A STUDY ON PROBIOTICS AND THEIR PREPARATION
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Introduction

Probiotic are microorganisms, which when consumed, are believed to provide health benefits to humans and other organisms. We usually think of bacteria as something that causes diseases. But your body is full of bacteria, both good and bad. Probiotics are often called "good" or "helpful" bacteria because they help keep your gut healthy. When you lose “good” bacteria in your body (for example, when we take antibiotics), probiotics can help replace them. Probiotics are naturally found in your body. You can also find them in some foods and supplements. They may be of two types:

1. Lactobacillus
2. Bifidobacterium

Commonly claimed benefits of probiotics include the decrease of potentially pathogenic gastrointestinal microorganisms, the reduction of gastrointestinal discomfort, strengthening of immune system, improvement of skin function, improvement of bowel regularity, resistance to pollen allergens, decrease in body pathogens, the protection of DNA, maintaining the stomach health when receiving antibiotics, etc. Due to its immense benefits, it is regarded to be very useful. The history of probiotics can be traced back to the first use of cheese and fermented products that were well known to Greeks and Romans who recommended their consumption. Later, Henry Tessier found that Bifidobacteria are dominant in the gut flora of breast-fed babies. He also observed clinical benefits in treating diarrhea.

Abstract

When we start to think about probiotics, there are many aspects we must consider. Its origin, its first use for our benefit, its importance in our lives, its synthesis for common man, spread of its knowledge and improvements and developments in its overall field of study, synthesis and understanding. Here, we will be seeing into each of these fields and aspects. Probiotics has been and is a very intriguing topic as it has influenced many generations of people around the globe. That is why we must get to know about it so we can reap full benefits. Then we will see how probiotics can be isolated for further scientific test for its study. Already there has been a lot of research being undertaken on this topic and there are many kinds of probiotic, which are being used, already in our everyday lives without us knowing about them! Then we will go to the roots of probiotic and see its importance in shaping many lives in the past all around the world. These findings are sure to leave you astounded. Then we will see how and where probiotics can/is being used for the betterment of human, animal and plant life.
Justification For Choice Of Topic

With our current ever-changing society and way of living we have been struck with many lifestyle diseases. The diseases are the direct reflection of our actions. Abraham Lincoln was also believed to be consuming probiotics in the form of fermented milk, which was the main reason behind his longevity. This was confirmed after the immense research done by a Russian scientist named Elne Metchnikoff when he found out that the reason for the longevity of the Bulgarian people was the consumption of fermented milk. FAO, keeping in view the growing importance of probiotics, constituted a committee to define the concept and features of probiotic. According to FAO a probiotic may be defined as- “live micro-organisms which, when administered in adequate amounts, confer a health benefit on the host.” Accordingly the major criteria for probiotic are as follow:-

1. Essentially it is living micro-organisms.
2. It ensures benefits to the host/consumer.
3. It should not have any adverse effects or residual effects.

Isolation Of Probiotic

The isolation of probiotic organisms can be done using the following methods and materials:

1. Sample collection-The dairy samples including yoghurt, cheese, gorout and shour are collected from different regions. They must be stored in low refrigerator temperature (-4°C) to protect normal micro flora and avoid from contamination and deterioration.
2. Preliminary screening-the preliminary screening in Phosphate Buffer Solution with PH 3.0 should performed for three hours.
3. Isolation of bacteria-Bacteria is isolated from dairy products by using MRS medium. After dissolving into MRS broth, they were shaken homogeneously and were incubated at 37°C for 24 h in aerobic condition. Finally, the single colony of bacteria was isolated by observing their colonial morphology.
4. Identification of isolates- performed by biochemical and morphological tests such as Growth test at 4 °C and 15 °C in tubes containing MRS broth and the fermentation of carbohydrates.
5. Determination of antimicrobial activity - Some of acid and bile resistant isolates was assessed for their antibacterial activity against main three pathogenic bacteria using well-diffusion method.

