

Food enzymes, probiotics can help overcome global nutrition challenges

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In the present times, it is not just about curing but healing, not just health but wellness, and not fast food anymore but its all about whole food.

The world population is presumed to reach nine billion by 2050 (source: UN News), with the rapid escalation in middle-class. The safety in food supply is now an increasing threat. Meanwhile, the prevalence of diabetes, obesity and undernourishment are on the rise and therefore, food and beverage producers more than ever need groundbreaking solutions to meet global challenges. A few critical ingredients can help overcome such challenges.

Food enzymes are products obtained from plants, animals or microorganisms or products thereof including a product obtained by a fermentation process using microorganisms, containing one or more enzymes capable of catalysing a specific biochemical reaction and which is added to food for a technological purpose at any stage of the manufacturing, processing, preparation, treatment, packaging, transportation or storage of foods.

Beverages are an important part of a healthy, balanced diet: they provide hydration, quench thirst and can deliver energy, essential vitamins and minerals. Beverages complement the foods we eat and, consumed responsibly, are a needed component of a balanced diet. In fact, many of the beverage industry's products, including bottled waters, juices, sports drinks, teas, and milk and diet soft drinks can be catalysts to health and fitness.

Probiotics are live microorganisms (e.g., bacteria) that are either the same as or similar to microorganisms found naturally in the human body and may be beneficial to health. Also referred to as "good bacteria" or "helpful bacteria," probiotics are available to consumers in oral products such as dietary supplements and yogurts, as well as other products such as suppositories and creams.

Enzymes provide several advantages including fast reaction rates, mild conditions, and high specificity. The main industries using enzymes are starch & dairy but it is also used in food industries like brewing, wine, juice, fruit, and baking.

The Solutions

Sami Labs delivers the solutions with the premier speciality food enzymes like DigeZyme which is a multi-enzyme complex of Amylase, Cellulase, Lactase, Lipase, and Neutral Protease in an appropriate proprietary ratio that supports as a digestive aid which can be used to fortify foods.

Protease helps digest protein, and Amylase helps digest carbohydrates. Amylase first breaks down carbohydrates and starches into simple sugars, Lipase is for fats and oils digestion, and Lactase helps digest dairy products. DigeZyme also can be taken as a whole product to maintain the digestive health. To replace digestive enzymes lost during food processing and cooking, to make sure that the food is completely digested and broken down into a form body can assimilate, to supplement one's own enzymes because as we age we make fewer enzymes, to feel better after we eat, to reduce digestive discomfort, to supply extra workers in the body to assist the immune system and to some extent avoid auto-intoxication. In totality, DigeZyme enhances proper digestion and absorption of nutrient with a full spectrum of digestion enhancing enzymes.

Standardised Extract

Beverage ingredients like Cococin BG syrup and Cococin WS made out of *Cocos nucifera* is a GRAS (Generally Recognised As Safe) affirmed safe standardised extract which can be a perfect blend in functional and sports drink for rehydration and energy. Cococin is supplied in an off-white to creamy white crystalline powder with a characteristic odour. This product has a pH (1% suspension in water) between 5.0 and 7.0. Cococin, patented in USA and Europe for its use, is a standardised composition of freeze-dried coconut water solids obtained from tender green (immature) coconut fruit. When added as a nutrient to specific foods Cococin can be beneficial for individuals who wish to increase their daily intake nutrients including potassium and magnesium. Long considered a refreshing beverage and even a natural sports drink in southeast Asia, central America and other tropical regions, green coconut water has long been valued for its regenerative benefits.

Sami Labs extracts green coconut water, at optimal maturity stage when high levels of RNA (ribonucleic acid), which is critical for amino acid transport and respiratory metabolism of living cells, are present.

The patented Citrin K is a water-soluble beverage ingredient which is extracted from *Garcinia cambogia* fruit rind. Sami' wing Sabinsa Corporation, a leading dietary supplement and food ingredient company based in East Windsor, NJ, and Payson, UT, has received independent GRAS designation for its flagship product Citrin K for use in non-alcoholic beverages.

It is protected under US Patents No. 5,783,603 and 6,770,782 and has been marketed as a dietary supplement ingredient in the United States for more than 20 years for use in formulations that are helpful in maintaining a healthy body weight and energy balance, and in beneficially influencing satiety. The GRAS assessment of Citrin K included consideration of the unique manufacturing process and quality assurance procedures used to extract the product from *Garcinia cambogia* with its associated specifications.

