



ikiBC



What is iKiBC?

iKiBC is a proprietary gram-positive, spore-forming *Bacillus coagulans* (*Bacillus coagulans* LBSC, DSM 17654) designed for use in traditional food.

Clinical study shows it is safe to use and efficacious (Chitaranajan Maity & Anil Gupta, 2018 Eur. J. Clin. Pharmacol. Sept 2018)

Organic grade of iKiBC is available on request.



Specification



Form: Off-white to creamish powder

Active ingredients: Probiotic *Bacillus coagulans*

Declared potency: 10x10⁹ CFU/gm

Bulk density: 0.7 + 0.2 g/ml

Solubility: Soluble in water

Benefits:

Benefits of ikiBC include:

- Promotes regulation of pH levels to support a healthy gut microbiome
- Supports the inhibition of bad bacteria growth
- Promotes T-cell response and immune system
- Supports relief from bloating and digestive discomfort
- Promotes vaginal flora and normal vaginal health
- Supports nutrient absorption
- Shows promising results in arresting antibiotic-associated diarrhea

Features:

- Spore forming & thermo-stable
- Shelf & pallet stable
- Low-acid pH stable
- Resistant to bile salt & pepsin
- Soluble & stable in water
- Compatible with antibiotics & coccidiostats
- Stable in hot & cold beverages, baked goods, cereal bar and chocolates
- Organic-grade available



Mechanism of action

ikiBC promotes change in the microbial population dynamics of the gastro-intestinal tract, creating a more favorable microbial population due to a shift in the balance between beneficial and harmful microbes. Healthy microbial populations in the GI-tract are often associated with enhanced performance, reflecting more efficient digestion and improved immunity. The reduction in pathogenic microorganisms in the gut may be attributable to the production of antimicrobial substances such as bacteriocins and adhesion of the probiotic microbes to the intestinal epithelium, thereby excluding pathogens competitively, or by inducing immune system response.

Application

ikiBC can be used in a range of foods and functional beverages, such as ice and hot tea, instant coffee, juices, flavored drink, sports drink, purees, yoghurt drink, coconut water, breakfast cereals, cereal bars and chocolates, ice creams, ready mix soup, instant noodles, muffins, cookies, ketchup, and more ...

The recommended dose of ikiBC is 5.0×10^7 to 2×10^9 per serving. The final dose varies based on type of food and intended label claims

Figure 1: thermostability of ikiBC in aqueous media

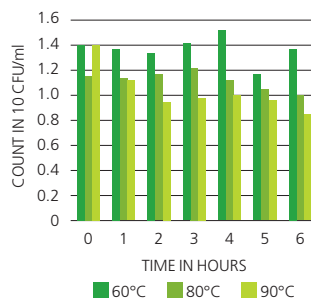


Figure 2: aqueous stability of ikiBC

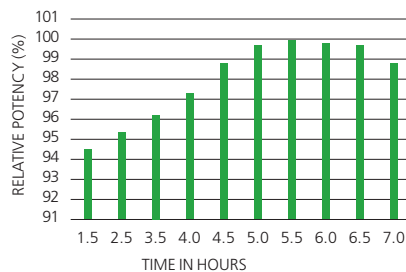
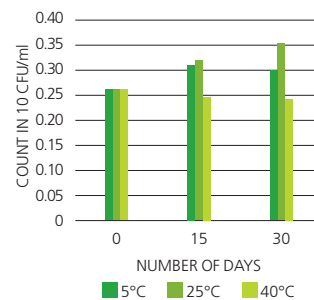
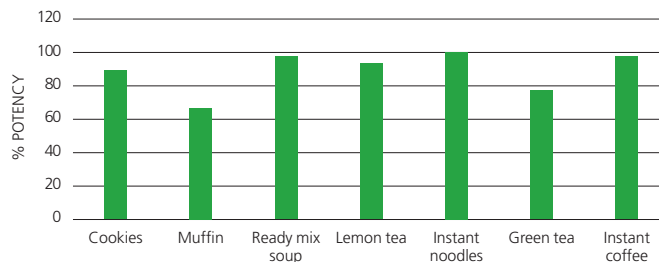


