graph shows doubling time and growth curve of each genus: when one genus has ended its growth circle, another genus is ready to take over. \*Source : Cell Biotech R&D Center

(UNIT:%)

33

49

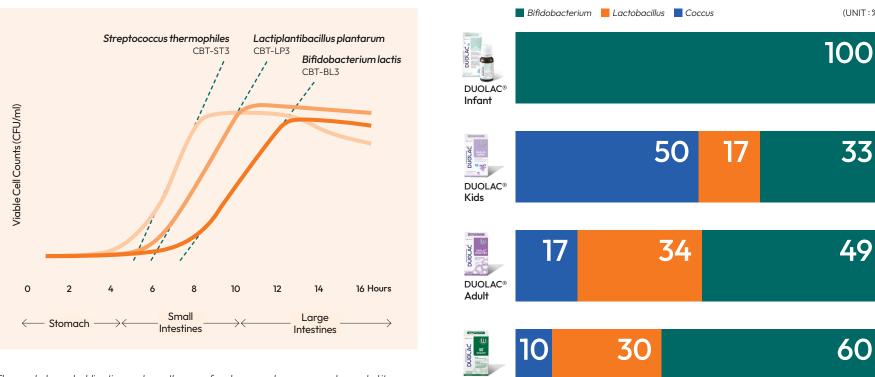
## FORMULATION CONSIDERING DIFFERENT **GROWTH RATES OF THE 3 GENERA**

Through our knowledge of fermentation and strain proliferation, we have created 3-genus technology, a synergistic probiotics formation which allows different strains to grow harmoniously in the intestines. Our specialist knowledge of strain proliferation enables us to create a synergistic effect among our probiotic strains.

# FORMULATION TAILORED FOR MICROBIOME DIVERSITY BY AGE

Bifidobacterium is the dominant bacteria in the intestines of infants, but its percentage decreases with age. Our strain formulation is scientifically **tailored to the changing** intestinal flora across different age groups.

\* Reference: Intestinal flora and human health, Mitsuoka (1996)



**DUOLAC®** 

50+

# **IN-HOUSE** FERMENTATION FOR QUALITY, PURITY, SAFETY



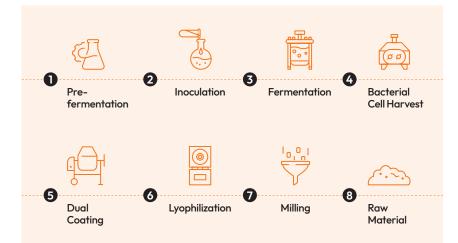
# **FERMENTATION FACILITIES FOR THE HIGHEST QUALITY**

To ensure optimal state of living bacteria, we have optimized the fermentation conditions for each strain and established mass production facilities through continuous technology innovations as a means to secure global-scale fermentation facilities. Every batch is produced to the highest quality standards and undergoes rigorous testing to ensure compliance with our strict quality standards.

# FULLY AUTOMATED CONTROL SYSTEM

An automated control system ensures consistent environmental conditions, guaranteeing the **consistent quality of probiotics**. This is crucial for maintaining the stability and efficacy of the final product. Also, this system use precise devices to monitor and control the fermentation process accurately. This helps maintain optimal conditions for the growth and production of strains.

### FERMENTATION PROCESS



# **PROBIOTICS-CENTRIC** MANUFACTURING FACILITIES



# **OPTIMIZED FACILITIES FOR MAXIMUM PROBIOTICS VIABILITY**

Our dedicated probiotic facilities are designed for the manufacture of high-quality probiotics, with every process and environmental factor optimized to ensure maximum probiotic viability.



entire facility

Equipped with **HEPA** filters

# INTERNALIZED PROCESS FROM **START TO FINISH**

and filling processes

High-quality probiotic products are provided through our one-stop solution, which encompasses strain development, production, distribution, quality control, and customer service in accordance with global standards. To ensure the viability and traceability of the products, the entire chain is carefully managed and internalized.

# MADE-TO-ORDER SOLUTION

Various dosage formats, flavors, and packaging options are prepared to meet diverse and unique requirements of our valued customers.

