

Lactic Acid Bacillus Uses

== Description == cc0f10eefd L. acidophilus has antagonistic effects on the growth of Staphylococcus aureus, Escherichia coli, Salmonella typhimurium, and Clostridium perfringens. Out of the four organisms, Staphylococcus aureus is the most affected. Along with S. aureus, the other Gram-positive bacteria, C. perfringens, was affected more by L. acidophilus, than the two other bacteria that are Gram-negative. L. acidophilus is found to also reduce oral plaque formation by Streptococcus mutans. cc0f10eefd

Lactobacillus delbrueckii subsp. bulgaricus It is defined as homofermentive lactic acid bacteria due to lactic acid being the single end product of its carbohydrate digestion Lactobacillus bulgaricus is the main bacterium used for the production of yogurt. It is defined as homofermentive lactic acid bacteria due to lactic acid being the single end product of its carbohydrate digestion. naturally fermented products. It also plays a crucial role in the ripening of some cheeses, as well as in other processes involving naturally fermented products. It is also considered a probiotic cc0f10eefd

== History == cc0f10eefd Bacillus subtilis is a Gram-positive bacterium, rod-shaped and catalase-positive. It was originally named Vibrio subtilis by Christian Gottfried Ehrenberg, and renamed Bacillus subtilis by Ferdinand Cohn in 1872 (subtilis being the Latin for "fine, thin, slender... cc0f10eefd H. coagulans is a catalase-positive, spore-forming, motile, facultative anaerobe rod shaped microbe. H. coagulans is usually seen as Gram positive when a Gram stain test is performed. However, if the Gram stain test is performed while H. coagulans is entering the stationary phase of growth the microbe may appear Gram negative. H. coagulans grows best at 50 °C (122 °F), but the microbe can sustain growth on a temperature range of 30–55 °C (86–131 °F). cc0f10eefd The earliest mention of the term can be found in a lecture given by Dr. Allan Macfadyen of the Jenner Institute of Preventative Medicine in 1902. Dr. Macfadyen described symbiotic fermentation as noting "a close relationship between the organisms at work, the action of one aiding or modifying the action of the other, whilst both members are more active as a results of the partnership." Fermentative microorganisms have had a deep history as seen by kefir and kumis fermentations of milk by Nomadic tribes in Russia, as well as Japanese koji fermentation (see Aspergillus oryzae). cc0f10eefd

Bacillus subtilis (April 2003). "Rope-producing strains of Bacillus spp. from wheat bread and strategy for their control by lactic acid bacteria". Applied and Environmental Bacillus subtilis, known also as the hay bacillus or grass bacillus, is a Gram-positive, catalase-positive bacterium, found in soil and the gastrointestinal tract of ruminants, humans, and marine sponges cc0f10eefd

It is a gram-positive rod that may appear long and filamentous. It is non-motile and does not form spores. It is also non-pathogenic. It is regarded as aciduric or acidophilic, since it requires a low pH (around 5.4–4.6) to grow effectively. In addition, it is anaerobic. As it grows on raw dairy products, it creates and maintains the acidic environment that it needs to thrive via its production of lactic acid. In addition, it grows optimally at temperatures of 40–44 °C under anaerobic conditions. It has complex nutritional requirements which vary according to the environment. These include carbohydrates, unsaturated fatty acids, amino acids, and vitamins. cc0f10eefd Bacillus subtilis is motile and amylase-positive. It forms biofilms through the formation of extracellular polymeric matrix containing sugars and proteins. cc0f10eefd

Ramesh C. Ray author of Agricultural and Biotechnological Applications of Bacillus subtilis, Lactic acid Fermentation of Sweet Potato, and Extracellular Thermostable Ramesh Chandra Ray is an agriculture and food microbiologist, author, and editor. He is the former principal scientist (microbiology), and head of the Regional Centre at Indian Council of Agricultural Research ICAR - Central Tuber Crops Research Institute in Bhubaneswar, India cc0f10eefd

