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Introduction

Congratulations on taking the first step toward a healthier you by downloading this book. This book encompasses an evidence-based approach pertaining to the restoration and healing of your gut.

Our body harbors over 10-100 trillion microbial species with a predominance of these bacteria in the gut. These microbes or microbiotas, along with their enclosed genetic material, constitute a highly organized Microbiome. Our delicate Microbiome is prone to damage by everyday factors, most importantly, by our current standard Western dietary pattern. Through this book, you'll get an insight into the rationale behind keeping your gut and the Microbiome healthy. We have shed light on the benefits of consuming live beneficial bacteria or probiotics, which when administered in adequate amounts confer a health benefit on the host. In particular, you'll learn about how a probiotic named *Lactobacillus reuteri NCIMB 30242* benefits our body beyond the domains of the gut, such as optimizing our cardiovascular health by lowering bad cholesterol levels.

Moving forward, this book will walk you through the common ailments faced by a malfunctioning gut, for instance, a leaky gut barrier and development of IBS as well as one of the most effective solutions to revamp the integrity of the gut barrier — i.e. probiotics. Since "all disease begins in the gut," we encourage you to keep other bodily systems and your health stable by maintaining the balance of your gut.

About The Author

Muthupandi is a Microbiologist and healthcare administrator professional with expertise in Nutrition and healthcare management. He profound clinical experience and proficiency have enabled her to achieve credibility in writing for various medical companies across the globe. She is the author of more than 50 articles. He is based in India in the South nation where he is continuing with his writing career.

From the Author

My extensive area of expertise in the field of gastroenterology, in essence, motivated me to serve as one of the authors for microbiome plus. I assure you that the evidence-based facts contained in this book are free of the market hype. Writing this book also helped me understand the product and the Microbiome on a deeper level.

The Microbiome and Bile Metabolism

The Microbiome

Your microbiome performs essential functions for your body, it is important that it is healthy and balanced¹⁻³.

- Recent evidence shows that your early childhood^{4, 5}, modern medicine⁶, and diet⁷ could have contributed negatively to the function of the microbiome and thus your health
- Bile metabolism is an important function of the microbiome and poor bile metabolism can lead to disease⁸⁻¹⁵
- Regaining microbiome and bile metabolism health requires serious lifestyle changes and or specifically formulated dietary supplements

The microbiome is the community of natural and essential organisms that live in your gut and perform functions necessary for your health like helping to digest your food², ensuring appropriate immune function³, and maintaining your metabolic health^{16, 17}.

The bacteria that live in your gut are essential and good for your health.

The microbiome is assembled and shaped between the ages of 0-4 years old and it has been shown recently to be negatively affected by C-section delivery⁴, insufficient breastfeeding¹⁸, antibiotic use⁶, an overly hygienic environment¹⁹, and poor diet⁷.

The health of your microbiome is largely a result of your childhood and diet but is also the result of environmental factors such as the use of oral antibiotic and the presence of disease^{6, 20, 21}.

The Microbiome of people with cardiovascular disease²², irritable bowel syndrome (IBS)¹⁰, irritable bowel disease (IBD)¹³, low vitamin D²³ and osteoporosis²⁴, and other diseases such as obesity²⁵, liver disease²⁶, and type two diabetes mellitus (T2DM)²⁷ are notably different from those who are considered to be healthy.

The differences between a normal and unhealthy microbiome can be the result of disease or can be the cause of disease, both having a negative impact on your health.

To help restore your microbiome you must significantly and permanently change your diet by supplementing your diet with the specific bacteria required.

One important function of your microbiome is maintenance of a healthy bile metabolism.²⁸⁻³⁰ Bile is involved in digestion of food, absorption of fat, absorption of cholesterol, removal of cholesterol from the body, production of hormones, absorption of vitamins, production of vitamins, and act on receptors found to be essential in weight management and glucose metabolism.

Healthy bile metabolism in the gut is important for the regulation of cholesterol balance^{28, 30}, inflammation leading to IBD^{13, 14}, in irritable bowel syndrome (IBS)¹⁰, severe types of diarrhea³¹, and maintaining healthy levels of vitamin D and calcium in blood^{23, 32}.

Bile metabolism can be disrupted by a poorly formed or damaged microbiome (bacteria in your gut)^{10, 13, 14, 28, 33}. Permanent and stringent changes in your

diet and daily supplementation are the only ways to repair the microbiome and restore its function.

For people who have cardiovascular disease, low vitamin D and osteoporosis, and IBD, IBS, and some severe types of diarrhea there is evidence that your microbiome and bile metabolism could be causing and or could be affected by your disease and that daily supplementation of your microbiome with *L. reuteri* NCIMB 30242 bacteria can help to boost and restore the normal balance of the microbiome and bile metabolism.

What is the Microbiome?

The human microbiome is the population of more than 100 trillion microorganisms that live in our gut, mouth, skin and elsewhere in our bodies³⁴. These microbial communities have numerous beneficial functions relevant to supporting life. They are needed to digest food, to prevent disease-causing bacteria from invading the body, to develop and maintain the immune system, and to synthesize essential nutrients and vitamins.

The total number of genes associated with the human microbiome exceeds the total number of human genes by a factor of 100-to-one. With the advancement of genomic technologies, the capacity of this “second genome” to influence health can now be harnessed as a function of the whole community.

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The Evolution of Microbiome



The Evolution of the Microbiome

Planet Earth is unique in many ways, and gathering the conditions to host life makes it even more special as compared to other planets, not only in our solar system but also in other planetary systems from the Milky Way and other galaxies. According to NASA's definition, there are three conditions for planetary habitability: the existence of complex organic compounds, liquid

water, and a source of energy to sustain metabolism. Planets with the capabilities of harboring life thus need to be at a certain distance from the star they orbit around so that the surface is neither too cold nor too hot to prevent water from constantly freezing or evaporating. The size of the planet is also important since that will determine the gravity to hold a viable atmosphere and will influence on the rotational speed to allow for alternation between day and night and therefore relatively well-distributed energy (in the form of light and heat) along its surface. While, complex organic compounds may have come to the Earth from extraterrestrial sources, as suggested from observations on comets and asteroids, theories propose that origins of life in the universe date from more than 10 billion years ago, with models advocating for a genes-first or metabolism-first categories or the more recent hybrid models. Microbial fossil remains in stromatolites provide evidence that life on Earth started 3.7 billion years ago.

With only one cell, bacteria constitute some of the simplest and some of the most ancient organisms on Earth having short reproduction cycles varying from ten minutes to up to one day. Given the relatively simple DNA replication machinery with unsophisticated quality control and short reproduction times, microbes can evolve and adapt easily to environments with diverse nutrient sources, temperatures, acidity, or humidity. Throughout Earth's history, life progressed from unicellular microorganisms to more complex multicellular species that integrate the kingdoms of fungi, plants, and animals, which provided newer and more diversified habitats for microbes to live and prosper. Besides soil, terrestrial and aquatic plants and animals host between thousands and millions (and even billions) of microbial species, depending on the environment. Specifically, the digestive systems of animals including worms, flies, birds, reptiles, and mammals (of course humans too) provide housing and food for the microorganisms that live therein. These microbes constitute a dynamic ecological system, each of them owning hundreds of genes that form part of a microbiome. For example, the human gut microbiome includes approximately 3 million genes, which is approximately 100 times the number of genes present in human cells. The constantly changing resources of the host (the food we eat) shape the size and composition of these guest communities. These guests are not necessarily enemies of the host, but are helpful and almost essential to the host's health. As shown in worms, flies and humans, the microbiome is involved in the host's growth, metabolism, immunity, and mood.

Microbial ancient DNA has been found in permafrost samples collected from several-hundred-thousand-year-old ice found at the bottom 20-meter layer of a 308-meter-deep glacier in Tibet, and in amber samples dating several hundred thousand years. The gut microbiome of ancient humans and animals was investigated in DNA samples extracted from coprolites (fossils of animal excrements) or palaeofaeces (feces from ancient species that were preserved by the specific environmental conditions where they remained). In particular, ancient microbial DNA was recovered from different archeological sources including the Rio Zape burial site in Mexico with samples dating 1400 years before present and the gut of "Ötzi the Iceman", the 5000-year-old mummy (the oldest human mummy ever found) discovered in the Tyrolean Alps in 1991. The microbiome recovered from Rio Zape coprolites resembled in great part that of African rural populations with a smaller resemblance to the primate non-human. Ötzi's microbiome was similar to that of the primate gut. These results contrast the lifestyles and dietary habits of ancient and present day societies. Nowadays we live in a more cosmopolitan world with access to processed foods and antibiotics, which accounts for major differences in the microbiome as compared to rural and ancient communities. Whereas the use of antibiotics protects humans from diseases that were untreatable in the past, these remedies are not pathogen-specific and their use results in the loss of bacterial species that may have beneficial effects on the host. Evidence of the diet effect is suggested by the presence of the species *Treponema* in the 1400-year-old Rio Zape samples as well as in present-day rural African samples, as opposed to cosmopolitan microbiomes. *Treponema* species (cousins with the syphilis-causing microbe) are believed to help in the digestion of fibrous foods and therefore a shift towards processed diets results in a less appealing environment for such microbes in the modern society's gut. On the contrary, the loss of microbial diversity due to consumption of processed food or the exposure of antibiotics may result in the increase of autoimmune disorders, such as inflammatory bowel disease or rheumatoid arthritis, as seen in recent studies.

Thus, it appears that the gut microbiome evolved with technological advances and changes in lifestyles which brought significant benefits to our health, but scientists are starting to realize that the maintenance of a diverse gut's microbial ecology is important as well. The consumption of natural diets in combination with prebiotics and probiotics may help maintain a healthy microbiome.

Microbiome Plus+ products were all developed to deliver the most clinically researched, highest quality nutritional supplements available. Our research and development team used the new science of the microbiome to understand a gene deficit that appears to be contributing to heart, bone and gastrointestinal disease and deliver the gene in a probiotic to supplement it. If you use them with your patients they will all work!

MICROBIOME PLUS+ HEART - HEART HEALTH PROBIOTIC + OMEGA 3

- May reduce coronary heart disease risk**
- Supports healthy cholesterol and triglycerides*
- Supports normal inflammatory response*
- Supports healthy blood pressure*
- Supports healthy bile metabolism*

Microbiome Plus+ Heart is a complete heart health dietary supplement that provides the full American Heart Association daily dietary recommendation of omega-3 which may reduce the risk of coronary heart disease plus the probiotic L. reuteri NCIMB 30242, which supports normal cholesterol levels and inflammatory response.* The probiotic in Microbiome Plus+ Heart is the only probiotic shown in clinical trials to support healthy bile metabolism and maintain normal cholesterol levels and inflammatory response.* Microbiome Plus+ Heart also provides the full American Heart Association daily dietary recommendation of DHA and EPA omega-3 fatty acids which may reduce the risk of coronary heart disease.† Omega-3 polyunsaturated fatty acids have also been shown to maintain healthy triglyceride levels.*

MICROBIOME PLUS+ BONE - BONE HEALTH PROBIOTIC + CALCIUM/VITAMIN D

- May reduce risk of osteoporosis**
- Complete source of vitamin D and calcium*
- Supports healthy levels of 25-Hydroxyvitamin D*
- Supports healthy bones, joints, and muscles
- Supports healthy bile metabolism*

Microbiome Plus+ Bone is a complete bone health dietary supplement that provides full daily dietary recommended intake of calcium, and vitamin D3 and the probiotic L. reuteri NCIMB 30242, which helps maintain healthy levels of vitamin D in the body.* The probiotic in Microbiome Plus+ Bone is the only probiotic shown in clinical trials to maintain healthy levels of vitamin D.*

Microbiome Plus+ Bone helps replenish the natural bacteria in your body vital for regulating levels of vitamin D and calcium in your blood and also provides the daily requirement of dietary calcium and vitamin D3.* Calcium serves as the key building block for the formation and remodeling of bone. Microbiome Plus+ Bone also contains vitamin D, which is essential to the proper absorption of calcium.* Adequate calcium and vitamin D throughout life, as part of a well-balanced diet, may reduce the risk of osteoporosis.

