Gastrointestinal health is important not only for digestion but also to improve immunity and prevent diseases like diabetes, obesity & related health problems.

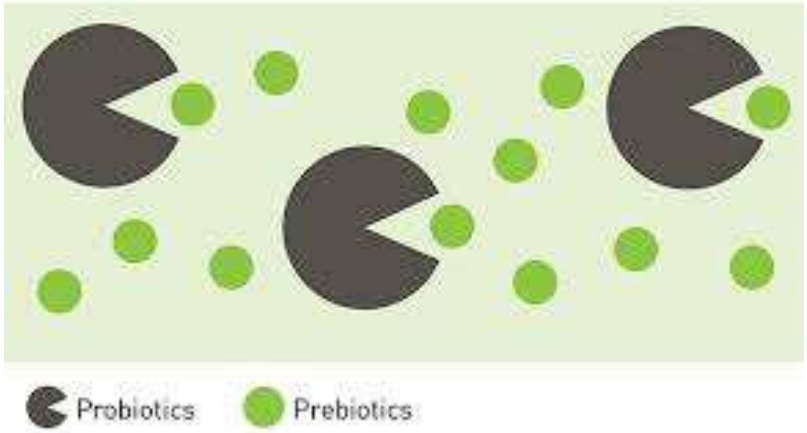
Our body is inhabited by millions of tiny living organisms like bacteria. The key to a healthy body is maintaining a balance among the different species of these bacteria.

In this presentation we will learn how to maintain this balance by using Prebiotics & Probiotics and their role in disease prevention

Probiotics are live, good bacteria that can be eaten using fermented foods or supplements

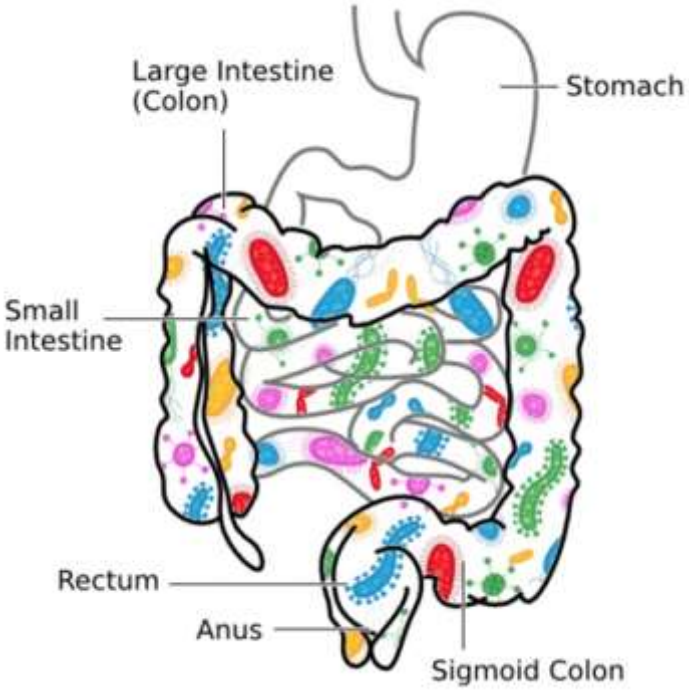
Prebiotics are a type of plant fibre that human body cannot digest, but serve as food for good bacteria or probiotics

