

## Probiotics: Boon to Humans

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### SUMMARY

Probiotics are live microorganisms which are intended to have health benefits when consumed. These are active microorganisms ingested to alter the gastrointestinal flora for health benefits. In recent years, there has been an increasing interest in probiotic foods, which has stimulated innovation and fueled the development of new products around the world. There are various properties and health benefits of probiotics. Nowadays, probiotics play an important role in dairy industry. Keeping in this view, the objective of this study is to review the properties, health benefits and various applications of probiotics in dairy foods.

### INTRODUCTION

Since ancient times, food has been considered essential and indispensable to human life. Numerous studies clearly show that an individual's quality of life is linked to daily diet and lifestyle (Moura, 2005). The concept of probiotics was first introduced in the 20th century by Noble prize winner, Elie Metchnikoff (1845-1916). He suggested that long and healthy life of Bulgarian peasants resulted from their consumption of fermented milk products. The root of the word 'probiotic' comes from the Greek word *pro*, meaning "promoting" and *biotic*, meaning "life". The Food and Agriculture Organization of the United Nation (FAO) defines probiotics as "live micro-organisms, which, when administered in adequate amount produce beneficial effect to the host when taken orally". In recent years, there has been an increasing interest in probiotic foods, which has stimulated innovation and fueled the development of new products around the world. Probiotic bacteria have increasingly been incorporated into foods in order to improve gut health by maintaining the microbial gastrointestinal balance. The most popular probiotic foods are produced in the dairy industry because fermented dairy products have been shown to be the most efficient delivery vehicle for live probiotics to date. "Probiotic" is used to refer to cultures of live microorganisms which, when administered to humans or animals, improve properties of indigenous micro biota (Margoles and Garcia, 2003). In the food industry, the term is described as "live microbial food ingredients that are beneficial to health" (Clancy, 2003).

### Properties of probiotics:

Various therapeutic properties of probiotics are-

- Influence on host gut micro biota and pathogenic bacteria
- Improvement of specific enzymatic activities
- Production of antibacterial substances
- Competitive exclusion of pathogenic bacteria
- Induction of defensin production
- Improvement of intestinal barrier function
- Modulation of host immune functions
- Modulation of intestinal carcinogenesis
- Modulation of cholesterol uptake
- Lowering blood pressure and cholesterol
- Improving immune function and preventing infections
- It should be safe to the host.
- It should not produce any pathogenic or toxic effect.
- It must be resistance to hydrochloric acid, bile and pancreatic juice.
- It should produce lactic acid.
- It should retain viability during storage and use.
- It should stimulate the immune system of the body.
- It should have the ability to colonize the gastrointestinal tract.

**List of probiotics:**

Table1: List of probiotics micro-organisms as per marketed formulation:

<i>L. acidophilus</i>	<i>B. thermophiles</i>	<i>S. lactis,</i>
<i>L. brevis</i>	<i>B. infantis</i>	<i>S. thermophilus</i>
<i>L. casei,</i>	<i>B. bifidum</i>	<i>S. cremonis</i>
<i>L. rhamnosum</i>	<i>B. longum,</i>	<i>S. alivarius</i>
<i>L. bulgaricus</i>	<i>B. animalis.</i>	

**Beneficial effects of probiotics:**

The role of balanced nutrition for health maintenance has attracted the attention of the scientific community, which in turn has produced numerous studies in order to prove the performance of certain foods in reducing the risk of some diseases. There has also been considerable growing interest in encouraging research into new natural components (Thamer and Penna, 2006). There is a growing body of evidence that ingested beneficial bacteria, called probiotics, can beneficially modulate chronic intestinal inflammation, diarrhea, constipation, vaginitis, irritable bowel syndrome, atopic dermatitis, food allergies and liver disease (Wallace et al., 2011, Nutrition reviews). Probiotics have considerable potential for preventive and therapeutic applications in gastrointestinal disorders. However, it is important to note that many probiotic health claims have not yet been substantiated through experimental evidence. In addition, the efficacy demonstrated for a single given bacterial strain cannot be extrapolated to other probiotic organisms. Moreover, the mechanisms underlying probiotic action have not yet been fully elucidated. A better understanding of these mechanisms will be able to shed light on the disparate clinical data and provide new tools to help the prevention or treatment of health disorders (Wohlgemuth et al., 2010; Yan et al., 2011).

