## **Review Article**

# **PROBIOTICS AND PREBIOTICS: Fabulous Nutritional**

# Supplements.



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#### Abstract:

When there is excessive use of antibiotics, which leads to imbalance between the beneficial and harmful microorganisms, making our body more susceptible to infections, Probiotics living microorganisms are added to food which beneficially affect the host by improving its intestinal microbial balance and Prebiotics are the non-digestible dietary supplements are used, which modify the balance of the intestinal microflora by stimulating the growth and activity of beneficial organisms. Combination of probiotics and prebiotics beneficially affect the host by improving the survival and implantation of live microbial dietary supplements into the gastrointestinal flora and by improving the microbial balance of the gastrointestinal tract, thus effectiveness of combining probiotics and prebiotics may have additive and synergistic effect. In the last few years, great attention has been dedicated to probiotics and prebiotics or their combined use (synbiotics) in improvement of human health in a natural way because of their history of safe use and the general body of evidence that supports their positive roles. Such synbiotics indicate a realistic way of using biological preparations in the prevention of diseases in humans.

(Keywords: Antibiotics, Probiotics, Prebiotics, Synbiotics, Microflora.)





#### **Introduction:**

Basically, everyone has bacteria living in their digestive tracts; some of it can make you sick, but other microbes actually can keep you healthy by keeping bad bacteria and yeast at bay. Many strains of good probiotic bacteria already exist in your gut, helping you better digest food and improving your body's ability to absorb nutrients. When you take antibiotics for an infection, the drugs can kill off the good bacteria in your digestive tract, which is why many women get yeast infections when they take antibiotics. [01] Probiotics and prebiotics can help the beneficial bacteria grow back. You need a balance of intestinal bacteria favorable to digestion in order for your body, especially the intestines, to utilize minerals and other nutrients from your food. This bacteria works off carbohydrates and sugars, often called fructooligosacharrides, found in vegetables and fruits, a large part of a balanced diet. A balanced diet is essential for health to provide the nutrients needed for energy and vitality. A balanced diet consists of protein, carbohydrates, fiber, vitamins and minerals, and fats. The US Department of Agriculture reports that to be healthy each person needs to have 6-10 half-cup servings of vegetables and some fruits daily, and at least one serving must be raw. Whole grains should be the only kind of grain products eaten in a balanced diet. Even when following a balanced diet the proper balance of intestinal bacteria is essential or the nutrients in food and/or supplements cannot be utilized. Probiotics and prebiotics are the solution to obtaining that balance of intestinal good bacteria. [02] Probiotics have been defined as viable microbial food supplements which beneficially influence the health of the host. Prebiotics are food ingredients that are largely undergraded in the small bowel and can beneficially affect the host by selectively stimulating the growth and/or activity of one or a limited number of bacteria. In farm animals, probiotics and prebiotics may enhance growth and prevent early mortality, especially from infections. In humans, their potential 'nutritional advantages' consist of preventative curative effects against diseases including intestinal dysfunctions, gastrointestinal infections, inflammatory bowel disease and possibly colon cancer. The evidence supporting nutritional advantages of probiotics and prebiotics is rapidly increasing. [03] Probiotics and prebiotics have been considered as potentially inexpensive and safe intervention approaches that can be formulated into specialized foods, supplements, or pharmaceuticals that can in turn contribute to solving some of these health concerns. The health benefits and efficacy of probiotics and prebiotics are currently attracting much attention and research. They span a broad range, including improved gut performance, immune function, and mineral bioavailability. In food form, probiotics and prebiotics appeal to people interested in staying healthy, managing a health concern or reducing disease risk. Such 'functional foods' are part of a dietary approach to prophylactically managing health disorders in a way that is both user-friendly and

attractive to the consumer. Adding beneficial live microbes (probiotics) or using non-digested food stuffs selective for beneficial indigenous microbes (prebiotics) is gaining much popularity and credibility. <sup>[04]</sup> Current marketing strategies for functional foods target improved resistance to various conditions, including:

- Infections:
- IBS;
- Chronic gut disorder (inflammatory bowel disease (IBD), colon cancer);
- Lactose intolerance;
- · Coronary heart disease;
- Recurrent vaginal thrush;
- Skin problems;
- · Food allergy; and
- Mineral bioavailability.

Your body requires "good" bacteria to function efficiently.

Probiotics and Prebiotics are "good" bacteria. Do you have them?

