

GanedenBC³⁰™ The Only Probiotic Ingredient



The Limitations of Conventional Strains of Probiotics

The primary purpose for the use of probiotic bacteria in functional food and beverage industries is for the strain that is utilized to effectively colonize the small and large intestines. There are a number of factors that influence effective colonization and many of these factors are related to the manufacturing process.

- The process of manufacturing probiotic bacteria is a complex endeavor. The protocol design and the preservation method that is utilized to ensure viability before the bacteria is delivered to the formulator/packager require intelligent design.
- Most manufacturers only guarantee the number of bacteria in the product at the time of manufacturing. As a result, by the time the dried bacteria have reached the formulator, there has already been a substantial drop-off in the number of probiotic cells per gram. Formulation using high shear mixing, high compression, preservatives, and heat also takes a toll on the number of viable bacteria found in the final product. Before the product has left the formulator to be delivered to the retailer, the number of viable probiotic cells has been considerably depleted.
- Most probiotic bacteria lack effective stability. Stability is the step in the manufacturing or fermentation of the organism that helps to ensure adequate shelf life. Some probiotic manufacturers use special additives to promote some measure of stability and others rely on refrigeration to accomplish this objective. But the harsh reality is that very few of the probiotic products on the market today have any real measure of long term stability.
- The ability of the probiotic to effectively colonize or take up temporary residence in the intestines is the end goal of use of probiotic products. Most probiotics are destroyed by gastric acid during ingestion. In addition, bile acid and some enzymes are inhibitory to these organisms and their respective numbers are depleted as a result.

Probiotics

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Why GanedenBC³⁰

- Once activated GanedenBC³⁰ germinates and proliferates throughout the gut providing benefit throughout the large and small intestines
- The sporeforming nature of Bacillus coagulans, in particular GanedenBC³⁰, provides superior viability compared to other probiotic strains
- GanedenBC³⁰ is a Gram-positive spore-forming rod 0.9µ by 3.0µ to 5.0µ in size, aerobic to microaerophilic
- Once germinated GanedenBC³⁰ produces lactic acid displacing non-beneficial bacteria

What Makes Bacillus Coagulans Different From Other Strains of Probiotic Bacteria?

Bacillus coagulans is surrounded by a natural protective shield. This protective layer helps Bacillus coagulans survive the heat and pressure of manufacturing and the acids in the stomach in order to arrive alive and intact in the intestines their intended target. Other traditional probiotic bacteria, such as bifidobacterium and lactobacillus, do not contain this protective outer shell.

GanedenBC³⁰ a Spore-forming Bacteria

GanedenBC³⁰ is a strain of Bacillus coagulans, which are spore-forming bacteria that can be compared to a seed. When left alone, the seed is dormant – meaning to say it's not alive, yet it's not dead either. It's kept in a state of "readiness" by a protective shell. However, when this seed is put into the right temperature and moisture, it starts to germinate, or grow.

Just as a seed waits for the proper conditions to start growing, so does the spore forming bacteria, Bacillus coagulans. However, for GanedenBC³⁰, these conditions are met in the body's intestinal tract. Here, the spore-forming bacteria meet the right temperature and moisture where they begin to grow and colonize – two critical factors for any probiotic bacteria.

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GanedenBC^{30™} The Only Probiotic Ingredient



GanedenBC³⁰ Survivability in Various Applications

Item Tested	Parameters	% Viable Cells – Post Processing
Hot Tea	Boil water, immediately place tea bag containing GanedenBC ³⁰ into water - steep for 4 minutes - perform cell counts on tea	>65%
Baked Muffin	Mix GanedenBC ³⁰ into muffin batter - bake at 350°F for 20 minutes - freeze immediately - store frozen for 14 days - thaw and count cells at end of 7 day shelf life	>65%
HTST Dairy Processing	Combine GanedenBC ³⁰ with milk - heat to 177°F for 22 seconds - chill immediately and count cells	>85%
HTST Dairy Processing with Homogenization	Combine GanedenBC ³⁰ with milk - run through homogenization system heat to 177°F for 22 seconds - chill immediately and count cells	>40%
Hot Mixed Granola Bar	Mix GanedenBC ³⁰ into dry granola mix - combine with 130°F wet ingredients and mix - roll to uniformed consistency and cool - store at room temperature for 2 weeks - count cells	>80%

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GanedenBC³⁰ as a Lactic Acid Producing Bacteria

The role of lactic acid producing bacteria in intestinal microecology has been the subject of extensive research^{i,ii}. Such bacteria are a necessary component of fermented dairy products and have been proven beneficial for human healthⁱⁱⁱ. They constitute an important element of the healthy digestive tract and are commonly found in a variety of food and nutrition products^{iv} and it is widely believed the action is a result of the production of antibiotic-like substances called bacteriocins^{v,vi}.

Lactic acid producing bacteria have been shown to be effective in treating various diseases^{vii}. There are two isomers of lactic acid D and L, also written as D (-) and L (+) that are optical isomers of each other. Optical isomers share the same structure but their molecules differ in their spatial arrangement. This minute difference is a determining characteristic of a molecule which has profound impact in its recognition and action. Some literature suggests that for lactic acid producing bacteria to be efficacious and safe the bacteria must produce optically pure L+ lactic acid, the only useful form of lactic acid for producing health benefits. In-fact, D lactic acid has been shown to be harmful as a toxic bacterial metabolite^{viii,ix}.

GanedenBC³⁰ produces only the L+ lactic acid isomer in high yield, making it the choice probiotic isolate in terms of lactic acid production. Survivability teamed with its L+ lactic acid production make GanedenBC³⁰ a therapeutic source that can be utilized in most processes without compromising bacterial viability.

The GanedenBC³⁰ solution

At Ganeden Biotech, our patented strain of GanedenBC³⁰ provides the solution to difficulties normally found within manufacturing and survival of probiotic bacteria. GanedenBC³⁰ has proven viable through manufacturing and digestive processes. It survives harsh environments of heat and pH plus GanedenBC³⁰ delivers its therapeutic effect in large numbers.

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