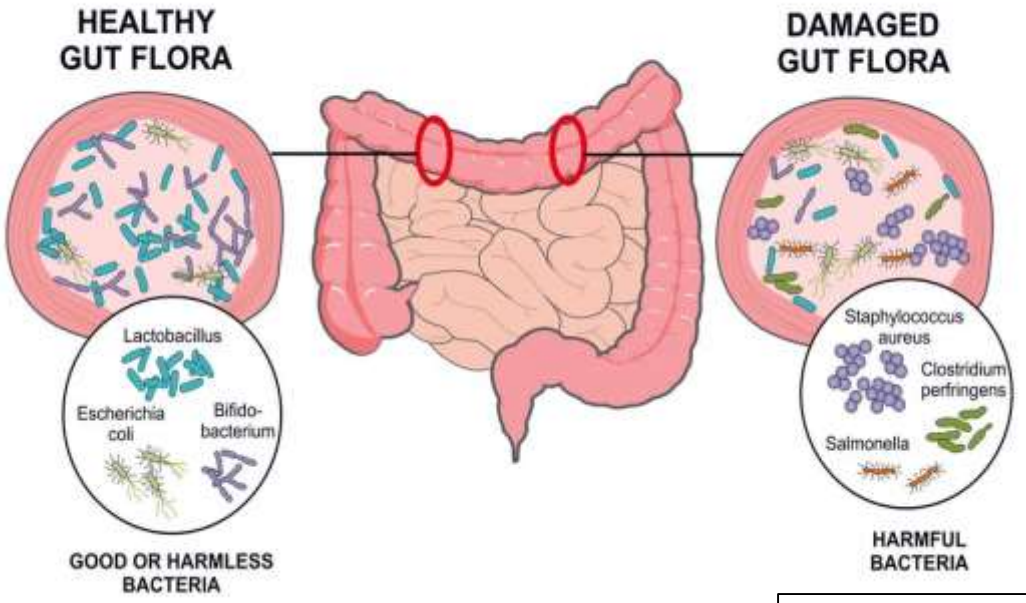
The Magic of Probiotics & Prebiotics



GUT

GOOD & BAD BACTERIA IN GUT





Bacteroides (good bacteria)

Firmicutes (bad bacteria)

Our digestive system or gut plays an important role in our health and well-being. Besides ensuring digestion of food, absorption of nutrients, and help with waste excretion, the gut is also one of the core disease-fighting systems of the human body.

The lining of the gut is covered with micro-organisms, mostly bacteria.

Some of these can cause infection and disease while other types of bacteria help us to fight diseases and stay healthy.

Each individual has his or her own unique set of bacteria. We acquire these bacteria during birth and the first year of life and they live with us throughout our lives. Some changes in the type of bacteria may occur during growth, depending on the type of food we eat, the environment in which we live, or the medicines that we take, such as antibiotics.

Good bacteria in the body helps to:

- Ferment plant fibre that cannot be digested by human body
- Provide energy from undigested food
- Produce certain vitamins like Vit K and B vitamins like B2, B9 and B12
- Prevent the growth of bad bacteria
- Regulate the appetite, energy metabolism and fat storage

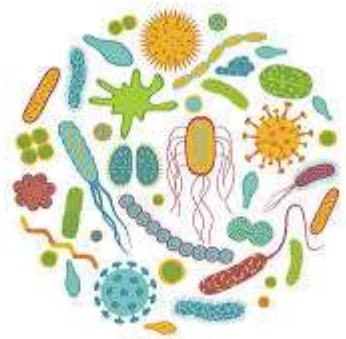
This helps us to be free from disease

Our immune system needs the right combination of bacteria so that we can stay healthy and rely less on medications.

Conditions such as stress, excessive alcohol use, diets high in processed foods, sugar, fat and artificial sweeteners but low in fibre can cause an imbalance of good and bad bacteria in the body

If bad bacteria outnumber the good bacteria they would ferment food in incorrect way and toxins might be produced. This may lead to health problems such as abdominal pain, stool irregularity (functional bowel disorders), inflammatory bowel disease, allergies, obesity ,diabetes. & related problems

PROBIOTICS



- Live Bacteria present in certain foods & supplements
- Beneficial to human health when given in adequate amounts
- Fight the harmful bacteria present in the gut
- Sensitive to heat & stomach acid

PREBIOTICS

- Food for Bacteria living in the gut
- Special type of fibre that cannot be digested by human body but only by gut bacteria
- Nourish the bacteria living in gut
- Not affected by heat & stomach acid

- Probiotics are live good bacteria like those naturally found in the gut. When given in the right form and in adequate amounts through food or supplement, they add to the population of healthy bacteria in the gut.
- Prebiotic is the non digestible (fibre) part of certain foods that goes through the stomach and small intestine undigested and is fermented in the large intestine. This fermentation process feeds good bacteria already present in the gut and not the bad bacteria.
- An increase in the number of good bacteria reduces disease risk and improves general well-being.

