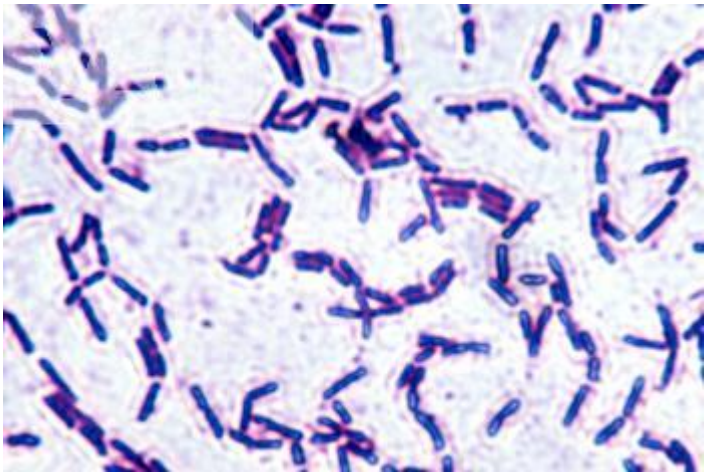
About the Good Bacteria

Functions of each species of *"Probiotic = Good Bacteria = Friendly Bacteria = Beneficial Bacteria = Lactic Acid Bacteria = Live & Active Cultures"* found in Super Yogurt:

Bacteria are both harmful and useful to the environment, humans and animals. However, most bacteria are harmful pathogens or simply germs but there are some that are beneficial to humans, which we cannot live without. They live in our body and assist us in digestion, etc. Since they are good bacteria, most of us may think that having even more strains of good bacteria is better. But, the fact is 'too many cooks spoil the soup' because too many strains will cause internal fighting leading to re-colonization of bacteria and may disrupt normal intestinal flora. So, four is just right as we do not want the species to dominate one another. Here, we will look at the Live & Active Cultures used in Super Yogurt, which is beneficial to us:



1. Lactobacillus Acidophilus

A natural inhabitant (already exist in our body) and one of the most important microorganisms of the humans' and animals' small and large intestine, also found in human's mouth and wall of vagina, cervix and urethra. It grows in the presence or absence of air (Facultative Anaerobic Lactobacilli) and produce lactic acid as a main byproduct from Lactose (milk sugar). Henceforth, lowers both the carbohydrates content of the food that they ferment and the pH. The pH may drop low enough to pH 4.0 that inhibit the growth of most other common pathogens, thus extending the shelf life of yogurt (by weeks) as compared to milk (by days). Optimum growth temperature is 35ºC to 38ºC (95ºF to 100ºF).

The major beneficial functions of this acidobacteria are: -

i. Their competitive nature such as the creation of lactic acid and other inhibitory substances help suppress the growth of other undesirable microorganisms in the intestine. Thus, prevents pathogenic organism from multiplying and colonizing.
ii. They help lessen the proliferation of hostile yeasts such as Candida Albicans commonly found in the vagina. Thus, reduces Vaginal Yeast Infections. Acidophilus also has known antimicrobial activity against Staphylococcus, Salmonella and E. Coli.
iii. It is well documented that some strains aid by destroying hostile invading bacteria by producing natural antibiotics substances called Bacteriocins, Lactocidin, Acidophilin, etc. Thus, boosting our immune systems.
iv. Some strains are able to help reduce the level of cholesterol, which you know causes cardiovascular complications in the long run.
v. They enhance and allow digestion of lactose by producing the enzyme lactase and aid in the digestion of nutrients. Hence, people with Lactose Intolerant (cannot take dairy products) can take yogurt because the

bacteria had already help with half of the digestion process before you even swallow the yogurt.

When the intestinal's microflora is disturbed, imbalanced caused by stress or under oral antibiotic, taking supplementary acidophilus found in Super Yogurt or in concentrated form (pill) can help reverse such negative processes. Regular consumption of Super Yogurt that contains Acidophilus is a protective means against an imbalance of the gastrointestinal tract's microflora.

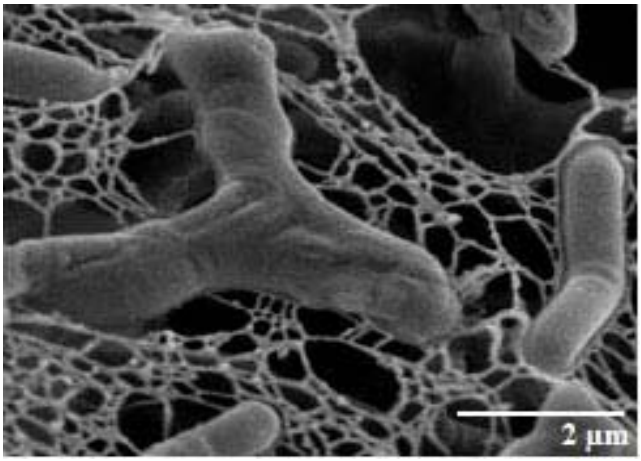
2. Lactobacillus Bulgaricus

An important bacteria in the human's internal ecology but not found in our body (transient). Together with Streptococcus Thermopilus constitute a yogurt culture that is used in the preparation of yogurt. *(Refer to - International connections of yogurt)*. Also found in cheese and milk, it is a Facultative Anaerobic Lactobacilli (grow with or without air) that produce lactic acid as a main byproduct from carbohydrates (lactose). Production of lactic acid by L. Bulgaricus provides a favourable environment for the growth of other Lactobacilli and Bifidobacteria residing in the intestines. Optimum growth temperature is 40ºC to 43ºC (104ºF to 109ºF).

