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PROBIOTICS: THE BENEFICIAL BACTERIA- A SHORT REPORT

Microbiology

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ABSTRACT

The World Health Organization's (WHO) in 2001 defined probiotics as live micro-organisms which, when introduced into the body, confer certain health benefit to the host. These probiotics are most often bacteria, but also include other kinds of organisms such as yeast. Probiotics are beneficial bacteria already in our body, particularly in gut region.

KEYWORDS:

Probiotics, WHO

INTRODUCTION

Russian scientist and Nobel laureate Elie Metchnikoff, firstly suggested (1907) that it is possible to modify the normal flora of gut and introduce certain beneficial bacteria into the gut. Metchnikoff himself consumed milk fermented by the bacteria he called them as "Bulgarian Bacillus" which was later called as *Lactobacillus bulgaricus* and believed that this could confer health benefits. The abundance of bifidobacteria in the gut flora of breast-fed babies was firstly reported by Tissier.

The term "probiotic" was originally defined as microorganisms that affect other microorganisms. Later this definition was modified by Fuller. He described probiotics as live microorganisms feed supplement which benefit the host organism by improving its intestinal microbial flora. Usually, consumption of antibiotics disturbs the normal flora of intestine. The probiotics capsules contains spore of bacteria. The probiotic microorganisms are usually abundantly present in foods such as yoghurt, buttermilk etc.The probiotics capsules are prescribed by the doctor to restore this flora.The term probiotics came to know after 1980.. Yoghurt, buttermilk, tempeh (fermented soya beans), Kimchi (fermented cabbage) kefir, sauerkraut (fermented cabbage) contain probiotics. Different types of bacteria are used as probiotics (Table 2). Some of them include *Lactobacilli* and *Bifidobacteria* (Macfarlane et al., 2004).

CHARACTERISTICS OF PROBIOTICS

To confer health benefits to the host organisms, the probiotic microorganisms should possess certain characters. They should be non-pathogenic, non- toxic. They Should be present in sufficient numbers to provide health benefits. They should retain their stability to exert long-term effects on host. They should not exert side-effects on host.

BENEFICIAL EFFECTS OF PROBIOTICS

The consumption of antibiotics can disturb normal intestinal flora and cause diarrhea. The probiotic treatment can reduce the severity of antibiotic associated diarrhea and improve stool constistency (Gionchetti et al., 2002). Bacterial vaginosis (BV) is a disease caused by excessive growth of bacteria in vagina of human females. Probiotic treatment has been found to be very effective against bacterial vaginosis. It was found that Lactobacillus group of microorganisms dominate the population of vagina in healthy females. Use of *Lactobacillus acidophilus* and *L. rhamnosus*, were able to prevent bacterial vaginosis by restoring the normal flora of vagina.

The consumption of probiotics has also shown to control hypertension. Probiotics are also found useful in the treatment of gastroenteritis. Some probiotics like lactic acid bacteria exert effect on pathogens by competing with them for growth and also some improve immune system by increasing the number of plasma cells (Reid et al., 2003). Probiotics can also be used in the treatment of inflammatory bowel disease. Lactose intolerance is a common problem in adults. Consumption of some strains of probiotics help to tolerate more lactose (Shah, 2000 and Farnworth, 2008). Retroviral infection (Trois et al., 2007) and sexually transmitted infections (Bolton et al., 2008) are also found to be treated by some probiotic bacteria.

ARE PROBIOTICS SAFE?

Mostly probiotics are safe, however people with condition like irritable bowel syndrome and impaired immune function are at a risk. Some probiotics may interact with certain medications and therefore are not considered safe. Probiotics are used as dietary supplements. They are not FDA-regulated like drugs. They may be manufactured by different companies in a different way.

CONCLUSION

Probiotics are living microbes, when administered in certain amount, confer health benefits to the host. Probiotic are becoming most demanding due to their beneficial effects. Probiotics have promising role in reducing infections and treating many diseases. However, there is need to investigate the use of multiple strains of probiotic bacteria and their effects on human health.

Table 1: Commercially available probiotics.

Name of the probiotic	Manufacturing company
Truebiotics	Bayer
Nexabiotic	Bioprosper Labs
Digestive Health	Culturelle
Adult Probiotic	CVS Pharmacy
Probiotic Blend	Daily Essentials
Complete Probiotics	Dr. Mercola
Pro-Bio	Enzymatica
Sehat Probiotic	Trivedi
Colon Health	Phillips
Enzyme Probiotic Complex	American Health

Table 2: Probiotic microorganisms and health benefits

Sr. No	Name of the microorganisms	Health benefits
1	*Lactobacillus acidophilus*	Colonizes small intestine and helps digestion.
2	*Lactobacillus fermentum*	Produces strong antioxidants.
3	*Lactobacillus plantarum*	Supports immune system.
4	*Lactobacillus rhamnosus*	Maintains the normal flora of urinary tract and vagina
5.	*Lactobacillus paracasei*	Found in small intestine, supports liver function.
6	*Bifidobacterium bifidum*	First colonizers of intestine of babies. Prevents growth of unwanted microorganisms.
7	*Bifidobacterium longum*	Found in GI tract, breaks down carbohydrates.
8	*Bifidobacterium infantis*	Present in large number in baby's intestine.

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