# BOTTLE



One-Touch 30ml



Push Down & Turn 150ml



Round 75ml



# **PRODUCT OPTIONS**

### **ADDITIONAL INGREDIENT**

Prebiotic Minerals **Postbiotics (Prolac-T™)** Others Vitamins

Customer-Requested Ingredient

# **CHEWABLE TABLET**





Oblong

## **ADDITIVE - FREE**

GMO Free **Preservatives** Free Gluten Free

Color Free - If using transparent capsule BSE-TSE Free - If not using gelatin capsule Lactose Free – If ingredients not contain milk or lactose Halal-Certified – Certified products only Kosher-Certified - Certified products only

## **FLAVORS**

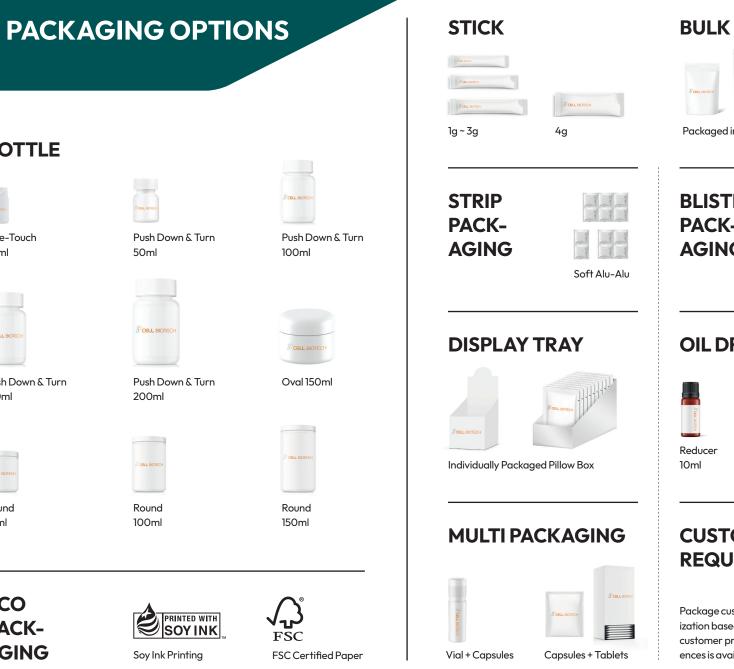
Orange	Grain
Strawberry	Milk
Pineapple	Lemon
Сосоа	Tropical Fruit
Yogurt	Peppermint
Grape	Apple Mint
Pomegranate	Mint Chocolate
Apple	Mango

Honey Banana Blueberry Green Grape No Flavor Natural Flavor Customer-Requested Flavor





PCELL BIOTEC



BLISTER PACK-AGING Plastic Pocket

**OIL DROPPER** 

8 CELL

Packaged in 5kg Units



Dropper

10ml

# **CUSTOMER-**REQUESTED

Package customization based on customer preferences is available.



# **STRICT QUALITY CONTROL BY** INDEPENDENT LINE **AUDIT TEAM**



### LINE AUDIT SYSTEM

As part of a transparent quality management process, this pursues the highest quality standards. Within this system, auditors are independent from the production team, and they monitor production processes in real-time on each production line. They have the autonomy to directly report any potential errors to management, ensuring a higher level of transparency in quality control.

### **GLOBAL QUALITY CONTROL STANDARDS**

With a world-class quality control system in place, thorough inspections are conducted at every stage, from raw material assessments to finished product delivery. This ensures product quality on a global scale, meeting the diverse criteria of various countries.

### **GLOBAL CERTIFICATIONS AND EMS**

To ensure the production of probiotics meeting the highest quality standards, our facilities undergo GMP inspections and hold certifications including Halal\*, Kosher\*, Codex HACCP, ISO9001, and ISO14001, enabling us to export to over fifty countries worldwide. \* Certified Products Only





# **SUSTAINABLE** MARKETING PARTNERSHIPS

#### 15 | 16

# MARKETING SERVICE FOR YOUR GROWTH

We offer **a wide range of marketing assistance** tailored to B2B clients. With over 30 years of experience, we are ready to share our marketing know-how in the probiotics business. Furthermore, we invite influential group, along with our valued partners, to visit our company's facilities to establish credibility for our products and company.

### We establish long-term partnerships with our valued partners to support you in Marketing Knowledge Collaboration Sharina 400 B2B Partners Attendees Knowledge Sharing • Attendees From 25 European Countries Relationship Building **B2B** Partners Conference **Factory Tour** Key Opinion ConsumerInvitation Leaders Invitation Events ... 197

Pharmacist **Group Seminar**  Marketing

Sales Forces

Seminar

Academic Conference

**Press Trip** 

Doctor Group Seminar

• \* •

Multilevel Marketine **Company Seminar** 

# **B2B PARTNERS CONFERENCE**

achieving goals. Annually, we host B2B conferences in Europe, providing a social platform for our B2B partners to exchange creative ideas, share our research findings, new product information, and insights.