MICROBIOME PLUS+ GI - GUT HEALTH PROBIOTIC + PREBIOTIC FIBER

- Supports gastrointestinal and immune health*
- Maintains balance of healthy bacteria*
- Supports normal inflammatory response*
- Supports healthy bile metabolism*
- Synbiotic formulation with pre and probiotic*

Microbiome Plus+ Gastrointestinal is a complete gastrointestinal health dietary supplement that provides natural prebiotic fiber (scFOS) and the probiotic L. reuteri NCIMB 30242 which work together to maintain the balance of healthy bacteria in your gut and support normal digestive function.* The probiotic in Microbiome Plus+ Gastrointestinal has been shown in clinical trials to help support normal inflammatory response in addition to supporting digestive health.* scFOS is a natural prebiotic fiber that supports a healthy gastrointestinal tract by promoting digestive function, immune health, the growth of healthy bacteria, natural intestinal mechanical barriers, and gut integrity.* Microbiome Plus+ Gastrointestinal combines these two ingredients to provide a complete gastrointestinal health support.* Not only does scFOS support digestive function but as a prebiotic helps L. reuteri NCIMB 30242 to support normal gastrointestinal function.*

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How to Eat Right for a Healthy Microbiome



The first question that needs to be answered is "**what exactly is the Microbiome?**"

The Microbiome is all of the microbes that live on and in your body. The portion of the Microbiome that is influenced significantly by nutrition is that of the

digestive tract, called the gut microbiota. With that answered, we can turn our attention to figuring out **what “eat right,” “fix” or “proper nutrition” means?**

How do we define a healthy Microbiota anyway?

This can be answered by answering the following:

What should the organ (i.e. a Microbiome) look like? – Generally, the higher diversity of organisms, and genes of those organisms, the more balanced/stable/healthy your gut ecosystem is. An accurate and interesting comparison is that our gut is simply another ecosystem like the Earth and diversity of organisms and genes ensures a healthy ecosystem, gut, and Earth. But one starved of diversity, where species are extinct becomes unbalanced and can spiral out of control to catastrophe.

How does the organ work? – The microbiome/microbiota plays a major role in: immune function, metabolism, digestion, regulating cholesterol levels, absorption of important vitamins, minerals and nutrients like calcium and vitamin D, maintaining the mucosal barrier of your intestinal tract (which helps regulate immune response), harvesting energy from dietary fiber, providing essential enzymes for digestion, resisting pathogens, synthesizing vitamins, etc..

How is it working for you? Is it contributing to your good or poor health? – Most of the Western diseases are a result of western food, lifestyle, and medical practices. While diet, exercise, and human genetics are essential components, one thing that seems to have been overlooked is that between the age of 0-4 years, we all assemble our own Microbiome/Microbiota. Nevertheless, by consuming the Western food and medicine, we have created a “Western Gut” which is playing a significant role in disease. Is there an additional component to diet, exercise, and human genetics? The gut seems to be an essential, independent contributor to health and disease.

Finally, before embarking on our quest for a dietary path to a healthy microbiota we should ask the question, **is it even possible to change my microbiome and how long will it take?** Scientists and studies appear to agree with the possibility of changing your microbiome; however, this requires a permanent and significant change in your diet and/or supplementation. Moreover, these changes can take place as early as 24 hours. This is not surprising since most gut bacteria divide

within 24 hours.

General nutrition guidance for a healthy microbiome

- 30-50 servings of vegetables a week
- 40-50 grams of fiber per day - try from veggie source
- whole food, complete fiber
- Keep it whole -whole foods contain complete nourishment for your gut
- Normal fat and protein levels – too much fat and protein can drastically change your gut within 24 hours
- Probiotics – try adding Microbiome Plus+ to your diet
- FODMAP diet (FODMAPs are osmotic; they are not digested or absorbed
- well and fermented heavily in the intestine and this contributes to the symptoms of IBS. Thus while combating IBS symptoms low FODMAP is sometimes used however this does not mean it is optimal for the long-term health of your microbiome and does not ultimately solve your IBS issue)
- Avoid overuse of antacids
- Avoid overuse of oral antibiotics

NOTE: This will help maintain normal bile and cholesterol metabolism, promote the production of appropriate SCFAs which will help with absorption of calcium and nourish the lining of the gut and maintain normal gut pH which will help with absorption of calcium and vitamin D.

Specific nutrition guidance for the microbiome

Pregnant and birthing

Why and how should an expecting mother eat for a healthy Microbiota for her baby?

There is some transfer of the microbiota during pregnancy and thus it is of utmost importance for a woman to eat right and to eat healthy during pregnancy. There is also evidence that the mother's microbiome, fecal and vaginal flora are preparing to inoculate the baby optimally for immune system generation and digestion of breast milk. Despite the possibility of this early microbial transfer, there is indisputable evidence that during natural birth, the mother's vaginal and fecal microbiome are transferred to the baby during the birthing process to inoculate the baby and develop a healthy microbiome much

like that of the mother - During caesarean section the bacteria present on mothers/doctors/nurses/fathers skin colonizes the newborn baby's gut, resulting in a microbiome that more closely represents that of the skin. There is also evidence that obesity during pregnancy affects the long-term health of offspring via the transferred microbiome.

SPECIFIC GUIDANCE: Always follow your doctor's advice and speak to a doctor before making any major modifications; however, maintaining a diet high in vegetables and fiber and avoiding overuse of antacids and oral antibiotics are generally healthy.

Baby/Toddler

How should a toddler 1 year+ eat?

The years 0-4 are the critical years for a child's health because this is when their gut microbiome is essentially forming. This "forgotten" but essential "organ" of their body is developing and will eventually significantly affect immune function, digestion, hormone signaling, vitamin production, and micro/macronutrient absorption. Adequate nutrient intake is as important for the development of a microbiome/microbiota as it is for the early development of our child's brain and heart.

Key points in baby/toddler years...

1. Expose your children to different kinds of foods
2. Let them get dirty
3. Breastfeed as long as you can - breastfeeding is better than bottled milk as it provides more diversity of prebiotic "full-spectrum prebiotic"
4. Plan to have a natural birth, if possible, and if not, consider inoculation of mother's vaginal microbiome - Cesarean section and formula feeding increase Clostridium in children when compared to natural; Clostridium bacteria are potentially harmful when not kept in check.
5. Eat a balanced and healthy diet including vegetables, fiber, whole foods - A healthy nutritional intake in early life is most likely to help reduce the risk of allergies and other noncommunicable diseases.

Antibiotic/radiation/chemotherapy

Antibiotics can be taken orally for a number of reasons, including the control of

bacterial infections within the gut, sinus/nose, skin, or somewhere else on your body. But along the way to these distant sites, antibiotics kill the bacteria in your

gut unintentionally, killing a little piece of the microbiome. Additionally, good and bad bacteria co-exist in a balance at all times in a healthy gut and thus, antibiotics that are taken to eradicate the bad bacteria, indiscriminately kill the good bacteria as well. Regaining this balance is paramount to ending the infection and eliminating reoccurrence. Appropriate nutrition and probiotic therapy are always an important part of this. Medical treatments for cancer such as radiation and chemotherapy can sabotage the gut; however, both result in an

indiscriminate eradication of the microbiome. Patients on chemotherapy and radiation therapy should always consult a doctor before making changes to their diet or using supplements.

SPECIFIC RECOMMENDATIONS: Heart health patients should replace their BSH active Lactobacillus species with Microbiome Plus+ Heart, those with osteoporosis benefit from Microbiome Plus+ Bone, and during and after an antibiotic course, the Microbiome Plus+ GI offers complete protection. Patients should always take their antibiotics as directed by physicians, however, try not to misuse or overuse antibiotics. They should also focus on staying hydrated and feeding the good bacteria, which requires full spectrum prebiotics largely derived from plants.

Better Health and Prevention of Disease

Microbiome Plus+ products were all developed to deliver the most clinically researched, highest quality nutritional supplements available. Our research and development team used the new science of the microbiome to understand a gene deficit that appears to be contributing to heart, bone, and gastrointestinal disease, while delivering the gene in a probiotic to supplement it.

HEART HEALTH PROBIOTIC + OMEGA 3

- May reduce coronary heart disease risk**
- Supports healthy cholesterol and triglycerides*

- Supports normal inflammatory response*
- Supports healthy blood pressure*
- Supports healthy bile metabolism*

Microbiome Plus+ Heart is a complete heart health dietary supplement that provides the full American Heart Association daily dietary recommendation of omega-3 which may reduce the risk of coronary heart disease plus the probiotic

L. reuteri NCIMB 30242, which supports normal cholesterol levels and inflammatory response.* The probiotic in Microbiome Plus+ Heart is the only probiotic shown in clinical trials to support healthy bile metabolism and maintain normal cholesterol levels and inflammatory response.* Microbiome Plus+ Heart also provides the full American Heart Association daily dietary recommendation of DHA and EPA omega-3 fatty acids which may reduce the risk of coronary

heart disease.† Omega-3 polyunsaturated fatty acids have also been shown to maintain healthy triglyceride levels.*

BONE HEALTH PROBIOTIC + CALCIUM/VITAMIN D

- May reduce risk of osteoporosis**
- Complete source of vitamin D and calcium*
- Supports healthy levels of 25-Hydroxyvitamin D*
- Supports healthy bones, joints, and muscles
- Supports healthy bile metabolism*

Microbiome Plus+ Bone is a complete bone health dietary supplement that provides full daily dietary recommended intake of calcium, and vitamin D3 and the probiotic L. reuteri NCIMB 30242, which helps maintain healthy levels of vitamin D in the body.* The probiotic in Microbiome Plus+ Bone is the only probiotic shown in clinical trials to maintain healthy levels of vitamin D.*

Microbiome Plus+ Bone helps replenish the natural bacteria in your body vital for regulating levels of vitamin D and calcium in your blood and also provides the daily requirement of dietary calcium and vitamin D3.* Calcium serves as the key building block for the formation and remodeling of bone. Microbiome Plus+ Bone also contains vitamin D, which is essential for the proper absorption of calcium.* Adequate calcium and vitamin D throughout life, as part of a well-balanced diet, may reduce the risk of osteoporosis.