Sources of Probiotics

Commercial Products

- Amul Probiotic icecream & lassi
- Mother Dairy Nutrifit
- Nesvita Dahi
- Yakult
- Probiotic drugs

Indian Fermented Foods

- Idli
- Dhokla
- Dosa
- Dahi
- Kanji
- Appam

Other Probiotic foods

- Sauerkraut
- Miso
- Tempeh
- Kefir
- Kombucha

- Common probiotic foods are yogurt and buttermilk, along with other fermented foods like idli, dosa, dhokla, pickles, kanji, appam, olives in brine, sauerkraut, miso, kimchi etc.
- The good bacteria can occur naturally in some foods or developed in some foods by addition of certain good bacterial strains during pre preparation

Sources of Prebiotics

Natural Foods

- Onion
- Garlic
- Oats
- Wheat
- Asparagus
- Barley
- Apple with skin
- Under ripe banana
- Flaxseeds
- Berries

Commercial Supplements in powder or liquid form

Cooked Foods

- Boiled cooled rice
- Boiled cooled potatoes
- Uncooked oats soaked in milk overnight
- Chana
- Rajmah
- Peas
- beans

RDA* - 5 gm Prebiotic Fibre / day

(* Recommended intake)

- Certain natural foods like onion, garlic, oats, wheat, under ripe banana, flaxseeds etc are rich in prebiotic fibre
- Prebiotics are also available commercially as powder or liquid supplements.
- Starch in certain cooked foods is not broken down by the body for energy. Instead, it passes through the stomach & small intestine, is fermented in the large intestine and feeds the good bacteria in the gut.

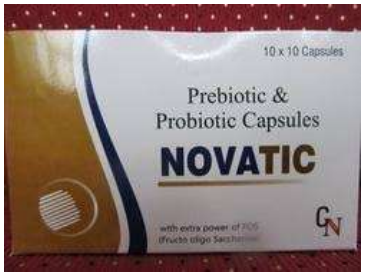
SYNBIOTICS

- Prebiotics, or " food for good bacteria” and probiotics, the "good" bacteria” work together synergistically.
- Products that combine these together are called synbiotics.

  Banana slices + Home made curd

  Mother Dairy B Activ Dahi

  Commercial products



Probiotics & prebiotics in Disease Management & Prevention

Digestive Health

- Relieves Constipation
- Treats and Prevents Diarrhoea
- Manages Lactose Intolerance
- Reduces symptoms of Irritable Bowel Syndrome

Diabetes & obesity

- Reduces blood glucose levels and improves insulin sensitivity
- Helps maintain weight

Heart Health

- Controls hypertension
- Controls serum cholesterol

Digestive Health

Prebiotics & Probiotics are effective to manage constipation as well as diarrhoea caused due to bacterial infection, travelling or antibiotic usage. Probiotics help in lactose digestion in people with lactose intolerance. The gut of these people lacks the enzyme needed to digest lactase, the sugar present in milk, which also causes gastrointestinal symptoms. Probiotics may also reduce the severity of pain and bloating in patients with irritable bowel syndrome

Diabetes & obesity

The imbalance of good and bad bacteria in the body makes the lining of intestine malfunction. This lining acts as a barrier & regulates what is absorbed into the blood. When it is healthy it allows water and nutrients to be absorbed into the blood while blocking chemicals and bacteria. The intestinal lining malfunction causes toxins, bacteria, waste products and other substances from the intestine to leak into the bloodstream. The immune system sees these substances as harmful, and triggers a response causing inflammation. If not treated, 'long term inflammation can cause medical conditions like obesity and diabetes

Probiotics & prebiotics restore the disrupted intestinal lining, strengthen it, produce certain helpful by-products (short chain fatty acids) which increase insulin sensitivity & reduce low-grade inflammation thus preventing and managing diabetes.

Imbalance of good & bad bacteria promotes diet induced obesity by changing energy regulation, altered gut hormone regulation, and secretion of chemicals that cross intestinal lining and enter blood, causing inflammation. Probiotics & prebiotics reduce the amount of food needed by our body due to the correct digestion and metabolism of food, regulate energy metabolism & hormone secretion that improve satiety and help to maintain weight.

Heart Health

Elevated blood cholesterol is a major risk factor for the development of coronary heart disease. Therefore, lowering the serum cholesterol level is important to prevent it.

Probiotics & prebiotics improve blood pressure and help to reduce cholesterol levels by reducing its synthesis & decreasing its absorption by intestine. They also absorb cholesterol for their own particular digestion.