In animals, L-lactate is constantly produced from pyruvate via the enzyme lactate dehydrogenase (LDH) in a process of fermentation during normal metabolism and exercise. It does not increase in concentration until the rate of lactate production exceeds the rate of lactate removal, which is governed... cc0f10eefd

Lactobacillus thermophilus Found mostly in pasteurized milk, the bacterium is reported to grow optimally from 50 °C to 60 °C. the ability to create acid using numerous sugars and alcohols. It belongs to the genus Bacillus, but has not been formally named or reclassified. The bacterium is a facultative anaerobe and has shown the ability to create acid using numerous sugars and alcohols. Most of the lactic acid produced by the organism is D-lactic acid, however studies have shown the production of some L-lactic acid. Most of the lactic acid produced by the organism is D-lactic acid, however studies have "Lactobacillus thermophilus" is a gram-positive, non-motile, non-sporulating rod-shaped bacterium cc0f10eefd

== Description == cc0f10eefd

Symbiotic fermentation Described early on as the fermentation of sugars following saccharification in a mixed fermentation process. For example, a yeast may produce ethanol, which is then consumed by an acetic acid bacterium. form of fermentation in which multiple organisms (yeasts, acetic acid bacteria, lactic acid bacteria and others) interact in symbiosis in order to produce Symbiotic fermentation is a form of fermentation in which multiple organisms (yeasts, acetic acid bacteria, lactic acid bacteria and others) interact in symbiosis in order to produce the desired product cc0f10eefd

== References == cc0f10eefd == Education... == cc0f10eefd The primary function of all these bacteria is to convert L-malic acid, one of the two major grape acids found in wine, to another type of acid,

L+ lactic acid. This can occur naturally. However, in commercial winemaking, malolactic conversion typically is initiated by an inoculation of desirable bacteria, usually *O. oeni*. This prevents undesirable bacterial... cc0f10eefd

Lactobacillus acidophilus 0), and has an optimum growth temperature of 37 °C. Certain strains of *L. acidophilus* show strong probiotic effects, and are commercially used in dairy production. The genome of *L. Lactobacillus acidophilus* (Neo-Latin 'acid-loving milk-bacillus') is a rod-shaped, Gram-positive, homofermentative, anaerobic microbe first isolated from *Lactobacillus acidophilus* (Neo-Latin 'acid-loving milk-bacillus') is a rod-shaped, Gram-positive, homofermentative, anaerobic microbe first isolated from infant feces in the year 1900. *acidophilus* has been sequenced. The species most readily grows at low pH levels (below 5. The species is commonly found in humans, specifically the gastrointestinal tract and oral cavity as well as some speciality fermented foods such as fermented milk or yogurt, though it is not the most common species for this cc0f10eefd

As a member of the genus *Bacillus*, *B. subtilis* is rod-shaped and can form a tough, protective endospore, allowing it to tolerate extreme environmental conditions. It historically has been classified as an obligate aerobe, though evidence exists that it is a facultative anaerobe. *B. subtilis* is considered the best-studied Gram-positive bacterium and a model organism to study bacterial chromosome replication and cell differentiation. It is one of the bacterial champions in secreted enzyme production and used on an industrial scale by biotechnology companies. cc0f10eefd == Subgroups of bacteria that affect food == cc0f10eefd *Lactobacillus acidophilus* was first isolated... cc0f10eefd Ray is a Fellow of National Academy of Agricultural Sciences, National Academy of Biological Sciences, and Confederation of Horticultural Societies in India. He holds editorial appointment as Series Editor of Food Biology, and Applied Biotechnology Reviews. He was included in the top 2% scientists of the world ranking in a database prepared by Stanford University in 2021, 2022 and 2023. cc0f10eefd Lactic acid is chiral, consisting of two enantiomers. One is known as L-lactic acid, (S)-lactic acid, or (+)-lactic acid, and the other, its mirror image, is D-lactic acid, (R)-lactic acid, or (–)-lactic acid. A mixture of the two in equal amounts is called DL-lactic acid, or racemic lactic acid. cc0f10eefd The fermentation reaction is undertaken by the family of lactic acid bacteria (LAB); *Oenococcus oeni*, and various species of *Lactobacillus* and *Pediococcus*. Chemically, malolactic fermentation is a decarboxylation, which means carbon dioxide is liberated in the process. cc0f10eefd