#### Probiotics: The "Good" Bacteria.

It may come as a surprise, but not all bacteria are bad for us. It's common to hear new reports about harmful bacteria (pathogens) these days, & most of us are familiar with some of their names-Listeria monocytes, clostridium botulinum and various strains of salmonella, for instance. But other families of bacteria are not injurious to health and may infact; provide some health benefits, particularly those in the lactobacillus and Bifidobacterium genera. Probiotics are "live microorganisms which when administered in adequate amounts confer a beneficial health effect on the host." These micro-organisms do not promote or cause disease.

- Proposed health benefits: [07,08]
- Promote recovery from diarrhea caused by rotavirus, travel and antibiotics.
- Produce lactase and can alleviate symptoms of lactose intolerance
- Help the gut heal in inflammatory bowel diseases.
- Relieve constipation

Other possible health benefit, more research is needed:

- Reduce cholesterol and blood pressure
- Treat Helicobacter pylori, a common cause if peptic ulcers.
- Ease symptoms of irritable bowel syndrome.
- Enhance immune health
- Reduce risk of pathogenic infections

- Reduce risk of certain cancers
- Treat for food allergies
- Increase nutrient bioavailability
- Reduce incidence of dental caries
- Optimize effects of vaccines.

#### Foods that contain probiotics (helpful bacteria such as *Lactobacilli and Bifidobacterium*):

- Yogurt (Almost all yogurts contain "active cultures")
- Buttermilk (Tastes good if you like drinking sour cream!)
- Kefir (I have tried this and it is very good, watch the serving size though because of added sugars.)
- Tempeh
- Miso
- Kim Chi (Korean side dish)
- Sauerkraut (on potatoes with sour cream, Yum!)



Fig: Probiotic products.

#### Prebiotics: Helping the Good Bacteria.

Prebiotics are, quite simply, indigestible food ingredients that stimulate the growth and maintenance of beneficial gut microbiota. [06] Prebiotics are derived from insoluble fiber and fructooligosacharrides (the sugars often found in fruits and honey); they are carbohydrates that selectively stimulate growth and/or activity upon contact with intestinal microflora. For instance, they are said to assist in the absorption of calcium and the development of good bacteria. [05] Prebiotics travel through your digestive system untouched and are available for probiotic bacteria to use as nutrition. Fructo-oligosaccharides may also be taken as supplements and are found in health food stores. [01]

#### Proposed health benefits: [09]

- Improved lactose tolerance
- Improved resistance to pathogens resulting in decrease in gastrointestinal infections
   & respiratory infections.
- Decrease in cholesterol
- · Increased bacterial synthesis of vitamins
- Protection against allergies by reducing gut inflammation
- Improved absorption of calcium and magnesium.
- Prevent and possibly stop early stage of colon cancer. [10]
- Improve heart health. [10]

#### Food that naturally contain prebiotics (things that feed healthy bacteria):

- Oatmeal
- Flax
- Barley
- Other whole grains
- Onions
- Greens (especially dandelion greens, but also spinach, collard greens, chard, kale, and mustard greens)
- Berries, bananas, and other fruit
- Legumes (lentils, kidney beans, chickpeas, navy beans, white beans, black beans, etc.)



Fig: Prebiotic foods.

#### **Synbiotics:**

# Probiotics + Prebiotics = Synbiotics

One last area worthy of discussion among dietitians is that of synbiotics. The term synbiotic is relatively new and refers to the mixture of a probiotic and a prebiotic. [12] Synbiotics have the beneficial bacteria from the probiotics and the carbohydrate source from the prebiotic to encourage the growth of the beneficial bacteria. [13] Fermented milk or yogurts are examples of synbiotics. They contain live bacteria as well as the carbohydrate source to promote their growth and survival in the intestine. [13]

#### **Taking Probiotics and Prebiotics:**

Alternatively, they can also be added as ingredients to various foods, including yogurts. [11] Try to buy probiotic or prebiotics from recognized brands. This will ensure that they benefit your health as much as possible. If you

don't like the idea of taking tablets or capsules, then it will be easiest to eat some of the foods which have added probiotics or prebiotics. Bacteria often sounds like something that you would want to rid your body of. However, there are plenty of helpful bacteria which need to be cared for. By encouraging the healthy bacteria in your body, it is possible to avoid any problems with dangerous or harmful bacteria.

#### **Probiotics and Children:**

Probiotics are generally safe for children; however you should speak with your pediatrician before giving them to your kids. They may be beneficial for digestive complaints and diarrhea, but research hasn't clearly indicated any benefits beyond that. If the child is currently taking or has recently undertaken a course of antibiotics - then giving probiotics is a good way of re-balancing the digestive flora.