Probiotics & prebiotics in Disease Management & Prevention

Bone Health

- Increases bone mineralization & density
- Prevents osteoporosis

Oral Health

- Maintains healthy gums & teeth
- Prevents Dental caries
- Manages & prevents bad breath

Immunity & Infections

- Boosts immunity
- Protects against upper respiratory infections
- Reduces the prevalence & severity of allergy & eczema in susceptible individuals
- Treats urinary tract infections

Bone Health

Prebiotics and probiotics contribute to bone health by increasing the absorption of minerals including calcium, phosphorus and magnesium in the intestine. Vitamin K produced by probiotics direct these absorbed minerals towards bone rather than arteries. The by-products produced by good bacteria pass into the blood from intestine and are transported to bone where they reduce the activity of cells (osteoclasts) responsible for breakdown of bone. This increases bone mineralization and density and prevents osteoporosis

Oral Health

Probiotics & Prebiotics can help to destroy the harmful microbes in the oral cavity by fighting against them and help in maintaining healthy gums, teeth & preventing bad breath. Dental caries, a disease of bacterial origin characterized by acid demineralization of the tooth enamel is also prevented by use of prebiotics & probiotics

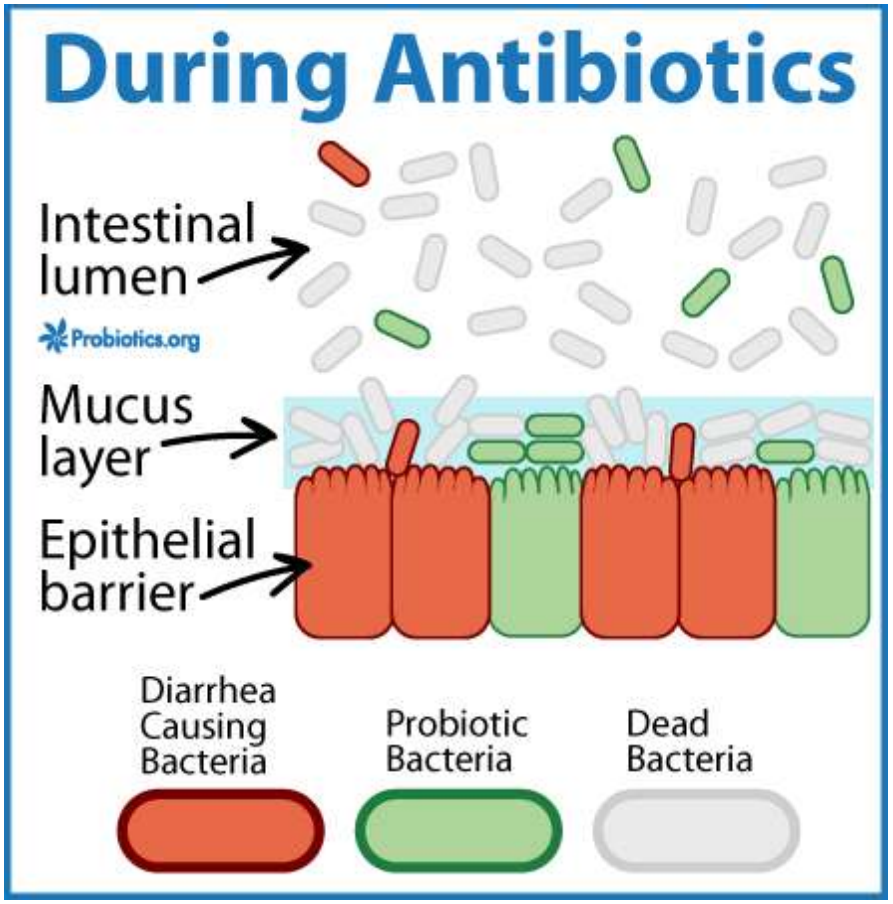
Immunity & infections

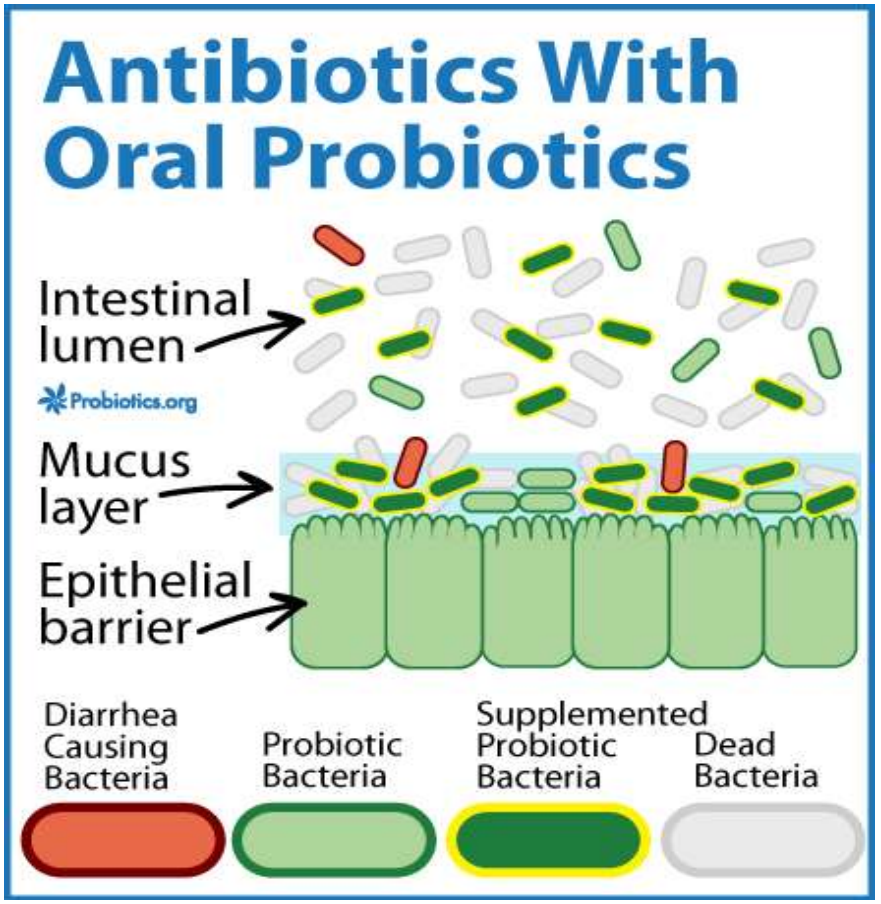
The gut is largest immune organ of the body. The good bacteria in the gut support immune health by directly interacting with bad bacteria and creating an inhospitable environment for them.

Probiotics & prebiotics are useful for preventing or treating respiratory tract infections through enhancing the immunity of individuals & via activating certain specific cells (immunoglobulin A (IgA), neutrophils etc). They reduce the incidence of influenza-like symptoms and upper respiratory tract infections.

Prebiotics & probiotics help in the treatment as well as reduce the risk for development of allergies and urinary tract infections.