GUT HEALTH PROBIOTIC + PREBIOTIC FIBER

- Supports gastrointestinal and immune health*
- Maintains balance of healthy bacteria*
- Supports normal inflammatory response*
- Supports healthy bile metabolism*
- Synbiotic formulation with pre and probiotic*

Microbiome Plus+ Gastrointestinal is a complete gastrointestinal dietary health supplement that provides natural prebiotic fiber (scFOS) and the probiotic L. reuteri NCIMB 30242, both of which work together to maintain a balance of healthy bacteria in your gut and support normal digestive function.* The probiotic in Microbiome Plus+ Gastrointestinal has been shown in clinical trials to help support normal inflammatory response in addition to supporting digestive health.* scFOS is a natural prebiotic fiber that supports a healthy gastrointestinal

tract by promoting digestive function, immune health, the growth of healthy bacteria, natural intestinal mechanical barriers, and gut integrity.* Microbiome Plus+ Gastrointestinal combines these two ingredients to provide a complete gastrointestinal health support.* Not only does scFOS support digestive function but as a prebiotic helps L. reuteri NCIMB 30242 to support normal gastrointestinal function.*

How Dietary Fats Influence the Microbiome



The types of fat that we consume in our diet tend to affect the makeup of our gut Microbiome. There are two major types of dietary fats. Saturated (or bad fats) and unsaturated fats. Saturated fats that come from animal-based foods like beef, whole-fat milk, cheese, and butter have a negative impact on the gut microbiota and lead to obesity. In contrast, unsaturated plant-based or marine fats (like nuts and fish oil) play a vital role in maintaining a balance of healthy gut flora, and so do not contribute to obesity. How do dietary fats alter the gut Microbiome? Alternatively, how does the gut Microbiome influence the

metabolism of dietary fat?

Gut Microbiome Communicates with the Dietary Fats

Scientists have been able to locate a crosstalk between the microbiota and dietary fats. Dietary consumption of saturated fats lowers the level of healthy gut bacteria. The altered Microbiome is then capable of harvesting energy from the dietary fat. Additionally, overweight/obese individuals with metabolic disorder exhibit higher proportion of unhealthy gut bacteria that are capable of harvesting surplus energy from the dietary nutrients. This is probably due to the reduced metabolism of dietary fats in obese individuals. Hence, the microbiota and dietary fats can be considered as a two-way traffic where the Microbiome influences the metabolism of dietary fats or vice versa, consumption of dietary fats plays a role in shaping our Microbiome.

A High-Fat Diet Induces the Release of Inflammatory Substances in Blood

When the dietary intake of saturated fats is considerably on the higher side, the gut bacteria trigger the release of several inflammation-promoting substances. These substances are the culprit behind obesity and long-standing metabolic diseases (including insulin resistance). More interestingly, it is found that regular intake of saturated fats is associated with increased levels of inflammation-promoting substances in the blood regardless of whether the Microbiome is altered or not. A study supporting this notion showed that germfree mice (i.e. mice not exposed to a Microbiome) are protected against obesity induced by a high-fat, sugar-rich diet despite not having any exposure to a Microbiome. A high-fat-diet-induced inflammation and its crosstalk with the gut microbes has been traced to a rise in special immune sensors in the gut called Toll-like receptors.

Increased Dietary Fat Lowers the Microbial diversity

A high-fat diet also reduces the diversity of the Microbiome. Microbial diversity is the inhabitation of the gut by trillions of diverse bacterial species. Normally, a healthy gut (which is obviously due to a healthy diet) has abundant amounts of good microbes called *Bacteroidetes*. These bacteria fight inflammation and obesity. On the other hand, a high-fat diet reduces the levels of *Bacteroidetes*

while correspondingly raising the levels of the hostile gut microbes known as *Firmicutes*. These bacteria (as opposed to *Bacteroidetes*) drive inflammation and obesity.

Switching from a low-fat plant-based diet to a high-fat, sugar-rich “Western” diet shifts the structure and composition of the microbiota as early as 24 hours. The good news is that despite being on a high-fat diet, you can still prevent obesity. Apart from regular exercising, this is by the use of **probiotics or prebiotics** (containing short-chain fructooligosaccharides) that help ferment the gut bacteria to produce short chain fatty acids. These indigestible carbs being high in fiber are protective against diet-induced obesity.

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Ultimate Guide To Microbiome Reboot in Under 30 Days

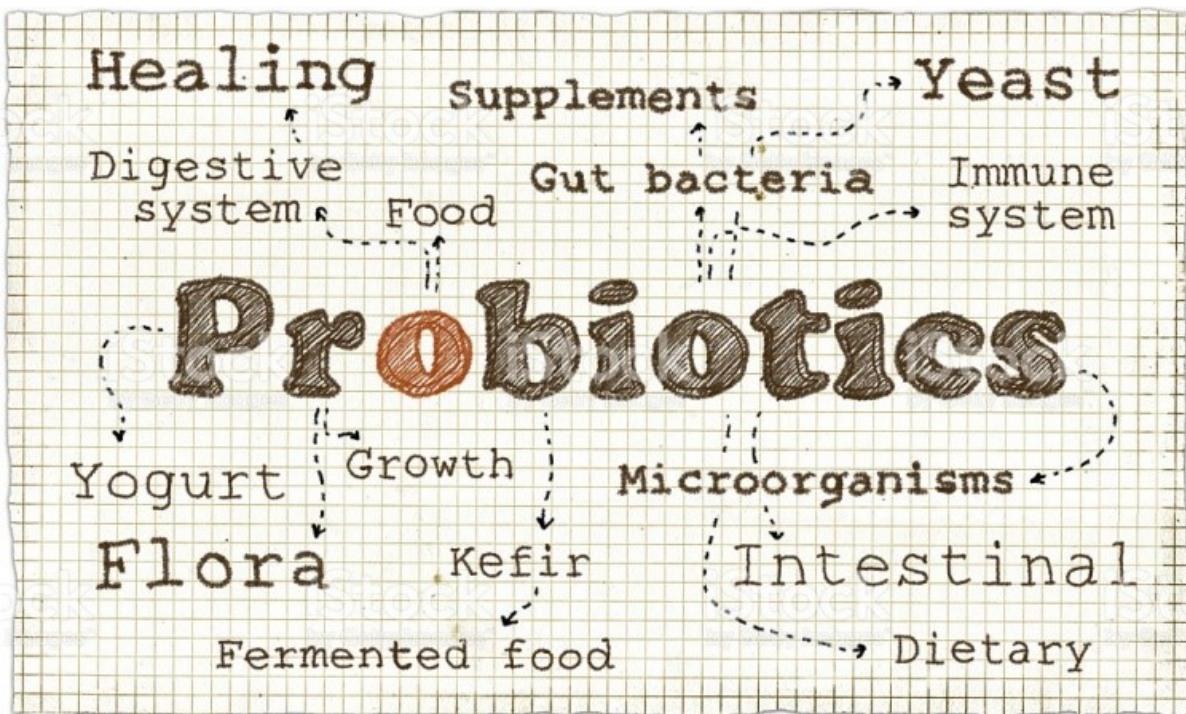


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Introduction

We are so preoccupied with our hectic routines that we fail to focus on our health and well-being. The worst case scenario is when you feel more out of sorts than usual and visit your doctor for occasional blood tests that hint at a vitamin D deficiency or a high cholesterol level. The problem, however, has a cause that is more deep-rooted than your blood.

Your parents might have once told you that you're special and different from the rest, turns out they're right! Every one of us has an individually unique microbial ecosystem both inside and on us that is home to more than 100 trillion microbes, responsible for keeping our Microbiome in balance. If you've ever experienced an unexplained pain or discomfort in your gut, or if you feel relentlessly tired regardless of getting an appropriate amount of sleep and rest, you ought to keep reading. Your Microbiome might be unbalanced!

How much do you know about your Microbiome?

A little something about Microbiome

The number of microbes throughout your body outnumbers the number of cells you contain by 10 to 1. Microbes, otherwise known as microscopic organisms, is a term used to generalize a number of different types of life forms that are relatively too minuscule to view without the use of a microscope. Some microbes that you may be familiar with are bacteria, fungi, and viruses, all of which are inhabitants of your body.

Let's divide microbes into two simpler groups: the good microbes and the bad ones. A significant amount of good microbes is situated in your gut where they support your immune system, protect you from various diseases, detoxify your body, and even assist in the maintenance of your weight. The bacteria accountable for maintaining the health of our gut are known as **probiotics**. A comparative amount of bad bacteria, or microbes, also inhabit our gut that account for a myriad of chronic diseases, inflammation, and obesity. The choices we make in our daily lives have influential effects on our Microbiome and can throw it out of balance.



So how exactly does your Microbiome come to be in the first place? Apparently, fetus' gastrointestinal tract is a nearly sterile place and the gut microbiota doesn't completely form until after your birth. The Gut Microbiota Worldwatch stated that the digestive tract of a newborn rapidly colonizes with microorganisms from the mother and its surrounding environment. For example, the gut microbiota of a child who has been breastfed would differ from one who was fed with a formula. In fact, newborns who are exposed to different

environments have a more diversified Microbiome are less likely to suffer from allergies and sensitivities to different types of foods like eggs, milk, and peanuts.