#### Which Are The Best Probiotics for Children?

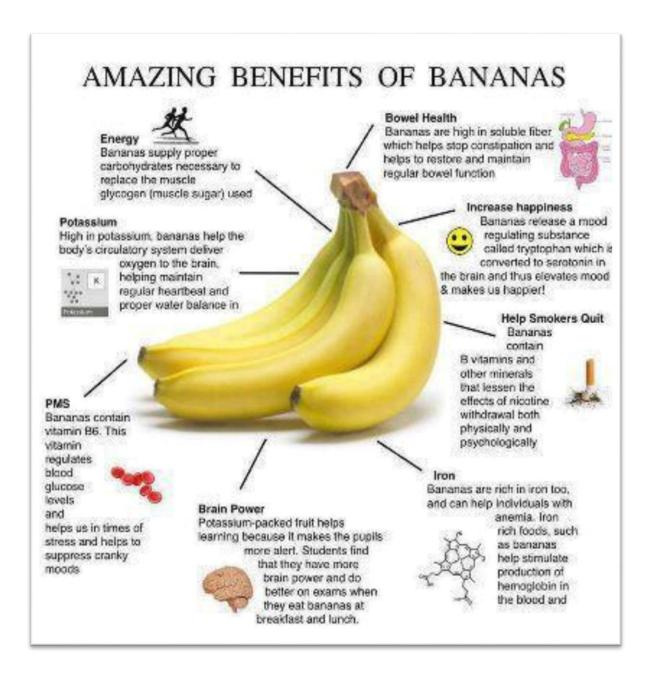
Unfortunately, at this early stage of the scientific research into probiotics for children, it's not yet possible to know for sure which are the best strains and species of probiotics to give. The evidence that exists however suggests that the follow species and strains of probiotics are beneficial to children:

- Bifidobacterium bifidum
- Bifidobacterium lactis
- Lactobacillus acidophilus
- Lactobacillus reuteri
- Lactobacillus rhamnosus GG (marketed as Culturelle Probiotic for Kids)
- Saccharomyces boulardii (probiotic yeast)

#### **Conclusion:**

There is a growing consensus that the intestinal flora is closely related to the host's health and proneness to disease. The predominance of harmful bacteria in the intestine may ultimately lead to various disorders, while useful bacteria subsequently act as scavengers and physiological regulation in the large intestine. Prebiotics and probiotics are obviously interesting agents in the field of preventive nutrition, and they should therefore have an important development. Combining probiotics with prebiotics could improve the survival of the bacteria crossing the upper part of the gastrointestinal tract, thus enhancing their effects in the large bowel. Moreover probiotic and prebiotic effects might additive be or even synergistic.

#### > Some important tips for good health











## Popcorn Has More Antioxidants Than Fruit And Vegetables



Plain popcorn has already been hailed as a great diet food for its low calorie content but now a group of scientists claim it may even top fruits and vegetables in antioxidant levels. Antioxidants – known as polyphenols – have huge health benefits as they help fight harmful molecules that damage cells.

Popcorn was found to have a high level of concentrated antioxidants because it is made up of just four percent water while they are more diluted in fruits and vegetables because they are made up of up to 90 percent water.

Researchers discovered one serving of popcorn has up to 300mg of antioxidants – nearly double the 160mg for all fruits per serving.

They also found that the crunchy hulls of the popcorn have the highest concentration of antioxidants and fiber.

The scientists from the University of Scranton in Pennsylvania unveiled their discovery at a meeting of the American Chemical Society in San Diego.

Mr Vinson added: 'Air-popped popcorn has the lowest number of calories while microwave popcorn has twice as many calories as air-popped.

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#### **RECOMMENDATIONS:**

- The use of probiotic supplements should be considered in antibiotic treatment to prevent antibiotic associated diarrhoea and further complications, which have cost implications in patient care.
- Infants and young children in daycare centers, who are at greater risk for frequent gastrointestinal infections, might benefit from probiotic supplementation. The available supplemented follow-on milk formulas can be a convenient method to include probiotics in their diets. Bifidobacterium bifidum, given in conjunction with Streptococcus thermophilus in standard milk formula, has been shown to reduce the incidence of rotaviral diarrhoea.
- Fermented dairy products are a convenient, culturally acceptable and safe method to increase probiotic intake. These products are also excellent sources of other nutrients such as calcium and protein.
- Good dietary sources of prebiotics include leeks, artichokes, garlic, onions, wheat and wheat products, asparagus and bananas. Prebiotics supplements, if necessary, should not be consumed in excess of the recommended amounts because of their known and unpleasant side effects

IT IS HEALTH THAT IS REAL WEALTH AND NOT PIECES OF GOLD AND SILVER.