ANTIBIOTICS AND PROBIOTICS





- When we take antibiotics to treat an infection, both good and bad bacteria are destroyed, ultimately weakening our immune system and making bad bacteria more adaptive and difficult to cure.
- It also causes imbalance of bacteria in the body that can lead to diarrhoea and other gastrointestinal problems.
- It is important to take probiotics whenever we are advised antibiotics to repopulate the large intestine with good bacteria
- There should be a gap of at least 2 hours between antibiotic intake and probiotic
- Probiotics also help to relieve gastro-intestinal side effects of medications.

Different Probiotic Strains

Strain	Commercial Product
Lactobacillus acidophilus	Florajen, intestine, acidophilus, VSL #3, Philips colon health, GNC Probiotic Complex
Lactobacillus casei	Yakult
Lactobacillus rhamnosus GG	GNC Probiotic Complex
Lactobacillus plantarum	GNC Probiotic Complex
Bifidobacterium infantis	Florajen 3, VSL #3, Philips colon health
Bifidobacterium bifidum	GNC Probiotic Complex
Saccharomyces boulardii	Florastor
Streptococcus thermophilus	GNC Probiotic Complex

- Different strains of bacteria have different health benefits
- Different probiotics contain different strains / combination of bacteria.
- Beneficial effects of probiotics related to intestinal tract could differ from one individual to another due to the difference of intestinal microbiota.
- Since each body is different, it is necessary to determine which strain will be helpful to one's own unique system through trial and monitoring of symptoms
- Check the commercial Probiotic products by reading its label which indicates the complete name of the bacteria, the expiry date and the health benefits.
- Also, make sure that the product you choose, must have more than one billion live organisms present, per dose.
- Store probiotic foods like yogurt in a cool dry place or refrigerator and other products as per the instructions on the pack

Label Reading for Commercial Prebiotics

The word ‘prebiotic’ is seldom used on the label.