Figure 3: Potency Retention of ikiBC under different pH conditions in presence of artificial gastric juice at 37°C (Also bile salt stability)

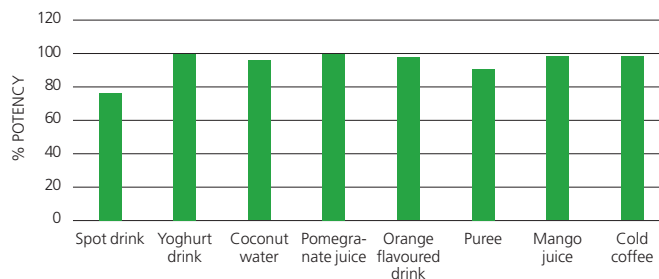
(Date source: R&D Lab of Advanced Enzyme Technologies Ltd. India)

Stability of ikiBC with various food & functional beverages

Recovery of ikiBC Post Food Preparation



Storage Stability of ikiBC in Functional Beverages



Quality Specifications

ikiBC is food-grade, meeting the recommended purity specifications for food-grade by Joint FAO/WHO Expert Committee on Food Additives (JECFA) and the Food Chemical Codex (FCC). **ikiBC** is manufactured under a quality management system consistent with International Quality System Standard ISO 9001 :2008.

Storage

ikiBC should be stored in a cool, dry place. Storage in unopened containers, at or below 5°C, helps to maintain maximum activity if stored over long periods. Under these conditions, activity loss after one year should not be more than 10 percent.

Packaging

ikiBC is available in 25 kg HDPE drum.

The case for Probiotics

Growth in Dietary supplements

USD 70 billions

Current Global Market

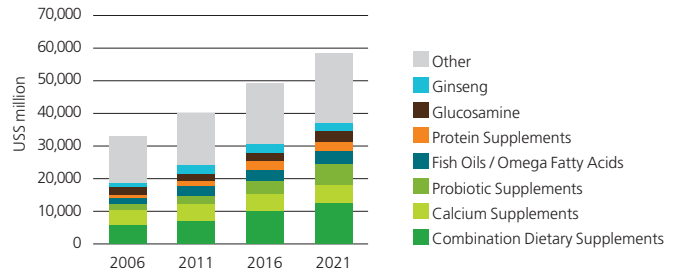
9%

YOY Growth

249%

Growth in Probiotic supplements from 2006 to 2021

Dietary Supplements • Retail Value 2006-2016



Probiotics in Food

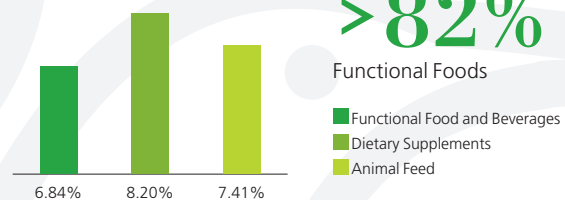
Why do I need to take probiotic supplements when I can have it in my food or beverage?

- Greater acceptability of food as compared to supplements
- Pill fatigue
- Taste and Satiety
- **Availability of probiotic strains which can survive in food products**