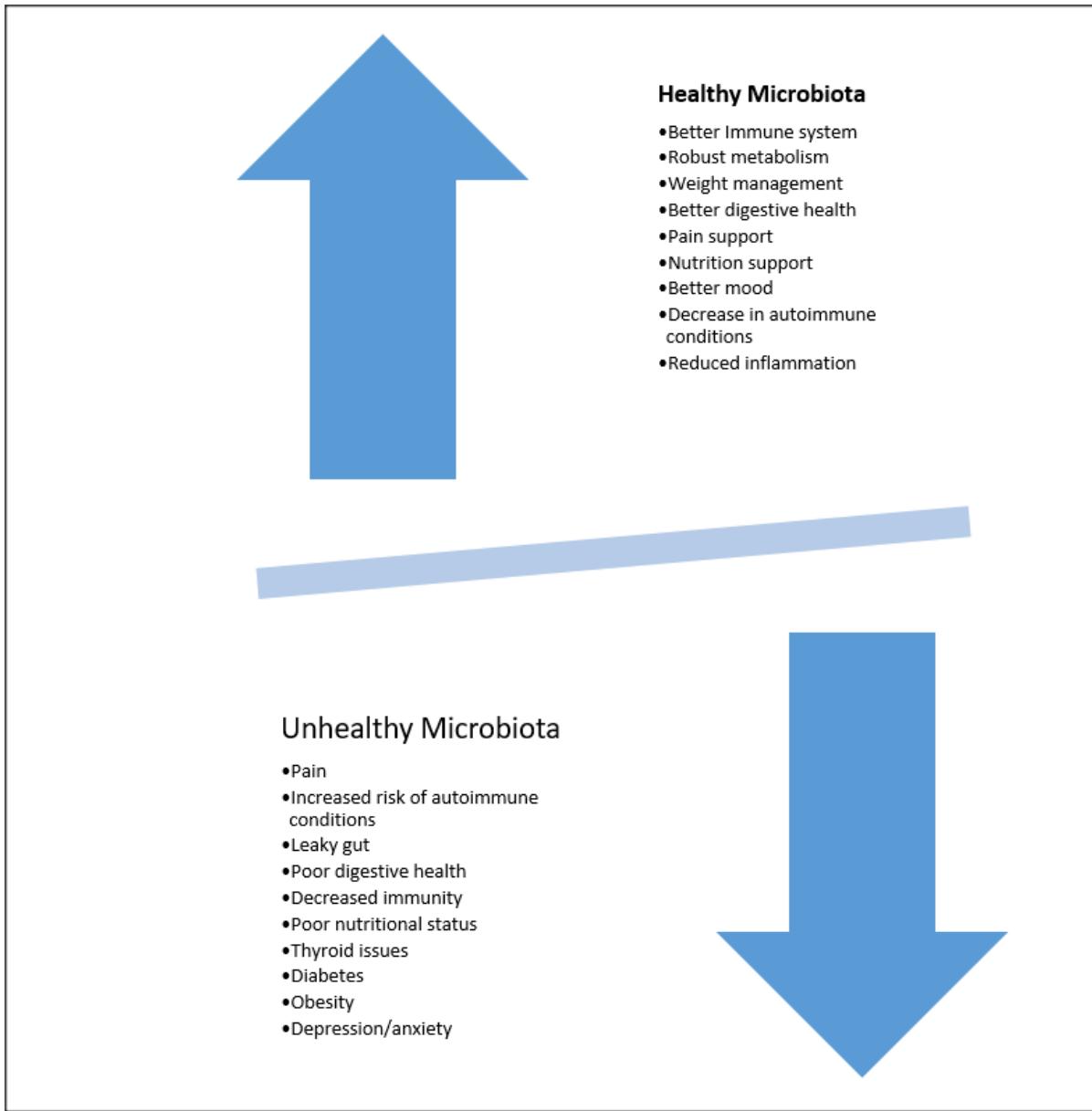
- ***Is it important for me?***

Each individual's Microbiome is essential for their external and internal physical condition. Your gut's Microbiome is one of the most imperative features of your body that could either make you or break you. The presence of over 2 kilograms of microbes and over 1000 species of bacteria renders the diversification of the gut Microbiome.

Our stomach and small intestine at times have trouble digesting whatever we consume, this is where microbes jump in and aid in the digestion process providing our bodies with the nutrients we need. An imbalance in the gut ecosystem can lead to indigestion and obesity, both of which, are major healthcare issues being discussed as of recently. A research study conducted by [Jones et al. 2012 at the McGill University](#), showed that using a probiotic supplement containing L. reuteri NCIMB 30242 caused significant reduction in total as well as harmful fractions of cholesterol.

The microbes in your gut supply your body with vitamins like vitamin B and K. In another study conducted by [Jones et al. 2013 at the University of McGill Canada](#), researchers found that in contrast to a placebo, a L. reuteri NCIMB 30242 based probiotic was capable of increasing the blood levels of vitamin D by 22.4%. These vitamins are fundamental to a properly functioning immune system. Your immune system, when vulnerable or compromised, can further disrupt the balance of the gut Microbiome by making it more susceptible to bad microbes or bacteria.

We previously discussed the influence of a more diverse Microbiome in newborns on different types of food allergies. Being low in diversity, the Microbiome can have long-term effects on a child's development advancing into adulthood. Just the same, a Microbiome overpopulated with certain types of bacteria can wreak havoc on the balance of your Microbiome as well. Let's figure out what's going on in your Microbiome and exclude all factors that are causing chaos!



1. Why am I losing my Microbiome?

There are multiple factors that partake in the destruction of your Microbiome. Although a stool analysis can be used to determine whether your gut harbors a healthy microbiota, there are some simple signs you can look out for by asserting your current health condition to deduce the composition of the microbial community in your gut.

Factors that can wreak havoc on your microbiota health include:

Multiple cravings for sugar and highly processed foods

It's relatively normal for you to crave something sweet following an extensive day at work or school, especially if you missed a meal. Our bodies are automatically programmed into craving sweets when blood sugar levels decline. Though, when you begin to desire ice-cream and doughnuts on a full stomach, taking precautions and keeping track of what you consume is advised.



Recent studies have shown that the microbes found in your gut can exert a strong effect on our dietary preferences and modify our appetites. Let's say you're an individual with a sweet tooth and consume more than necessary sugary substances than needed. This surplus intake of refined sugars leads to the development of pro-inflammatory microorganisms in your gastrointestinal tract. These microbes further produce compounds that create additional cravings due to the dependence of their survival on these food types.

- **Food Intolerance**

With a well-developed and diversified Microbiome, you shouldn't have a problem digesting any of the foods you consume. However, if your Microbiome is poorly matched to your dietary intake, food intolerance ensues. For instance, if you're raised consuming a vegetarian or vegan diet and decide to switch to a more carnivorous diet into adulthood, your gut would have trouble processing

the food due to the lack of microbes that assist in its digestion. Factors like food intolerance contribute to gastrointestinal distress as well as a leaky gut.

- **Depression**

Recent evidence has shown that chronic depression can, in some cases, be related to an inflammatory disorder. The microbes residing in our gut have a sizable effect on our brain function and mental health. For example, while healthy gut bacteria can promote anti-depressive effects, other more hazardous microbes assist in inducing anxiety or depression.

- **Irritable Bowel Syndrome and other Gastrointestinal Issues**

Gastrointestinal issues are usually related to a poor diet, allergies, and stress, and despite that, don't really offer a vast inventory of cures or remedies. That's because the problem lies deeper than just the dietary lack of fiber or your irritating boss — and can be more accurately attributed to an imbalanced gut Microbiome that lacks diversity and resilience. Gastrointestinal issues present with;

- Gas
- Bloating
- Bad Breath
- Loose Stools
- Constipation

If you find yourself experiencing one or more of the above signs, chances are that your Microbiome is out of whack to some extent. Wondering how it got so serious? Here are 5 habits to avoid that can wreck your Microbiome Health.

1. Antibiotics

Over the counter drugs and medicines have become pretentious solutions for ordinary ailments. It may seem like a smart financial move to avoid all those reoccurring trips to the doctor and just get yourself or your kids some antibiotics from the nearest pharmacy.

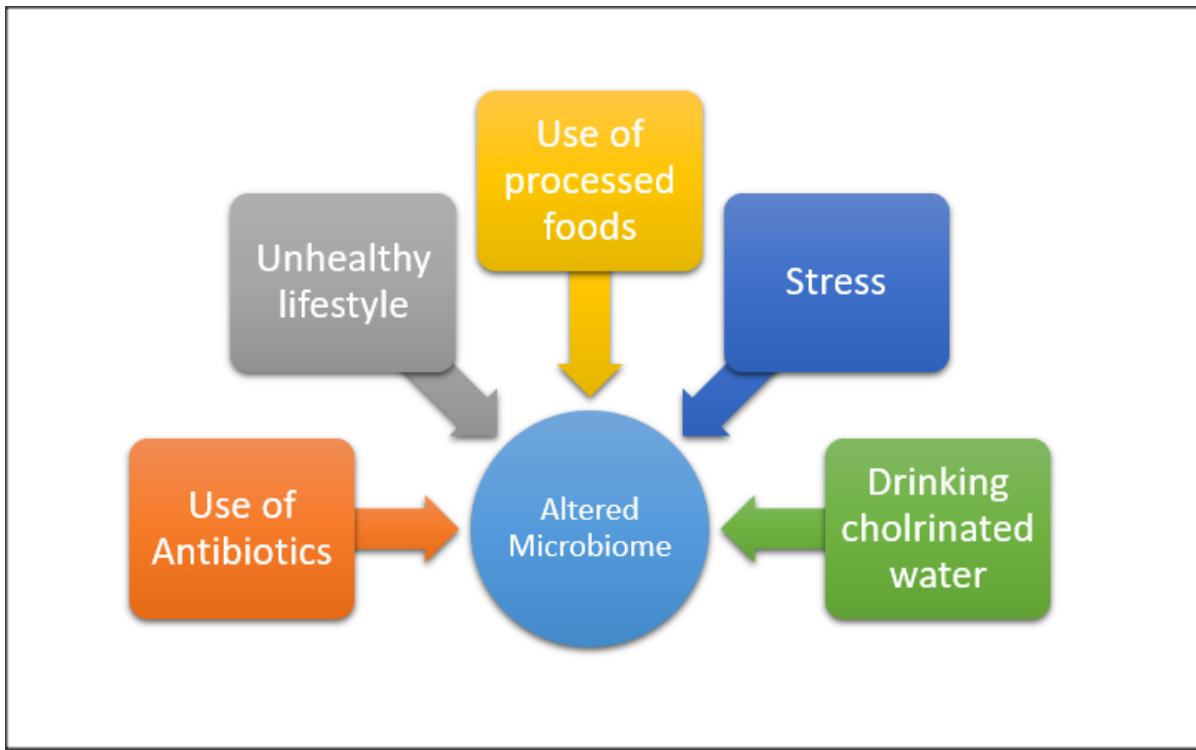
The intake of antibiotics is probably the most destructive thing you could do to your Microbiome. You have to consider that your bodies consist of both bad bacteria and probiotics. Antibiotics not only wipe out the bad bacteria from your system but also end up significantly diminishing the probiotics that are crucial to your digestion, immune system, and so much more. The use of antibiotics has to be cautious until specifically indicated. Moreover, the re-indulgence of good

bacteria, or probiotics, is often forgotten after relief from their ailment.



Chlorinated Drinking Water

The use of chlorinated drinking water is detrimental to the friendly gut microbes. This is due to chlorine's ability to kill off any bacteria that come in its way.



3. Altered Fats used in Food products

Our body requires fats for the production and maintenance of cell walls. The fats that we consume in our diet form a sort of impermeable protective layer on our cells that prevents toxins and pathogens from entering into our bloodstream. Fast foods contain altered fats that render the cell walls more permeable allowing the invasion of harmful agents susceptible into our system. The original cell walls made from authentic fats are actually the dwelling area for most protective microorganisms that flourish in our bodies. Think of it this way, a weak or broken cell wall is like a broken sewage pipe that ends up leaking into your system and contaminates everything it comes in contact with.



Increased Consumption of Carbohydrates

We already discussed the negative impact of a high sugar intake on your Microbiomes. The surplus intake of foods high in carbohydrates can also lead to a drastic imbalance in the microbial system. This is because the bad bacteria feed on carbohydrates and sugars to thrive and flourish. Focusing on a more Asian dietary pattern and saying good riddance to the standard Western diet is an ideal way to help minimize the consumption of carbohydrates.