Look for:

- Galactooligosaccharides (GOS)
- Fructooligosaccharides (FOS)
- Oligofructose (OF)
- Chicory fiber
- Inulin

PRAANAMRIT®

Optimal Prebiotic Fiber

Prebiotic Supplement

120 Capsules

Activate your "Praana", The Infinite Life Force Energy

Supplement Facts

Serving Size 4 Capsules
Servings Per Container 30

Amount Per 4 Capsules		% Daily Value
Calories	5	
Total Carbohydrate	3 g	1%†
Dietary Fiber	2 g	8%†
Prebiotic Blend	3,000 mg	*
Inulin (derived from chicory root)		
Oligofructose (derived from chicory root)		
Beta-Glucan (purified from *Saccharomyces cerevisiae*)		
Larch Arabinogalactan (*Larix occidentalis*), dried water-soluble extract		

*Daily Value not established.

Other ingredients: Vegetarian capsule (hydroxypropyl methylcellulose, water) and L-leucine.

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Free of the following common allergens: milk/casein, eggs, fish, shellfish, tree nuts, peanuts, wheat/gluten, corn, yeast, and soybeans. Contains no artificial colors, flavors or preservatives.

Suggested Use: 4 capsules once or twice daily. Capsules may be pulled apart and contents taken separately.

Do not use if full-bottle shrinkwrap is broken or missing. Store in a cool, dry place (59°F-85°F) away from direct light. KEEP OUT OF REACH OF CHILDREN.

This product was made in a GMP and ISO 9001:2008 registered facility.

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Prebiotic (soluble fibre) Content of Some Foods

SN	Food	Household Measure	Soluble Fibre (gm)
1	Chapati	One	0.3
2	Quinoa	1 cup cooked	1.2
2	Chana Dal	1 Katori cooked	1.1
3	White chana	1 Katori cooked	0.7
4	Urad sabut	1 Katori cooked	1.5
5	Moong sabut/ Rajmah	1 Katori cooked	0.8
6	Spring onions	1 Katori cooked	2.9
7	Onion	1 katori cooked	2.1
8	Garlic	1 tsp	0.1
9	Broccoli	1 Katori cooked	2.3
10	Cabbage	1 Katori cooked	1.5
11	Carrot	1 Katori cooked	2.2
12	Peas	1 Katori cooked	2.6
13	Guava	1 med	3.0
14	Chikoo	1 med	3.9
15	Orange	1 med	1.8
16	Apple with skin/ banana	1 med	1.0
17	Pear	1 med	2.2
18	Almonds	20 no.	0.8

Symptoms of Imbalance of Good & Bad Bacteria

- Flatulence / Gas / bloating
- Reduced appetite
- Unpleasant taste in mouth
- Nausea
- Belching
- Loose stool, diarrhoea, constipation or a combination
- Abdominal distension
- Fatigue or low energy
- Repeated infections

In case you experience any of the above symptoms, maintain an observation sheet to co-relate specific foods with symptoms in order to avoid these foods for some time

Observation Sheet

Date	Time	Meal	Menu	Symptoms experienced

Maintaining the Balance between Good & Bad Bacteria

- Eat a variety of plant foods rich in fibre such as whole grains, pulses, fruits and vegetables
- Make curd and buttermilk daily part of your daily diet
- Add chopped apple with skin / unripe banana to the curd
- Incorporate fermented foods like idli, dosa, dhokla, kanji , pickles in your diet
- Minimize the use of processed & refined foods
- Avoid indiscriminate use of antibiotics
- **Use commercial prebiotic & probiotic supplements** when the body is affected by poor diet, repeated infection, antibiotic use or stress and relieve the gastro-intestinal symptoms