**Application of probiotic bacteria in dairy foods:**

Fermented foods, particularly dairy foods, are commonly used as probiotic carriers. Fermented beverages provide an important contribution to the human diet in many countries because fermentation is an inexpensive technology which preserves food, improves its nutritional value and enhances its sensory properties (Gadaga et al., 1999). However, the increasing demand for new probiotic products has encouraged the development of other matrices to deliver probiotics, such as ice cream, infant milk powder and fruit juice. Sendra *et al.*, (2008) studied the fermented milks supplemented with lemon and orange fibers increased the counts of *L. acidophilus* and *L. casei* during cold storage compared to the control set. This was not the case for *B. bifidum*, possibly owing to the well-known sensitivity of bifidobacteria species to an acidic environment. Bhoir (2012) manufactured lassi from cow milk, for that they inoculated pasteurized whole cow milk with *Lactobacillus spp.* culture (@ 1%), after setting up of curd, 10 per cent water and 8 per cent cane sugar were added on weight basis of dahi. This mixture was mixed well with agitator to get lassi. Mule (2015) and Kamdi (2017) carried out studies on preparation of low fat lassi as per the methodology described by Kadlag (1982) with partial modification of mixing Lemon grass extract and curry leaf (*Murraya koenigii spreng*) extract.

**How should people take probiotics?**

The requirements for a microbe to be considered a probiotic are that the microbe must be alive when administered, it must be documented to have a health benefit, and it must be administered at levels to confer a health benefit. These are live microorganisms that will not provide the promised benefits if they don't stay alive. The manufacturer and consumer must pay close attention to the conditions of storage at which the particular microorganism will survive and the end of their shelf life.

**Health benefits**

- Probiotics balance the friendly bacteria in your digestive system:

- Probiotics include “good” bacteria that can provide health benefits when consumed. Probiotics are live microorganisms. When taken in sufficient amounts, they can help restore the natural balance of gut bacteria. This results in health benefits to the consumer.
- Probiotics helps to prevent and treat diarrhea:
- Probiotics can reduce the risk and severity of diarrhea from a number of different causes. Strains such as *Lactobacillus rhamnosus*, *Lactobacillus casei* and the yeast *Saccharomyces boulardii* are most commonly associated with a reduced risk of diarrhea.
- Probiotic supplements improve some mental health conditions:
- An increasing number of studies links gut health to mood and mental health. Both animal and human studies find that probiotic supplements can improve some mental health disorders. Research shows taking probiotics may help improve symptoms of mental health disorders such as depression, anxiety, stress and memory, among others.
- Certain probiotic strains can help keep your heart healthy:
- Probiotics may help protect the heart by reducing LDL cholesterol levels and also lowering blood pressure.
- Probiotics may reduce the severity of certain allergies and eczema:
- Certain probiotic strains may reduce the severity of eczema in children and infants. However, more research is needed.
- Probiotics can help reduce symptoms of certain digestive disorders:
- Probiotics may help reduce the symptoms of bowel disorders like ulcerative colitis, IBS and necrotizing enterocolitis.
- Probiotics may help boost your immune system:
- Probiotics may help in boosting immune system and inhibit the growth of harmful gut bacteria. Also, some probiotics have been shown to promote the production of natural antibodies in the body.
- Probiotics may help you lose weight and belly fat:
- Certain probiotics may help you lose weight and belly fat. Probiotics may also help you feel fuller for longer, burn more calories and store less fat. So, ultimately it helps in weight loss.

## CONCLUSION

Probiotics have demonstrated efficacy in preventing and treating various medical conditions, particularly those involving the gastrointestinal tract. Promising results have been obtained with probiotics in the treatment of human inflammatory diseases of the intestine and in the prevention and treatment of atopic eczema in neonates and infants. Use of some probiotics is justified by robust assessments of efficacy, but not all products have been validated; the goal is evidence-based use by healthcare professionals. But data supporting their role in other conditions are often conflicting.

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