Studies indicate that certain strains stimulate the production of interferon and tumor necrosis factor, thus boosting the immune system. These natural antibiotic substances benefits human by enhancing the digestion of milk sugar by producing the enzyme lactase. When introduced into our body, these transient bacteria as with other lactic acid bacteria produce a more acidic environment because of their creation of lactic acid, in which there is a strong inhibition of undesirable microorganisms.

Dr. Metchnikoff did a study on the people in Bulgaria of the Balkan region and observed that high percentage of the population actually live up to 100 years old without much illness but with full of vitality. One of the factors is their heavy consumption of yogurt, which he believes was responsible for the observed longer lifespan of so many Bulgarians. In his book, 'The Prolongation of Life", he attributed this to eating yogurt whereby the Good Bacteria colonizing the intestine helped to normalize bowel habits and fight disease carrying bacteria by neutralizing the 'germ-produced toxin' or 'poison' absorbed by the human host, thereby promotes longevity. He believes that with regular yogurt consumption, it is possible to live up to 150 years old. In honour of this discovery, he named the bacteria, 'Lactobacilus Bulgaricus' after the Bulgarians. The very same Lactobacillus Bulgaricus is found in Super Yogurt.

Dr. Metchnikoff also wrote that, the secret of longevity was in the Russian mountains where the villagers of Caucasus Mountains (now known as Azerbaidzhan), ate lots of yogurt and are responsible for the origin of Kefir. Another fermented milk product quite similar to yogurt except that it contains yeast cells and slightly alcoholic and effervescent because of the different processes. Whereas yogurt is totally alcohol free because they use bacteria to ferment, not yeast.
(Refer to – History of Probiotic)



3. Bifidobacterium Bifidum

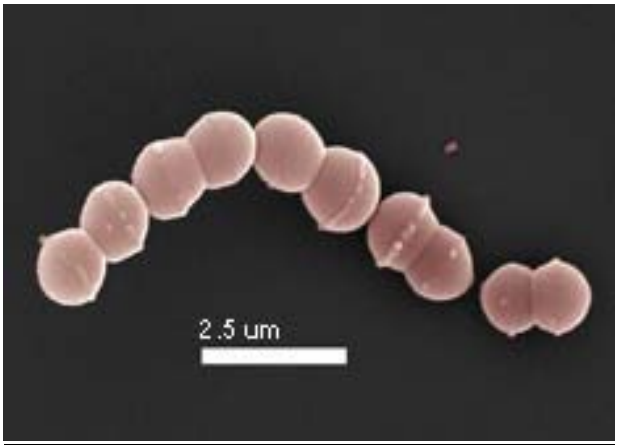
A natural inhabitant (already exist in our body) of the human's intestine and also found in the vagina. Large numbers are found in the large intestine other than in the lower part of the small intestine.

Bifidum together with other bifidobacteria species account for about 99 percent of the microflora in the large intestine of breast-fed infants, colonized with bifidobacteria within days after birth. In adolescents and adults, bifidobacteria are a major component of the large intestine's microflora. The level of bifidobacteria decline as we age as well as the deterioration of our health. These anaerobic bacteria produce acetic and lactic acids with small amount of formic acid from the carbohydrates that they ferment. Optimum growth temperature is 37ºC to 41ºC (99ºF to 106ºF).

The major beneficial functions of bifidobacteria are: -

i. The production of acetic and lactic acids lower the pH, hence increases the acidity of the intestine making the region in-conducive for other undesirable bacteria.
ii. They produce Vitamin B.
iii. Assisting in the dietary management of our livers.
iv. Assisting toddlers in nitrogen retention and weight gain.
v. The inhibition of bacteria, which can alter nitrates derived from food and water in the intestine into potentially harmful nitrites.
vi. They compete for nutrients and attachment or enteric sites. Thus, prevent the colonization of the intestine by invading pathogenic bacteria or yeasts.

When the intestinal's micoflora is disturbed due to stress, oral antibiotic therapy, therapeutic irradiation, gastric acidity, constipation or some other conditions, Bifidobacteria supplements or those found in Super Yogurt or bifidus milk can help to restore the intestinal's microflora balance. In clinical studies, it has been found to reduce the frequency of gastrointestinal disorders such as nausea, diarrhea, etc during antibiotic therapy.



4. Streptococcus Thermophilus

A transient (not found in our body) of the human's intestine, together with Lactobacillus Bulgaricus is used commercially to produce yogurt. *(Refer to - International connections of yogurt)*. Also found in cheese and pasteurized milk. Facultative Anaerobic Streptococci (grow with or without air) is known to be efficient in breaking down lactose by producing the enzyme lactase and especially beneficial to those with lactose intolerant as they stimulate Cytokine production.