The probiotic LactoSpore is a room temperature stable *Bacillus coagulans* preparation sometimes referred to as *Lactobacillus sporogenes*, which is functionally used to aid digestion, help support gastrointestinal health and as a result improve the overall general health. The strain of *Bacillus coagulans* in LactoSpore (MTCC 5856) is characterised phenotypically and genetically by an external research laboratory. The strain of *Bacillus*

coagulans has 99.5 per cent of homology with *Bacillus coagulans* ATCC 7050 (the American type culture collection serves as a worldwide repository and distribution centre for cultures of standard reference microorganisms). In vivo studies revealed probiotics properties of *Bacillus coagulans*, such as resistant spore to adverse environment, adherence capacity to intestinal mucosa, inhibitory activity against harmful bacteria and resistance to harsh conditions of manufacturing processes.

Why is LactoSpore Superior to other Probiotics? LactoSpore is a lactic acid producing *Bacillus* preparation from *Lactobacillus sporogenes* (*Bacillus coagulans*). The human digestive tract contains about 400 different bacteria. Lactic acid producing bacteria will reduce the growth of harmful bacteria and promote a healthy digestive system. LactoSpore produces only L(+) lactic acid and grows in the temperature range of 35-50degree C and the optimum pH range is 5.5-6.5.

The role of lactic acid bacteria in gastrointestinal microecology has been the subject of extensive research. It is widely believed that these bacteria prevent the growth of putrefactive microorganisms by: Competitive inhibition; Generation of non-conducive acidic environment; and Production of antibiotic like substances (bacteriocins).

In conditions like eczema and certain food allergies, there is an adverse balance of intestinal bacteria with a marked reduction in lactic acid bacteria and an increase in putrefactive pathogens in the faecal flora.

In view of the pressures of modern existence, the maintenance of a normal, healthy, balanced microbial populations (Eubiosis) in the gastrointestinal tract is a difficult task. Humans are often subjected to stress caused by sudden changes in food consumption patterns, exposure to environmental pollutants, extensive travel and unexpected changes in weather.

Under such adverse circumstances, harmful bacteria may become predominant (a condition referred to as bacterial overgrowth) and create an imbalance which may in turn impair normal gut function and lead to various problems, ranging from inefficient digestion, diarrhoea, constipation and flatulence to severe gastrointestinal disorders.

A logical approach to restoring the balance of intestinal flora is the use of naturally occurring microorganisms. A superior and potential species among *Lactobacillus* is *L. Sporogenes*, this species forms spores, which on activation in the acidic environment of the stomach, can germinate and proliferate in the intestine, produce the favoured L(+) form of lactic acid and effectively prevent the growth of other harmful pathogens.

LactoSpore - Reasons

It maintains viability during preparation and storage until consumption; keeps viability during the manufacturing process; survives the acidity of stomach and bile acids and digestive enzymes; and germinates in the intestine, which is favourable for *Bacillus coagulans* spore reactivation.

LactoSpore does not require specific conditions for storage like other probiotics. *Bacillus coagulans* spores are stable at room temperature for 2 years.

International Network

Sabinsa Group has grown into a health science multinational organisation with presence in USA, Europe, Japan, Australia, China, the UAE, South Africa, Vietnam and Malaysia. It employs over 1,000 people with six manufacturing locations in India and one in Utah, USA. Our global logistics network and vast regulatory experience serve as competitive assets for our customers.

Ingredients for Sustainability

As one of the world leaders in extracts and bio-based solutions, Sami is working to create a more sustainable way of doing business in areas throughout the value chain. We deliver solutions that help our customers and consumers improve their sustainability performance while reducing our own impacts. Sami combines knowledge and experience with a passion for innovation to deliver unparalleled customer value to the market place.

The Sami range of food enzymes, beverage ingredients and our probiotic can help improve the general health without sacrificing taste and texture, while actively promoting the improved digestive immune and overall health. With longer product shelf life, our ingredients help manufacturers achieve the stability, taste, appearance, and consistent quality they need in their food products. In fact, these ingredients provide the nutritional benefits of today's most pressing health issues. The Sami / Sabinsa Group stands ahead of the curve to meet the ultimate needs of the food & beverage manufacturer.

(The author is the founder and managing director, Sami / Sabinsa Group)