5. Stress

Recent studies suggest that red squirrels which reside in a low-stress environment contain a considerably healthy Microbiome. Researchers tested the squirrel's Microbiomes as well as their stress hormones and the results depicted

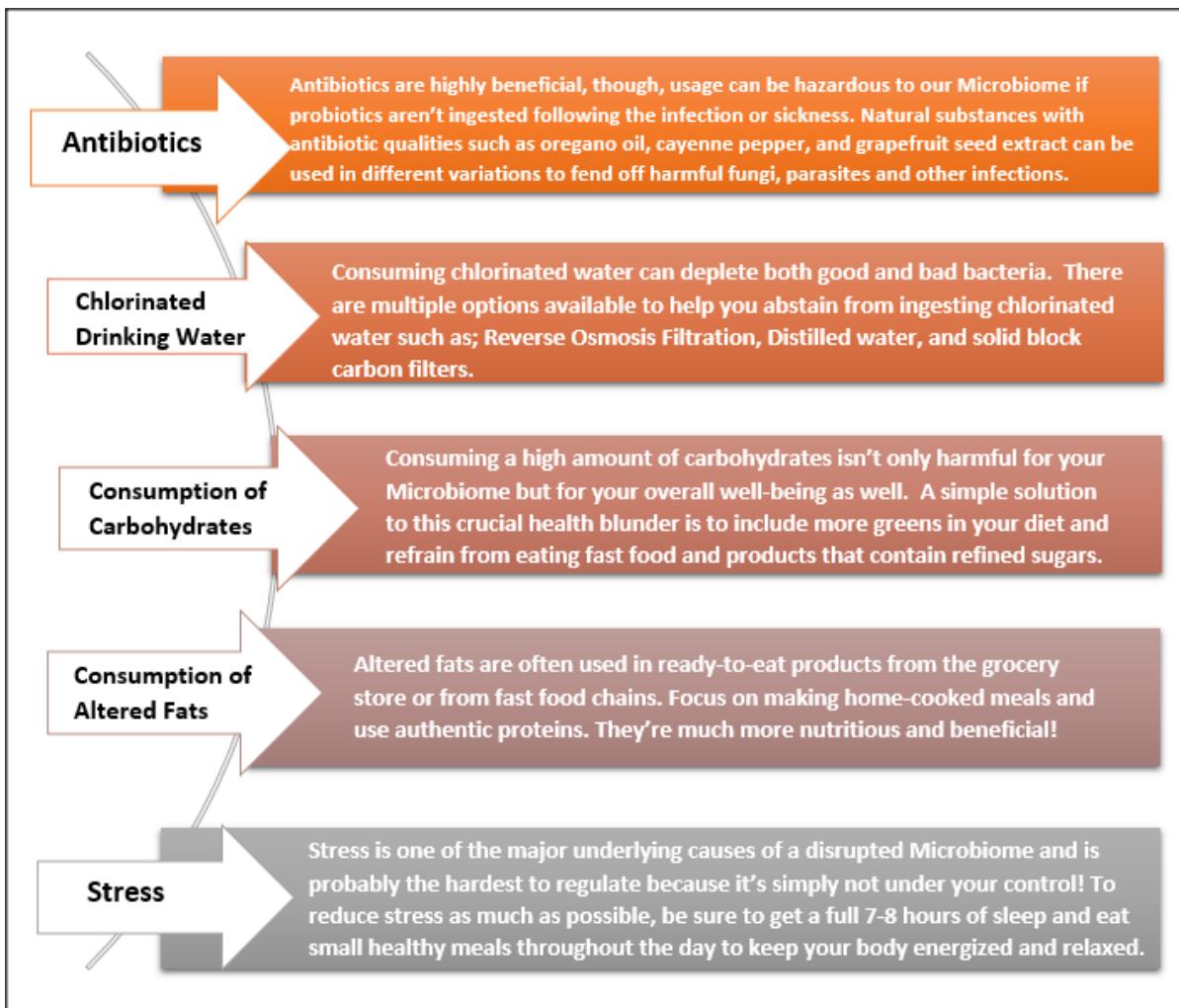
that the squirrels with higher stress levels ended up presenting less bacterial diversity, which is considered an indicator of poor Microbiome health. A later study revealed that enhanced stress levels in the squirrels were secondary to the increased levels of potentially harmful bacteria. So it's safe to say that it

wouldn't hurt to lay back and relax a little!



3. My Microbiome is out of Whack. What do I do Now?

There's no need to fret if you believe that your Microbiome isn't functioning the way it should. Luckily, getting your Microbiome back on track is moderately easy and can be done in the comfort of your home without constant trips to the doctor. Follow these five easy steps to safeguard the condition of your Microbiome!



Step 2: Diet Matters. Here's what you should eat.

Given that the majority of beneficial microbes are situated in your gut, it's vital to keep a check on what is being put into it. Chances are your Microbiome is out of whack due to what you were consuming in the first place.

One of the mandatory additions in your diet to fix the topsy-turvy mess in your gut is fiber. Research has shown that most individuals living in the western hemisphere lack the consumption of dietary fiber by approximately 50%. This is something nutritionists signify as the "fiber gap." Fiber is an essential nutritional provider for the bacteria that reside in your gut and the deficiency of this substance can lead to the depletion of some microbes in your gut reducing the diversity of your Microbiome.

FRUITS

- Raspberries
- Bananas
- Pears/Apples with the skin
- Dried Figs
- Raisins

VEGETABLES

- Boiled Artichoke
- Boiled Green Peas/ Broccoli
- Boiled Turnip Greens
- Baked Potato with skin
- Raw Carrots

GRAINS

- Cooked Whole-Wheat Spaghetti
- Cooked Pearled Barley
- Bran/Oat Muffins
- Brown Rice
- Rye/ Whole-wheat Bread

LEGUMES/NUTS

- Boiled Split Peas/ Lentils/ Black beans/ Lima Beans
- Baked Beans
- Almonds
- Pistachio nuts
- Pecans

Go ahead and try out Fermented Plant-based foods like tempeh and miso. These fermented foods are in demand due to their ability to restore the healthy microorganisms in your gut, which then outnumber the unhealthy bacteria and microbes

Indulging fermented plant-based foods has colossal benefits. These foods are rich in probiotics, boosting the body's overall Microbiome, which improves the health of the intestinal cells, immune function, and alleviates allergies.

Step 3: Probiotics. Do they really work?

We're already aware that probiotics are necessarily the "good" bacteria in our body. Although, what makes them different from the other microbes or bacteria?

Probiotics have been more successful in the treatment of gastrointestinal issues. Controlled trials have shown that supplementation with *Lactobacillus reuteri* species can reduce the frequency of diarrhea by 50% in adults. Similar results were seen in children too. Moreover, enriching the gut microbiota with *Lactobacillus reuteri* species can have benefits like improved intestinal microbiota and enhanced insulin sensitivity.

To get the most out of the probiotics you use, it's recommended to pair your probiotic with a **prebiotic supplement**. So what's the difference between **probiotics and prebiotics**? Turns out, prebiotics act as food for the beneficial bacteria residing in your gut.

For example, **Microbiome Plus+ Gastrointestinal** is a dietary supplement containing Lactobacillus reuteri NCMIB 30242 used in recent successful studies to help rebalance the healthy bacteria in your gut and provide support in normal digestive functions. This dietary supplement is an amazing blend of probiotics (Lactobacillus reuteri NCMIB 30242) and prebiotic fiber. This blend assures the maintenance of a healthy gut that is in its best shape!

Step 4: What other supplements should I take?

Other than probiotics and prebiotic powders, there's a range of beneficial supplements you can consume to re-balance your Microbiome.

Magnesium is a crucial substance required by enzymes to enhance and maintain function in the gut. On an average, you should consume approximately 320-420 mg of magnesium daily, and usually, that amount of magnesium isn't available in our diets. Magnesium supplements help fill that void and improve your immune health and aid the body by converting insulin into energy. Some good natural sources of magnesium are:

- Spinach
- Chard
- Yogurt or Kefir
- Almonds
- Bananas



Fish oil is mainly used for the prevention of inflammation and is recommended to pregnant women due to its potential to promote brain development. This oil loaded with omega-3 fatty acids modifies the gut microbiota along with its anti-inflammatory and immunity-boosting properties, and therefore offers a host of benefits for our Microbiome

A recent study showed that combined with probiotics, fish oil assists in the probiotic's survival in the gut regardless of the presence of bad bacteria.

One of the amplest natural amino acids in your body is **L-Glutamine**. They assist in fueling white blood cells, which in turn benefits your immune system. Intake of L-glutamine can help enhance our gut Microbiome by reducing gut permeability; thus, healing and protecting the intestinal wall.

Step 5: A healthy lifestyle is critical. Here's what you should try.

As you can tell, a balanced dietary lifestyle is crucial for the well-being of your Microbiome and can be done without the help of a nutritionist or doctor. Nonetheless, there are other factors that can destroy your Microbiome regardless of whether or not you follow a constant, healthy, diet.

Stop Smoking:

First things first, put down that cigarette! The dangers of smoking are countless and can have a large impact on your gut Microbiome. Smoking amplifies the

amount of Bacteroides-Prevotella in healthy individuals putting them at a risk for Crohn's Disease.

Sleep:

Incorporate a regulated sleeping pattern into your lifestyle. Getting 7-8 hours of deep, restful sleep helps relax your body and regulates your metabolism.

Breathing and Meditation:

We've already discussed that stress plays a major role in disrupting the balance of your Microbiome. Regular breathing exercises every morning can help calm both the mind and muscles, preparing you for a stress-free day.

Try meditating or practicing some yoga poses to help further regulate your breathing pattern and reduce stress. Even 10-15 minutes of meditation would suffice as a great start to your day.

Exercise:

Lack of exercise fuels the growth of unfriendly bacteria. On the contrary, exercise assists in burning off the bad microbes that you may have consumed and keeps track of your Microbiome health.

Exercise is also a superb way to blow off all that pent up steam that had you stressed out all day.

Chapter # 4: How do I check if my plan is working?

So you've changed your diet, altered your lifestyle, and have incorporated relaxing therapies into your days, now what?

One of the greatest aspects of rebalancing your Microbiome is that it occurs rather quickly. Within the first 24 hours of healthy eating and taking the supplements you need, your body is introduced to a wide range of probiotics and starts to balance itself based on what it's receiving.

Other than feeling less tired and being more productive throughout the day, other easy methods can be used to deduce whether or not your Microbiome is

on the right track.

- Check your stool on a daily basis. If the makeup of your stool has changed to resemble a sausage or tiny blobs, it's safe to say that you're on your way to a healthier Microbiome.
- Your autoimmune flare-ups and acne calm down a bit once your gut Microbiome starts to regain balance.
- Check your weight! If you've shed a few pounds in the first week of your new diet plan, you're good to go.

Currently, many adults experience the effects of having an unbalanced Microbiome and are oblivious to the cause. Changing your diet and lifestyle can be imperatively tricky and somewhat hard granting you've been following that certain way of life for a while. Simply focusing on eating home-cooked meals, exercising, and even investing in occasional visits to the spa, can make a great difference and above all, if you still experience trouble, you know exactly which supplements to reach out to speed up your ride to a healthy gut Microbiome.

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5 Benefits of Probiotics in IBS (Explained at the Molecular Level)



Irritable bowel syndrome (IBS) is one of the most frequent gastrointestinal disorders estimated to affect millions of people universally. The mechanisms responsible for the generation of IBS include variation in gut motility, inflammation, small-bowel bacterial overgrowth, the leaky gut phenomenon and a meddling with the gut-brain axis, hypervigilance to pain, and last but not the least when the gut ecology goes haywire.

Live, healthy bacteria (probiotics) have a wide array of potential health benefits in various GI diseases, predominantly IBS. Why are probiotics an effective addition in IBS?

Here are the 5 benefits of ingesting healthy bacteria in IBS!

1. Induce the Expression of Pain-Alleviating Receptors in the Gut

What are the most potent painkillers? They are opioids and to our surprise, **probiotics** exert morphine-like effects once ingested. Experts have been capable of figuring out that probiotics, particularly the Lactobacillus strains induce the expression of pain-relieving receptors in the gut. This reduces the pain hypersensitivity in IBS.