# FOR DAILY WELL BEING OF ALL AGES

Cell Biotech Pioneering Innovative Probiotic Solutions

Daily concepts are for everyone and everyday use to support and maintain a healthy internal balance, a strong immune defense and a well functioning gut.

Skin

Category	Name	Concept		Co
Baby	New Born Baby <sup>™</sup>	Baby Growth (HMOs)	Oil Drop	W
	⇔ Baby Organic <sup>™</sup>	Baby Growth (HMOs)	Powder	
	Happy Baby™	Toddler Gut health	Powder	
	♦ Milk Again <sup>™</sup>	Lactose Intolerance	Powder	
Kids	♦ Healthy Kids™	Kids Gut Health	Kids Tablet	F
	♥ Kids Immune <sup>™</sup>	Kids Immune Health	Kids Tablet	
Adult	♥ Daily Vitality™	Adult Gut Health	Capsule	
	Interpretation of the second seco	Bowel Movement	Powder	
Senior	\$0+ Vitality™	Complete 50+ Care	Capsule	м
		Complete 65+ Care	Capsule	
Nutritional Joy		Probiotic Choc Ball (Live Bacteria)	Chocolate Ball	
	♥ Vita-Gummy <sup>™</sup>	Multivitamin Gummy	Gummy Bear	

ategory	Name	Concept	
Vomen	♦ Mom <sup>™</sup>	Prenatal Care	Capsule
	♦ Women Balance™	Vaginal Microbiome	Capsule
	♦ Glow <sup>™</sup>	Inner Beauty	Powder
	◆ Detox <sup>™</sup>	Defecation	Powder
amily	I Family Balance	Family Gut Health	Tablet
	Sio Guard™	Family Care	Powder
	♥ Quercetin <sup>™</sup>	Family Immune Health	Powder
	Thrive <sup>™</sup>	Prebiotics	Powder
1ulti Care	Super Day™	Multi-Vitamins	Capsule
	Super Immune <sup>™</sup>	Vitamin C	Capsule
	Super Energy™	Vitamin B Complex	Capsule
	Super Memory <sup>™</sup>	Ginkgo Biloba	Capsule

# FOR TARGETED HEALTH BENEFITS

Our special probiotics formulation are targeted for those situations where extra help is needed to recover and restore the specific symptoms and disease.

gory	Name	Concept	
lth	Premium Care <sup>™</sup>	IBS, IBD, Constipation	Powder
	< Calm Gut™	IBS	Capsule
	AAD Stop™	Antibiotic Associated Diarrhea	Capsule
	Travel <sup>™</sup>	Traveler's Diarrhea	Tablet
obiome toration		Boost Microbiome Diversity	Capsule
	Revitalize™	Chronic NSAIDs Medication	Capsule
	Preparation <sup>™</sup>	Probiotic Pretreatment for Bowel Preparation Prior to Colonoscopy	Capsule
	Stop Cry™	Infant Watery Diarrhea	Powder
estive Ith	♥ Easy Digest™	Digest Care	Capsule
nen Ith	♥ UTI Care™	Urinary Care	Capsule
	♦ Meno-Pro <sup>™</sup>	Anti-Menopause	Capsule
Health	♥ Derma Plus™	Atopic Dermatitis	Powder

Category Name		Concept		
Metabolic Health	♥ Control <sup>™</sup>	Diabetes	Capsule	
Health	♥ Slim <sup>™</sup>	Obesity	Capsule	
Blood Health	♥ Blood Care <sup>™</sup>	Cholesterol	Powder	
Liver Health	♥ Fresh Morning <sup>™</sup>	Hang Over	Powder	
neaim	♦ NAFLD Care <sup>™</sup>	Non Alcoholic Fatty Liver Dis- ease (NAFLD)	Tablet	
	♥ Liver Protect <sup>™</sup>	Liver Damage	Powder	
Bone Health	Bone Strength™	Osteoporosis Rheumatoid Arthritis	Powder	
Mental Health	♦ Good Mood <sup>™</sup>	Depression	Powder	
Muscle Health	Protein Plus™	Protein Absorption	Capsule	
Oral Health	♥ Dental <sup>™</sup>	Periodontitis	Capsule	
Pet Health	♥ Happy Dog™	Healthy Dog Skin	Capsule	
	♥ Slim Dog™	Dog Obesity, Joint Care	Capsule	

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