Some strains produce antibiotic like substance. As with other lactic acid bacteria, these transient bacteria encourage a more acidic environment because of their creation of lactic acid that is inhibitory to undesirable bacteria. These bacteria are the only Stretococci which produce lactase and they produce it in even greater number than Lactobacillus Bulgaricus when used together. Optimum growth temperature is 40ºC to 45ºC (104ºF to 113ºF).

Below are the BACTERIALOGICAL ANALYSIS done on Super Yogurt after production:

(Results may vary due to many factors such as duration, temperature, storage condition, handling during transportation and etc.)

Natural Flavour

Lactobacillus Acidophilus ≈ 8.3×10^{8} or 830,000,000 cfu/gm

Lactobacillus Bulgaricus ≈ 1.3×10^{7} or 13,000,000 cfu/gm

Bifidobacterium Bifidum ≈ 4.6×10^{6} or 4,600,000 cfu/gm

Streptococcus Thermophilus ≈ 3.0×10^{6} or 3,000,000 cfu/gm

Total Good Bacteria Count ≈ 8.5×10^{8} or 850,600,000 cfu/gm

Vanilla Flavour

Lactobacillus Acidophilus ≈ 8.9×10^{8} or 890,000,000 cfu/gm

Lactobacillus Bulgaricus ≈ 1.3×10^{7} or 13,000,000 cfu/gm

Bifidobacterium Bifidum ≈ 3.8×10^{6} or 3,800,000 cfu/gm

Streptococcus Thermophilus ≈ 2.8×10^{6} or 2,800,000 cfu/gm

Total Good Bacteria Count ≈ 9.1×10^{8} or 909,600,000 cfu/gm

Total Plate Count

Bad Bacteria / Pathogen ≈ No Growth (<10) cfu/gm

cfu/gm = Colony Forming Units per Gram

Probiotic and Our Body

A "probiotic" general accepted definition is a "live microbial feed supplement which beneficially affects the host animal by improving its intestinal microbial balance". ***Probiotic*** is simply the opposite of ***Antibiotic.*** Antibiotic is taken to kill bacteria in our body system, unfortunately all Good and Bad. Whereas Probiotic is to enhance and replenish the much needed Good Bacteria. On the other hand, ***Prebiotic*** is the food for the Probiotic.

Human beings, as with all animals, play host to many types and large quantities of microbes. Microbes live in our skin, mouths, womens' vaginal tracts and all the way through our gastrointestinal tracts. In fact, it is estimated that human body has more microbes in it than human cell; 100,000,000,000,000 or **100 trillion bacterial cells** as compared to 10,000,000,000,000 or **10 trillion human cells**. Not only that there are 10 times more microbes, there is also a very large diversity of bacteria estimated to be more than 400 different species or types of microbes making their homes in the human's body.

A healthy human body should consist of **¾ good bacteria** and **¼ bad bacteria**. However due to our lifestyle and diet, most of us have it the other way round, meaning ¼ good bacteria and ¾ bad bacteria which is bad in the long run.

Regular consumptions of Super Yogurt will boost the Probiotic good bacteria, which will dominate our gastrointestinal tracts by competing and depriving the bad bacteria of foods and space in order to survive and flourish.

We eat to grow, we rest to repair our cells, we exercise to keep fit and we do whatever it takes to look good. Yet, we did nothing to help our much-needed Good Bacteria. Ill health began in the colon, through the process of "auto-intoxification". Waste products and toxins from the colon seeped into the bloodstream and initiate the diseases of old age. Despite all these, most of us still think that the heart is the most important organ. **Maybe it is not; maybe it is the Gut, the Gastrointestinal Tracts!**
(Refer to - Lactobacillus Bulgaricus)

History of Probiotic

Probiotic in the form of substances containing lactobacillus, bifidobacterium and acidophilus cultures had been used for centuries to preserve food (not today's chemically produced preservatives) and a natural source to promote good health without specific knowledge of their active ingredients or how they work. Lactobacillus was first identified by Pasteur (1845-1895) in France, the pioneer of modern microbiology who lend his name to the term 'pasteurization', that he discovered.

A real understanding of how Probiotic functions only began when the Nobel Laureate, a Russian physiologist, Dr Ilya Ilyich Metchnikoff (1845-1916) introduced his *Intoxication Theory*. He stated that the **main cause of aging is "toxicants" formed by intestinal putrefaction and fermentation** and suggested **eating yogurt containing lactic acid bacteria would prevent aging**. Lactobacilli or Lactic Acid Bacteria (LAB) attracted worldwide attention and since then, his "Eternal Youth Theory" has been researched and many clinical trials done but to these days remain inconclusive.

Nowadays, with remarkable advances in microbiology and intestinal bacteriology, it has been established that certain Lactic Acid Bacteria (LAB), especially Lactobacillus genus and Bifidobacterium genus have high mucus membrane chemical affinity and play very important roles in human health. Dr. Metchnikoff's assumption has been substantiated and even become common knowledge in the health sciences. *(Refer to - Lactobacillus Bulgaricus)*

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