Probiotics: A short review

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ABSTRACT:

Probiotics are those living microorganisms that confer various health benefits to the host when ingested in adequate amounts. They provide vital metabolites with nutritional and therapeutic properties that provide countless health benefits. Probiotics have been demonstrated to prevent some digestive disorders such as infectious diarrhea, helicobacter pylori infection, antibiotic-associated diarrhea (AAD), necrotizing enterocolitis (NEC) and chronic kidney disease (CKD). The most widely used probiotic species are Bifidobacterium and some lactic acid bacteria strains that are used in wide range of functional foods as well as in dietary supplements. In addition, probiotics are also act as a co adjuvant in the treatment of various metabolic disorders such as metabolic syndrome, type 2 diabetes and obesity. However, the mode of action of probiotics is diverse as well as heterogeneous that have received attention to work on. The objective of the present work is to review the therapeutic role probiotics. Further attempts have been made to isolate the new probiotics from unexplored microflora and to investigate their therapeutic role.

Keywords: Probiotics, AAD, NEC, CKD


INTRODUCTION:

Nowadays, in addition to the fundamental nutritional role of providing the needed nutrients for the organism's growth and development, some extra elements are becoming progressively crucial, including health maintenance and disease counteraction. In the globe of extremely processed foods, specific consideration is paid to the structure, safety and wellbeing of the consumed products. The fermented food contains some organisms which bestow health benefits and are generally regarded as ‘probiotics’. According to the FAO and WHO, probiotics are “live microorganisms which when administered in adequate amounts confer a health benefits on the host”. [Paulina et al., 2017].

Probiotics are potentially useful micro biota playing a wide variety of vital roles in several different fields including improvement of digestion, intestinal health, inhibition of pathogenic microbes in intestinal tract, enhancement of immune system, production of cofactors and vitamins, prevention of tumors and cancers and also helps in the reduction of blood pressure [Nasr et al., 2018].

The probiotic bacteria are found mainly in dairy products and in fermented products. These foods play a predominant role in upgrading the positive image of probiotics in the field of health. Probiotics are used as starter culture in the fermented foods [Senok et al., 2005].

Microorganisms Used As Probiotic [Santosa et al., 2006]:

Bacteria (Doromet et al., 2006)

a) *Lactobacillus* species

- *Lactobacillus bulgaricus*
- *Lactobacillus crispatus*
- *Lactobacillus acidophilus*
- *Lactobacillus gasseri*
- *Lactobacillus acidophilus*
- *Lactobacillus johnsonii*
- *Lactobacillus casei*
- *Lactobacillus lactis*
- *Lactobacillus plantarum*
- *Lactobacillus fermentum*
- *Lactobacillus reuteri*
- *Lactobacillus rhamnosus*

b) *Bifidobacterium* species

- *Bifidobacterium animalis*
- *Bifidobacterium breve*
- *Bifidobacterium adolescentis*
- *Bifidobacterium infantis*

- *Bifidobacterium lactis*
- *Bifidobacterium longum*

c) *Bacillus cereus*

d) *Enterococcus faecalis*

e) *Escherichia coli Nissie*

f) *Streptococcus thermophilus*

Yeast: *Saccharomyces baulardi*

**Dietary sources for the administration of probiotics:**

The vehicle by which probiotics ingested is fermented food and moreover some commercially products are also available in markets enriched with probiotics. Some of the probiotic products are (Patil et al., 2006):

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A) Milk products
   - Cheese
   - Milk drink
   - Yogurt

B) Fruit Juices

C) Lozenges

D) Straw

E) Tablets

F) A probiotic lozenge administered medical device.

G) Capsules

**Mechanisms of action:** Probiotics in human species have countless advantageous features. Their primary benefit is the impact on the growth of the organism’s microbiota in order to ensure a correct equilibrium between pathogens and bacteria needed for the ordinary function of the organism [Johnston et al., 2006]. Another role is to counteract the pathogenic intestinal microbiota activity that has been brought from the contaminated environment. Probiotics can therefore inhibit the growth of pathogens such as *Campylobacter jejuni* [Schoster et al., 2013], *Salmonella enteritidis* [Cameron & Carter, 1992] and various species of *Shigella* [Hussain et al., 2017], *Staphylococcus* [Sirkoska et al., 2013] and *Yersinia* [Demontijo et al., 2015] and thus preventing from food poisoning.

Probiotics exert their benefits through different mechanisms of action:

1. Antagonism through the production of antimicrobial substances
2. Interaction of probiotics with TLRs and cell cascade signalling [Julio et al., 2019]
3. Immunomodulation of the host
4. Inhibition of bacterial toxin production [Hill et al., 2014]
5. Competition with pathogens for adhesion to the epithelium and for nutrients

**Clinical applications of Probiotics**

Probiotics have been used to treat some diseases related to the gastrointestinal tract. Several health claims have been made for probiotics are (Elli et al., 2000):

- Lactose intolerance
- Infective diarrhoea/ Rotavirus-associated diarrhoea

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• Traveller’s diarrhoea
• Inflammatory bowel disease
• *Clostridium difficile* associated diarrhoea
• Crohn’s disease
• Antibiotic-associated diarrhoea (AAD)
• *Helicobacter pylori* infection
• Ulcerative colitis
• Urogenital infections
• Constipation
• Atopic disease

**CONCLUSION**

The use of probiotics is an interesting emerging field. Keeping in view the guidelines and recommendations of FAO/WHO, there is scope for further researches and standardizations of probiotics therapies that can definitely open up a new era of various disease prevention at a very affordable prices where common man can reap the benefits of probiotics.

**References:**


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