**Commonly Used Probiotics**

Lactobacillus acidophilus – is a gram-positive bacteria which are used for fermenting sugars into lactic acid and grows readily at low pH values (below pH5.0) and at an optimum temperature at around 37 °C. These strains are commercially used in various dairy products like yoghurts, etc.

Lactococcus lactis – is also a gram-positive bacteria used extensively in the production of buttermilk and cheese, pickled vegetables, beer or wine, some breads. But it has also become famous as the first genetically modified organism to be used alive for the treatment of human disease. Other uses that have been reported for this bacterium include the production of pickled vegetables, beer or wine, some breads, and other fermented foodstuffs, such as soymilk kefir, buttermilk, and others.

Sacomyces cerevisiae – is a species of yeast useful for winemaking, brewing and baking. The process employed here is top fermenting. The resulting beers have a different flavor than the same beverage fermented with lager yeast. The carbon dioxide generated by the fermentation is used as a leavening agent in bread and other baked goods.

Bifidobacterium - is a genus of Gram-positive, nonmotile, often branched anaerobic bacteria. They are ubiquitous, endosymbiotic inhabitants of the gastrointestinal tract, vagina and mouth of mammals including humans. Different species or strains of bifidobacteria may exert a range of beneficial health effects, including the regulation of intestinal microbial homeostasis, the inhibition of pathogens and harmful bacteria that colonize or infect the gut mucosa and the modulation of local and systemic immune responses.

**History of probiotics**
Probiotics have a long history. The Old Testament suggested that Abraham lived long and healthy because of consuming sour milk (it contains live microorganisms). So, can it be that the true secret to his incredible mind and ever-inspiring soul be probiotics? No one knows. Another study in the 20th century, by the Russian scientist Elie Metchnikoff suggested Bulgarian peasants lived long and healthy lives because they consumed yogurt containing live bacteria. Both these cases are a solid proof to what probiotics can actually gift us with. Both Abraham Lincoln and the Bulgarian peasants lived long, could it be that the consumption of probiotics brought about this? A special mention to the renowned branch of Ayurveda which has supposedly used principles of probiotics unknowingly/knowingly but has also seen benefits all around the globe.

**Various applications of probiotics**

Probiotics, by now, has proved to be beneficial to mankind and animals in various fields. Some of them are :-

1. **Dairy products** – Probiotics are added in most commonly consumed dairy products such as curd, yoghurt, cheese, shrikhand, etc. These help add benefits to our daily consumption so as to initiate a regular intake of these good bacterium i.e. probiotics.

2. **Confectionary**- Even the daily bread that you consume has probiotics in it. They are also used in chocolates, biscuits, cookies and cakes. This ensures goodness with every bite of joy.

3. **Cold beverages** – Soft drinks, carbonated drinks all contain probiotics too that also help in their preservation.

4. **Health supplements** – In case a person still misses out on his daily dose of probiotics, there are many health supplements that incorporate probiotics in them and also probiotic supplements are available separately too. Fermented probiotic milk based drinks are also getting a lot popular nowadays. These not only provide refreshment but also energy and an adequate dose of probiotics.

5. **Therapeutic** – They help in improving intestinal tract health, enhancing the immune system, synthesizing and enhancing the bioavailability of nutrients, reducing symptoms of lactose intolerance, decreasing the prevalence of allergy in susceptible individuals, and reducing risk of certain cancers.

6. **Animal feed** – The feed for swine, beef cattle, dairy cattle, sheep, poultry, turkeys are seen that sufficient quantity of probiotics are contained in them.
Conclusions

We have seen that probiotic maintains gastro intestinal tract health and functionality. It can be used for therapeutic purpose such as colitis, inflammatory bowel disease, and diarrhea in addition to lengthening the quality of life. It can be also used as a supplement in the diet of all stages of human life beginning from child to old age. Following ban on antibiotic, probiotic is recommended as feed additive in livestock for increasing the productivity and product quality.