Distribution of Probiotics Segments

CAGR 2016-2021



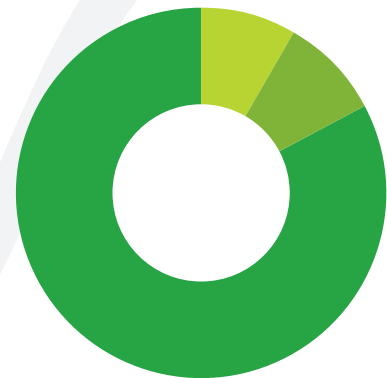
>82%

Functional Foods

- Functional Food and Beverages
- Dietary Supplements
- Animal Feed

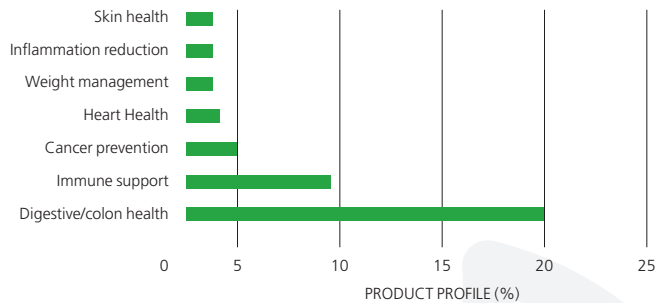
2016 Market Share

- 82.56%
- 8.89%
- 8.55%



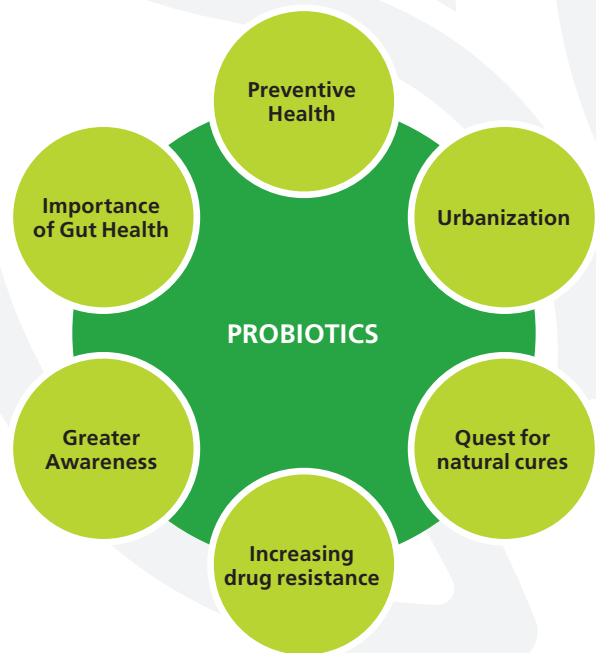
Consumer Cluster on Probiotics Why Gut Bacteria Matter

Maximum focus on Digestive/colon health



NMI's 2008 Health and Wellness Trends Database

Key Growth Drivers



BAD BACTERIAL FLORA

Enterococcus Faecalis

A common cause of post-surgical infections

Campylobacter

Campylobacter jejuni is a strain most commonly associated with human disease. Infections usually occurs through the ingestion of contaminated food.

Clostridium Difficile

Most harmful following a course of antibiotics when it is able to proliferate

70% of our immune cells are located in the digestive tract, making the health of the digestive tract critical to overall health

GOOD BACTERIAL FLORA

Bifidobacteria

The various strains help to regulate levels of other bacteria in the gut, modulate immune responses to invading pathogens, prevent tumor formation and produce vitamins

Lactobacilli

Beneficial varieties produce vitamins and nutrients, boost immunity and protect against carcinogens

Escherichia Coli

Several types inhabit the human gut. They are involved in the production of vitamin K2 (essential for blood clotting) and help to keep bad bacteria in check. But some strains can lead to illness.

Probiotic: Boosting the good bacteria

- Taxonomic determination at genus and species level
- Identifiable at strain level
- Should be bile and acid tolerant
- Documented history of safe use
- Ability to utilize nutrients in a normal diet
- Non-pathogenic and non-toxic
- Should be able to survive passage through digestive system
- Should exert a beneficial effect on the host
- Should be able to attach to intestinal cell wall and colonize
- Should have manufacturing, transport and storage stability

Stability

- Naturally Encapsulated
- Spore forming

Tolerance

- Tolerant to high temperatures
- Tolerant to gut acids and enzymes

Clinical Efficacy & Safety

- Human trials done
- Clinically proven for treatment of acute diarrhea and abdominal discomfort
- US FDA GRAS Dossier file (April 2019)