2. Eradicate Small-Intestinal Bacterial Overgrowth (SIBO)

One of the several triggers of IBS is SIBO. Normally, our small intestines contain a fewer number of microbes in contrast to the colon. However, when a gargantuan amount of bacteria inhabits our small intestine, it alters the normal gut microbiota, giving rise to a condition, called SIBO. In addition to interfering with the normal digestion and absorption of nutrients, SIBO can also contribute to IBS hallmarks like abdominal pain, bloating, gas, and diarrhea. Studies show that probiotics are effective at easing the chronic bloating and diarrhea associated with SIBO and subsequently diarrhea-predominant IBS. In fact, in some instances, probiotics have been found to be more useful than antibiotics.

3. Modulate the Immune System

There is a speculation that IBS might be the result of the production of mediators from inflammatory cells. The anti-inflammatory properties of probiotics, specifically Lactobacillus reuteri dampen down the inflammation and IBS features.

4. Aid in the Leaky Gut Phenomenon

Our intestine consists of tight junctions - so named because they are glued together to prevent the leakage of certain substances into the bloodstream. Loss of these tight junctions is followed by the seepage of harmful substances into the blood. This leaky gut contributes to a plethora of systemic illnesses, including IBS. Probiotics reinforce these tight junctions, curtailing the escape of harmful substances into your system. The restitution of a healthy gut barrier ameliorates the IBS symptoms.

5. Normalize the Gut-Brain Axis

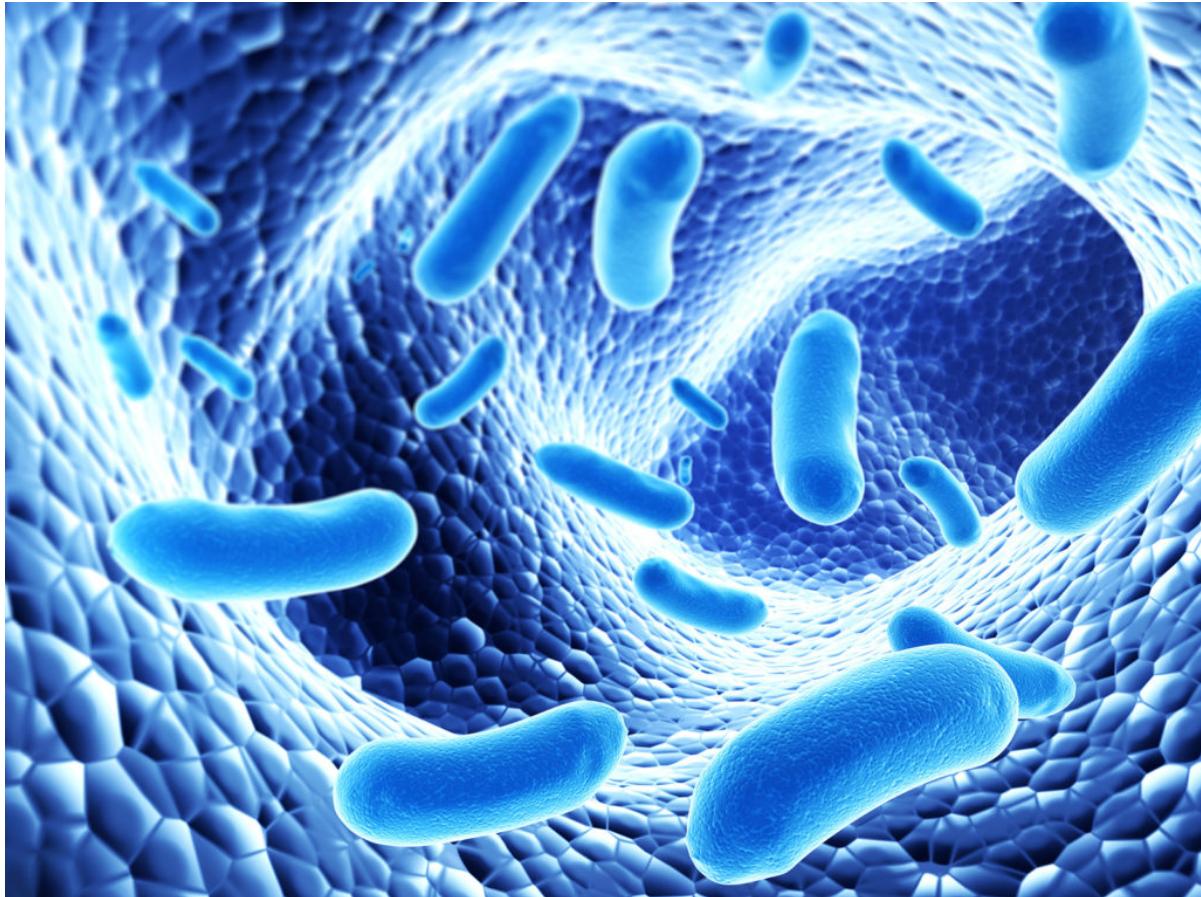
An altered gut flora in IBS has a negative impact on the mood and cognitive function - the gut-brain-microbiota axis. Reciprocally, psychological stress can

perturb the balanced community of intestinal bacteria, exacerbating the functional bowel disorder/IBS. Probiotics not only stabilize this axis, yet also mitigate anxiety and depression, and hence, banish the major risk factors for IBS.

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How Do Probiotic Supplements Work?



We know that probiotics are live active cultures that when administered in adequate amounts confer a health benefit to the host. But what essentially makes a probiotic a probiotic? To be labeled as a probiotic, the product should be capable of surviving the irritant effects of both the stomach acid and bile to arrive at their destination in the colon where they exert their effects.

How do probiotics work?

The probiotics work through a number of mechanisms to strengthen our immune defenses and prevent us from sickness.

It is recognized for decades that the restoration of the balance in the microbial gut population is crucial for our health, and its disruption precipitates several GI and non-GI disease states. Depending upon the duration of their effects, probiotics can be classified as transient versus colonizing. Transient probiotics travel to the gut but are incapable of making a permanent home in the **microbiome**. They work as long as they are taken. In contrast, the colonizing probiotics (as the name implies) tend to colonize in the gut permanently; their effects last even after discontinuing them. Both kinds of probiotics stick to the gut wall to fend off the harmful invaders from adhering and exerting their deleterious effects. They block the growth of the bad pathogens and therefore, serve to boost the immune defenses both locally within and outside the gut.

Probiotics Induce the Production of Protective Mucin

The probiotic supplements stimulate the cells of the intestine to produce mucus that coats the intestine forming a protective barrier. This powerful gut barrier prevents the foreign attackers from invading. The favorable flora, primarily lactobacilli can compete for the binding sites of viruses (such as rotavirus) causing diarrhea in children.

The Probiotic Communicate with the Elements of the Immune System

Moreover, underneath the gut lining are elements of the immune system. The genetic material of colonizing probiotics has the ability to interact with these elements of the immune system. How is this accomplished? It is through the Toll-like receptors (TLRs), which are the key molecules of the immune system involved in identifying and guarding against the intruding bad guys - the so-called "bacterial-epithelial crosstalk." Moving ahead, this cellular level crosstalk results in a series of reactions that leads to the formation of inflammatory signaling molecules called cytokines. These cytokines have several immunological

functions including the movement of white blood cells towards the harmful pathogen that is then engulfed by these blood cells. Our gut immune defenses have a capacity to turn off this inflammatory response. In the absence of this turn-off mechanism, our gut becomes vulnerable to chronic GI ailments like inflammatory bowel disease.

Colonizing Probiotics avert unnecessary Immunologic Reactions

The colonizing bacteria can induce oral tolerance through TLRs. Oral tolerance is the process by which the **immune system** does not respond to an innocuous agent that enters via the mouth. This, in turn, prevents excessive immunologic responses, including food allergies.

Probiotics Release a variety of Anti-Infective Agents

Current experts suggest that probiotics themselves release bacteria-killing substances like hydrogen peroxide (H_2O_2) and bacteriocins. Bacteriocins are proteins that are toxic to other unfriendly bacterial strains but do not harm the friendly bacteria themselves. Hydrogen peroxide is a potent oxidizing agent that is particularly toxic to unfriendly microbes that lack catalase. Catalase is an enzyme that scavenges H_2O_2 . Deficiency of this enzyme renders the bad bacteria susceptible to destruction.

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IBS is beyond irritating, and you don't have to live with it



IBS is really not the best name for irritable bowel syndrome. The term "irritable" implies a mild annoyance, but this disease can be far more than just a nuisance. It is a chronic, life-long battle that can cause mild to debilitating pain and gastrointestinal distress such as the following usual suspects:

- Bloating
- Gas
- Flatulence
- Diarrhea
- Constipation
- Stomach pain

There are many different possible causes of IBS include the following:

- Overly forceful or not forceful enough large intestinal muscle contractions
- Food intolerance
- Neurological issues such as delayed GI control, sensitivity to pain, or imbalance of neurotransmitters
- Genetic predisposition
- Chronic stress
- Hormonal imbalance
- Bacterial infections
- Bacterial overgrowth in the small intestine

The rest of this post will focus on bacterial contributions to IBS.

IBS symptoms due to bacteria are caused by an imbalance of the different species. The good bacteria that normally reside in the colon facilitate maximum absorption of nutrients by breaking down foods we can't, reducing large intestinal inflammation, and preventing disease causing bad bacteria from establishing residence. If these good bacteria are missing, disease-causing bacteria can latch on and wreak havoc.

But it is not only pathogenic bacteria that can wreak havoc. Incorrectly proportioned good bacteria will also cause an imbalance and result in GI distress. Whether there is too much bad bacteria or too much good bacteria, either scenario stops the different species from working synergistically to create the optimal intestinal microbiome.

Over 50% of IBS patients have been shown to have small intestinal bacterial overgrowth, which occurs when the "good" large intestinal bacteria creep backwards into the small intestine and start to proliferate. So even though in this scenario there is actually an overproduction of "good" bacteria, it is not in the right place and there is too much of it, which causes gastrointestinal distress.

Warning bells – how can a probiotic help if I already have "too much" of the good bacteria? If there is small intestinal bacterial overgrowth, first thing is first – the bacteria has to be eradicated, and there are several different kinds of antibiotics that doctors may prescribe. After the GI tract is squeaky clean, the correct probiotic therapy can be a way to re-introduce and nurture the appropriate large intestinal flora. Many studies support that probiotics ease IBS

symptoms, but the data is admittedly hard to interpret due to the existence of so many bacterial strains. There are so many different probiotics with different cocktails of cultures, and it is important to talk to your doctor and be deliberate about the strain you take. As discussed in the last post, Lactobacillus reuteri is the strain that we use in our product that has been clinically proven to significantly improve digestive health symptoms, so it might be a good place to start.

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Heartburn has nothing to do with the heart and everything to do with the gut



GERD, or gastroesophageal reflux, is more commonly referred to as acid reflux or heartburn. It occurs when the esophagoal sphincter at the entryway to the stomach doesn't entirely close. The sphincter is basically a muscle that acts like a gate – it requires pressure to open and close and regulates what substances pass through. If it is left open, even just a little, it loses its effectiveness.