Heyndrickxia coagulans This species was transferred to *Weizmannia* in 2020, then *Heyndrickxia coagulans* (formerly *Bacillus coagulans*) is a lactic acid-forming bacterial species. *Heyndrickxia coagulans* (formerly *Bacillus coagulans*) is a lactic acid-forming bacterial species. This species was transferred to *Weizmannia* in 2020, then to *Heyndrickxia* in 2023 cc0f10eefd

== History == cc0f10eefd Ray is the author of Agricultural and Biotechnological Applications of *Bacillus subtilis*, Lactic acid Fermentation of Sweet Potato, and Extracellular Thermostable α- amylase from *Streptomyces erumpens*, and editor of several agriculture and food microbiology books. His research interests are in the fields of food biology, and bioprocess technology with a particular focus on fermented food system, microbiology, food security, bio-ethanol from starchy crops, as well as bio-processing of agricultural and food wastes. cc0f10eefd

Malolactic fermentation Malolactic fermentation is most often performed as a secondary fermentation shortly after the end of the primary fermentation, but can sometimes run concurrently with it. The process is standard for most red wine production and common for some white grape varieties such as Chardonnay, where it can impart a "buttery" flavor from diacetyl, a byproduct of the reaction. winemaking in which tart-tasting malic acid, naturally present in grape must, is converted to softer-tasting lactic acid. Malolactic fermentation is most often Malolactic conversion (also known as malolactic fermentation or MLF) is a process in winemaking in which tart-tasting malic acid, naturally present in grape must, is converted to softer-tasting lactic acid cc0f10eefd

In the study of bacteria in food, important groups have been subdivided based on certain characteristics. These groupings are not of taxonomic significance: cc0f10eefd In 1927, Dr. Aldo Castellani defined symbiotic fermentation as "two microorganisms neither of which alone produces fermentation with gas in certain carbohydrates, may do so when living in symbiosis... cc0f10eefd

Lactic acid known as L-lactic acid, (S)-lactic acid, or (+)-lactic acid, and the other, its mirror image, is D-lactic acid, (R)-lactic acid, or (–)-lactic acid. A mixture Lactic acid is an organic acid with the molecular formula C₃H₆O₃. The name of the derived acyl group is lactoyl. Lactic acid is an alpha-hydroxy acid (AHA) due to the presence of a hydroxyl group adjacent to the carboxyl group. In its solid state, it is white and in its liquid state is miscible with water. It is a synthetic intermediate in many organic synthesis industries and in various biochemical industries. When dissolved, it forms a colorless solution. Production includes both artificial synthesis and natural sources. The conjugate base of lactic acid is called lactate (or the lactate anion) cc0f10eefd

Food microbiology The main genera are *Lactococcus*, *Leuconostoc* Food microbiology is the study of the microorganisms that inhabit, create, or contaminate food. are not of taxonomic significance: Lactic acid bacteria are bacteria that use carbohydrates to produce lactic acid. This includes the study of microorganisms causing food spoilage; pathogens that may cause disease (especially if food is improperly cooked or stored); microbes used to produce fermented foods such as cheese, yogurt, bread, beer, and wine; and microbes with other useful roles, such as producing probiotics cc0f10eefd

First identified in 1905 by the Bulgarian doctor Stamen Grigorov by isolating what later termed *Lactobacillus Bulgaricus* from a Bulgarian yogurt sample, the... cc0f10eefd

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