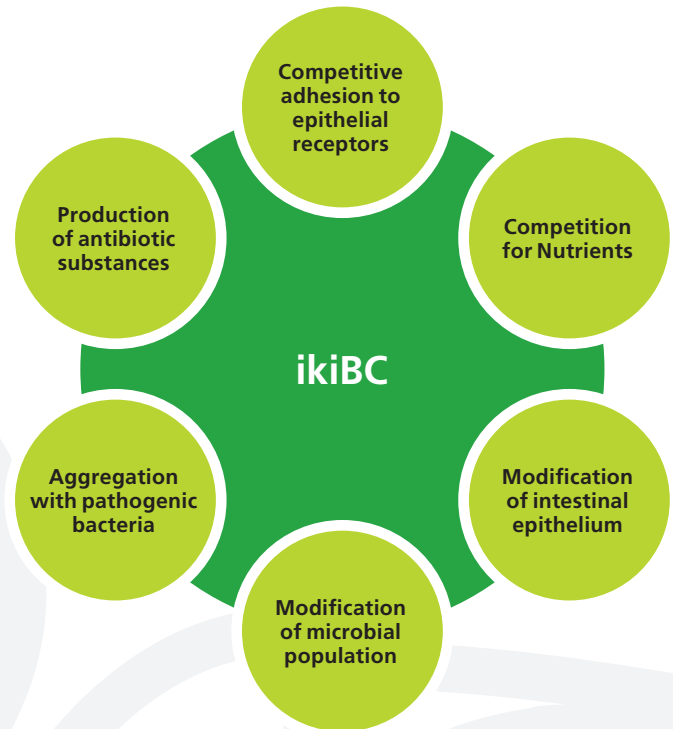
Clinical Study of ikiBC

Clinical Study *Eur J Clin Pharmacol.* 2019 Jan;75(1):21-31. doi: 10.1007/s00228-018-2562-x. Epub 2018 Sep 28.

A prospective, interventional, randomized, double-blind, placebo-controlled clinical study to evaluate the efficacy and safety of *Bacillus coagulans* LBSC in the treatment of acute diarrhea with abdominal discomfort

Key Findings of Study

- No adverse events therefore safe for use
- Well tolerated by participants at the dose provided
- Effective in recovering from acute diarrhea with abdominal pain and flatulence
- Exhibited improved Quality of Life



Key Advantages for Food Applications



>65% survival at 200°C in baked products



Stable at pH as low as 1.5 in water based matrix



Compatible with almost any kind of food matrix

Applications

Activity Data in Beverage Applications

Dairy products



- Yogurt
- Milk
- Kefir
- Ice cream
- Butter
- Cheese

Cereals & Confectionery



- Protein bar
- Chocolates
- Chewing gum
- Wafers
- Breakfast cereals

Baked goods



- Breads
- Cakes
- Muffins
- Biscuits
- Cookies
- Sour dough
- Breads

Beverages



- Juices
- Coffee, tea
- Health drinks
- Sports drink
- Ready mix soup
- Purees
- Coconut water

Fermented products



- Tempeh
- Meat Sausages
- Steak etc.

Serving segments	Processing conditions	Test time	% Active after test
Sports drink	NA	3 months	75
Coconut water	NA	3 months	95
Juice	NA	3 months	97
Puree	NA	3 months	90

Activity Data in Food Applications

Serving segments	Processing conditions	Test time	% Active after test
Green tea	Dissolved in 85°C hot water	30 minutes	85
Cookies	Baked at 180°C for 15 minutes	2 months	65
Muffin	Baked at 200°C for 18 minutes	1 month	90
Noodles	Dissolved in 85°C hot water	30 minutes	98
Cold Coffee	NA	3 months	95

ikiBC in your diet



Trusted Manufacturer

- Over 50 years of fermentation experience
- Kosher, Halal and WHO GMP Certified
- Largest production facility in Central Asia
- Global presence



ikiBC

Non-Toxic

Non-Pathogenic

Survives passage through gut

Thermo tolerant

Acid & Bile tolerant

Clinically Safe

Stable in a variety of food matrices

Gut Health Beneficial

GRAS Dossier filed

Spore Forming

Trusted Manufacturer



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