The separation between the esophagus and the stomach is beneficial because the esophagus is just a passageway to the stomach, an inhospitable, highly acidic, corrosive environment filled with caustic enzymes specifically designed to

tear organic tissue apart. Should acid leak into the esophagus, you will immediately know because a painful sensation will pulse around your heart and you may even feel the urge to vomit. Occasional heartburn is not unusual, especially after a large or spicy meal. Recurrent or pervasive heartburn, however, indicates that there is a serious underlying problem that needs to be addressed. Persistent heartburn may eventually even lead to cancer.

What is causing the acid leakage?

Intestinal dysbiosis is a condition where the healthy bacteria are missing or are out of balance. One consequence of this disharmony is the production of gases such as methane and hydrogen, which can lead to unpleasant symptoms such as bloating and gas. This additional gas builds up in the stomach causing pressure on the sphincter of the esophagus. Increased pressure makes the sphincter more likely to leak acid.

Hydrogen gas can contribute to GERD on another front. If it isn't the pressure from the additional gas that is causing acid leakage, the reflux could be due to H. pylori infections. About 1 in 4 adult Americans have this nasty bacteria residing in their stomach, and it thrives on hydrogen gas. H. pylori is not only notorious for causing ulcers, but it can also contribute to GERD symptoms. The more dysbiosis, the more hydrogen there is. The more hydrogen there is, the happier the H. pylori.

What is the best way to treat GERD?

Several people attempt to relieve symptoms of GERD by taking antacids in order to decrease stomach acid. Unfortunately, this may do more harm than good. By altering the pH in the stomach, the balance between good and bad bacteria shifts. The inhospitable, corrosive stomach becoming less extreme creates a more inviting environment for bacteria we unintentionally ingest every day. It has been shown that increasing stomach acid corrects many cases of GERD, which makes sense because it returns its stomach to its optimal pH.

Studies show that probiotics may minimize GERD symptoms, which again makes sense because the root cause could be the hydrogen gas produced by intestinal dysbiosis. More data needs to be collected to examine the correlation, but preliminary signs all support that restoring intestinal harmony leads to reduced reflux

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Women and their famous gut feelings



Women are almost twice as likely to suffer from gastrointestinal discomfort than men, especially during times of hormonal fluctuations. Menstruation, menopause, and pregnancy are all highly associated with gastrointestinal distress symptoms including nausea, vomiting, diarrhea, constipation, and bloating.

The hormonal fluctuations associated with these symptoms are correlated with a delay in stomach emptying (which may result in nausea) and slower movement in the colon (which may result in constipation/diarrhea). Gas and bloating also roll with the hormonal tides, and as unpleasant as these conditions are, many women do not seek treatment because they only see these symptoms as an annoying inconvenience.

There is no reason that women should have to live with digestive problems because there are many steps they can take to easily ward off symptoms. A healthy diet, exercise, and reducing stress (the standard recommendations) will certainly help. However, there is an additional factor in digestive health, often

neglected and overlooked because of the nefarious reputation of its constituents: the balance of bacterial flora.

Our small intestine does a lot of work on its own with its towel-like projections called villi, which aid in sucking up nutrients broken down by enzymes secreted from the liver and pancreas. Our endogenous organs alone are not enough though; *lactobillus* is a critical bacterial symbiont that breaks down nutrients that we can't.

The large intestine contains bacteria that aid us with more functionality than just breakdown assistance. The microbiome there is full of an army of over 400 species of bacteria that work for us; bacterial cells in the gut outnumber human cells by 10 to 1. There are some that convert nutrients to vitamins that we have the inability to make, like vitamin K (important for blood clotting and bone strength) and B vitamins (energy boosters). There are some that aid in maintaining the proper acidity of the intestinal environment, inhibiting pathogenic bacteria from establishing residence.

Should disease-causing bacteria start to grow in our gut, a condition called dysbiosis occurs. These harmful bacteria suppress the beneficial flora and may initiate bloating and gas. There is evidence that deliberately including more probiotics in the diet (either by custom-made supplements or by choosing culture-containing foods like yogurt) can ease gastrointestinal distress during menstruation, menopause, and pregnancy.

Hormones are annoying enough, notwithstanding digestive troubles. It's time to do something about it. So print out this article and be ready to hand it to the nearest woman (either yourself, wife, sister, or the hormonal, moody lady grumbling at you for whatever reason). There are also companies like ours that generate tailored products designed to address the body's functionality (as opposed to products that band-aid symptoms) that you can tell them about. But beware! Be sure to wait until after her PMSing, morning-sickness, or the dreaded hot-flash so that she will thank you for the advice.

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Probiotics for Constipation - Predominant for IBS



What is IBS?

IBS is one of the most frequently occurring GI disorders. It is a constellation of the following major clinical hallmarks:

- Abdominal pain
- Altered bowel habits
- Bloating
- Straining at the stools
- Urgency
- Flatulence

The bowel movements in **IBS** can follow either a pattern of

constipation-predominant IBS (IBS-C) or diarrhea- predominant IBS.

Constipation-predominant IBS is exasperating - incomplete defecation, straining at the stools, and bloated feeling all interfere with daily chores.

The story of IBS begins with the gut-brain axis!

Our emotions influence our gut functions. That is the reason why many people have butterflies in the stomach when they are apprehensive. Our gut microbiota communicates with the brain and alters behavior. IBS is common in people who already suffer from anxiety issues. Saying it the other way around, anxiety and/or a stressful life event can trigger IBS symptoms. This bidirectional communication coins the phrase - the gut-brain axis. When the gut and brain can't communicate well, IBS is inevitable.

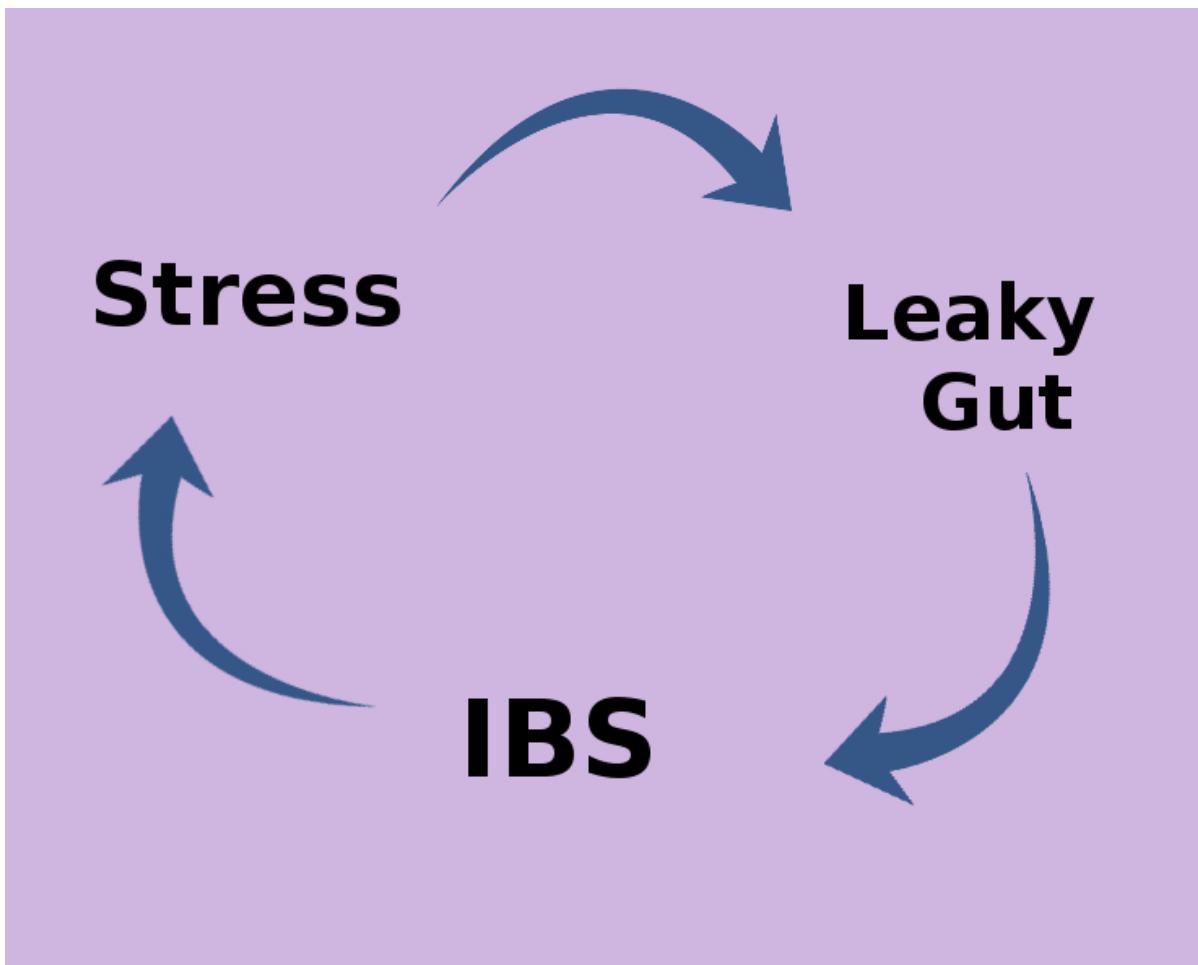
What's actually in the gut that interacts with the brain?

It is the gut **microbiome**. This re-coins the phrase as microbiota- gut-brain axis. In IBS, a lack of these desirable bacteria undermines the gastrointestinal, neurological and/or **immune** relationships, eventually leading to infirmity.

IBS and Probiotics

The healthy gut microbiota (probiotics) confers a myriad of health benefits in IBS.

- Probiotics assist in breaking down complex molecules ingested as part of the diet. This smoothes out the process of digestion and facilitates elimination of hard feces in IBS-C.
- As stated above, stress is a common precipitating factor for IBS; when taken during periods of stress, probiotics decrease the activation of the areas of the brain that tend to secrete stress hormones like cortisol. Hence, a decrease in the stress hormones calms the mind, the gut, and the associated IBS features. What's more? Stress triggers gut leakiness, which is counteracted by probiotics. Leaky gut syndrome (enhanced intestinal permeability) also underlies IBS.



- Probiotics are able to liberate short-chain fatty acids that are anti-inflammatory products. Gut inflammation at the microscopic level is present in IBS. In conjunction with other treatment modes, the good bacteria serve as a delivery vehicle for treatment loads that are liberated at various intestinal sites of inflammation. In addition, SCFAs diminish the sensitivity of gut receptors to pain in IBS and accelerate the waves of intestinal peristalsis in IBS-C.
- These favorable microbes generate bacteria-killing proteins, protecting your gut against harmful bacterial infections. Studies reveal that an infectious cause may be the culprit behind IBS.
- Probiotics, specifically including Lactobacilli alleviate abdominal pain by relaxing the gut muscles. Increased muscular contractions account for the abdominal pangs in IBS. Furthermore, it is found that the amounts of lactate-producing (*Bifidobacterium* and *lactobacilli*) beneficial microbes are considerably lower in people with functional constipation. This is in contrast to the higher numbers of methane-producing harmful bacteria found in the stools of these people, which slow down the transit of food through the

intestine. This represents a bonus reason to supplement probiotics in IBS-C.

A comprehensive scientific analysis that collected data from 24 clinical trials revealed a reduction in IBS symptoms and severity after the administration of probiotics.

Summary

To conclude, IBS has a profound negative impact on your daily life. Probiotics are effective for functional constipation when combined with other therapies including lifestyle and dietary modifications.

Written by:

Dr. Rasheed Huma

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Probiotics Help You Absorb Nutrients



Absorption is the passage of end products of digestion from the GI tract into the bloodstream and body tissues. These nutrients supply energy and nourishment essential for daily functioning. Lack of absorption of nutrients (both macro and micro) can lead to protein and several vitamin and mineral deficiencies - that is to say, malabsorption leading to malnutrition. Micronutrient deficiencies seem to gobble up about two billion people around the world.

While re-populating the gut with beneficial bacteria, high-end probiotics also ensure proper absorption of nutrients ingested as part of our diet. Following are a few evidence-based implications of **probiotics** in enhancing the delivery of micronutrients to our body tissues:

1. Augment Iron Absorption

When used on a regular basis, these fortified microbial strains prevent iron deficiency by boosting iron absorption.

The fermentation of healthy bacteria in the colon produces short-chain fatty acids (SCFAs) like butyrate and propionate. SCFAs increase the absorption of iron from the initial portion of the colon. Hence, probiotics may serve as a promising therapy for anemia secondary to intestinal worm infestation as well as for under-nourished children. The SCFAs are considered as a powerhouse for intestinal health. Elderly people who already have an altered **microbiome** tend to produce less SCFAs and thus have a greater propensity to develop malnutrition.

The significance of probiotics in improving the nutrient absorption is evident from a research performed by the University of Aberdeen in the UK. According to this study, administering prebiotics and probiotics can tremendously improve therapeutic outcomes in malnourished individuals. These individuals also include those battling with life-threatening conditions like cancer.

2. Accelerate Calcium Delivery to Body Tissues

Probiotics augment dietary calcium absorption and are therefore essential for bone and dental health. A study conducted by the researchers at the Faculty of Medicine and Health Sciences in Malaysia demonstrated a significant improvement in bone mineral density (used as a marker for osteoporosis) after the administration of **Lactobacillus strains** owing to enhanced calcium absorption. The probiotic-induced expansion of the absorptive surface of villi could also account for the augmented dietary nutrient absorption.

3. Relieve Diarrhea

Malabsorption syndromes in particular cause excessive diarrhea that further depletes the body of nutrients. Healthy gut microbes help mitigating diarrhea,

preventing the fecal loss of nutrients. This anti-diarrheal effect is also observed in children who are fed a probiotic supplement, consequently demonstrating a significant improvement in weight and height, relative to those who are fed a supplement with similar caloric value but lacking probiotics.

4. Directly Increase the Formation of the Vitamin B Complex group

The viable bacterial strains, specifically *Lactobacillus reuteri* serve as a route for vitamin B12, folate (vitamin B9), and thiamine (vitamin B1) synthesis. Vitamin B12 deficiency contributes to severe anemia and neurological deficits.

Summary

Supplementing probiotics can help us reap their immense benefits, including nutrient absorption.

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Ulcerative Colitis and the Role of Probiotics (A promising Treatment?)



"All disease begins in the gut." - Hippocrates

As quoted by Hippocrates several decades back, it is acknowledged today how accurate he was. A diseased gut can, in essence, take a heavy toll on your overall health.

One such gut illness, called ulcerative colitis (UC) can wreak havoc on your body as it tends to involve nearly every organ system (besides colon) — including the liver, skin, joints and muscles, kidneys, eyes, lungs and so on so forth.

The most dreaded complication of a long-standing UC is colorectal cancer.

Given these facts, it is imperative to treat UC in the early stages. Besides various other treatments for UC, probiotics have also shown promising results.

What is UC and How to Recognize that You Might Have UC?

Ulcerative colitis is an inflammatory bowel disease (IBD), characterized by diffuse, chronic inflammation (colitis) and sores (ulcers) in the lining of the colon (large intestine).

UC is likely if you are experiencing the following symptoms:

- Diarrhea, often bloody
- Rectal bleeding
- Lower abdominal pain and cramping
- Rectal pain
- Mucus or pus discharge from rectum
- A constant feeling to evacuate the bowels
- Inability to pass stool despite an urgency
- Weight loss
- Fatigue
- Fever

What Causes UC?

UC is primarily idiopathic (no known cause). However, most research reflects that one or more of the following factors might play a role in its emergence:

- Microbial/Immunological: A well-documented cause of UC is an imbalance of the intestinal bacteria. A glut of the bad bacteria in comparison to the beneficial ones can impair the protective inner lining of the intestinal wall. These bad guys adhere to this protective lining and trigger a sequence of events, culminating in UC.
- Genetic: It is believed that UC runs in families. Several genes have been

implicated in the causation of UC.2

- Environmental: Certain factors in the environment can increase the likelihood of developing UC.

- A high fat and a low fiber diet 3

- Medications like NSAIDS (pain killers) and antibiotics 4

The Good News: Probiotics can Ease UC Symptoms

Probiotics form a protective barrier by coating the inner lining of the intestinal wall. Additionally, these good bacteria containing probiotics compete with the disease-causing bacteria for shelter and space in the colon. This staves off the bad guys from gluing to the intestinal lining and inducing inflammatory damage.5

More interestingly, the probiotic organisms travel down the lining of the intestinal tract to reach the layer where the immune cells reside. There they show their proficiency by altering specialized immune cells, called dendritic cells, making them less responsive to the bad bacteria.

Probiotics, especially those comprising of Lactobacillus strains check the growth of bad bacteria. They are also effective in mitigating the UC symptoms like diarrhea. 6

To sum up, probiotics tweak the gut organisms as well as the immune response.7 The overall effect is a reduction in the inflammatory harm to the intestinal lining and an improvement in UC symptoms.

Take Home Message

A healthy gut is the cornerstone of a healthy body. Unfortunately, diseases like UC can end up ruining the entire framework of your body.

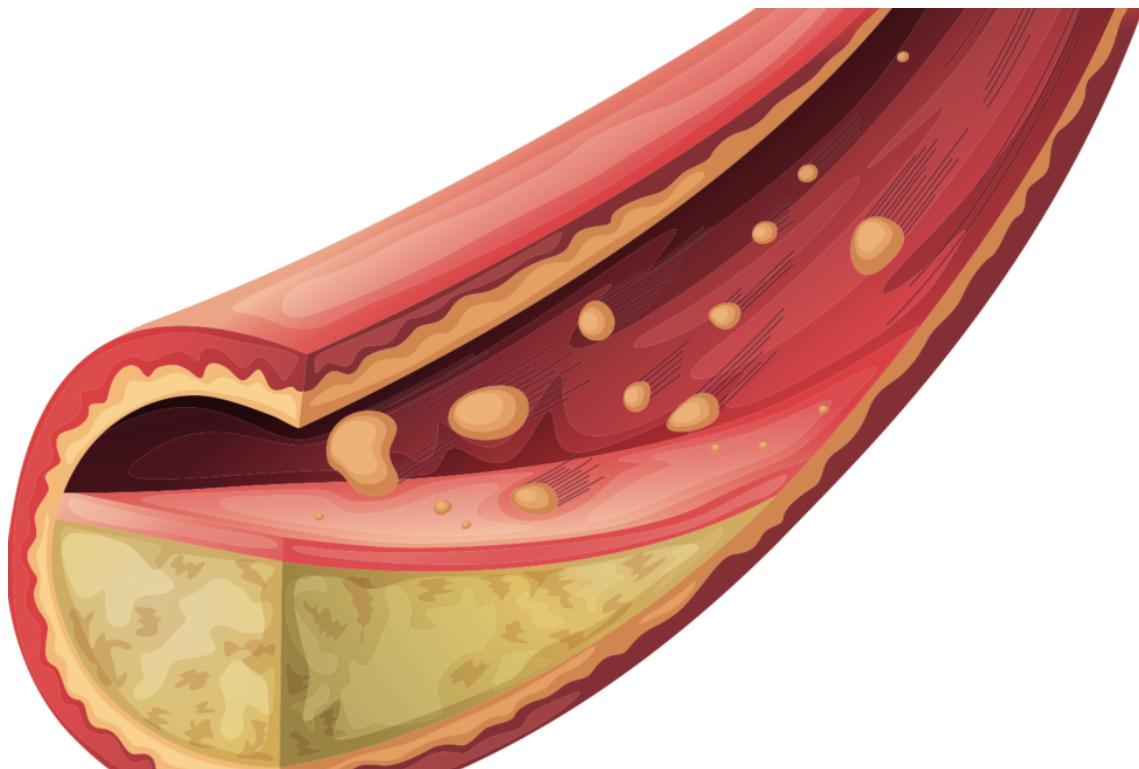
With the passage of time, probiotics have gained recognition for the treatment of a variety of digestive ailments. Probiotics have demonstrated a potential to ameliorate UC symptoms and maintain remission when combined with other treatments.

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Lactobacillus Reuteri NCIMB 30242 Reduces Bad Cholesterol by 11.64%



Raised LDL-C (low-density lipoprotein-cholesterol or bad cholesterol) levels constitute one of the major factors predisposing to cardiac disease. LDL-C reflects the mass of cholesterol contained within the LDL molecule.

Besides their vast gut-related health benefits, probiotics containing **L. reuteri NCIMB 30242** target cardiovascular disease owing to their distinctive quality of lowering the LDL-C levels.

How does *L. reuteri* reduce LDL-C levels?

L reuteri NCIMB 30242 classically demonstrates bile salt hydrolase (BSH) activity, an enzyme that accelerates deconjugation (cleaves the covalent bonding) of bile acids.

What are Bile Acids and what is Conjugation/Deconjugation of Bile Acids?

Bile acids are the products of cholesterol breakdown (catabolism) and are produced in the liver. Bile acids then conjugate (form a bond) with two amino acids, namely glycine and taurine, and are transported to the intestine. These conjugated bile acids are water-soluble and enhance the absorption of cholesterol into the bloodstream.

***L. reuteri* Prompts Deconjugation**

On the contrary, since the BSH activity of the lactobacillus cleaves the bond of bile acids with amino acids (prompts deconjugation), it renders cholesterol less soluble and less absorbable. Additionally, the water-insoluble, deconjugated bile acids are not excreted in the urine but in feces. In an attempt to compensate for the lost deconjugated bile acids, cholesterol is used up to produce more bile acids. This eventually represents another pathway for cholesterol reduction.

Moreover, the lactobacillus species entrap cholesterol in the intestine, impeding its outflow into the blood, which is instead flushed out via feces.



Lowers Cholesterol by 11.64%

Buy Now

Clinical Evidence of *L. reuteri* as a Cholesterol-lowering agent

The application of *L. reuteri* as a therapy for high cholesterol levels is gathering attention from the researchers and experts worldwide. The researchers at the Canadian Department of Biomedical Engineering reported a reduction in the LDL-C levels by 11.64% following consumption of *L. reuteri* capsules for nine weeks. Also noted, was a rise in the blood levels of deconjugated bile acids and substantial reduction in cholesterol-derived substances.

Another study published in the *British Journal of Nutrition* showed a significant drop in LDL-C of nearly 9 % after feeding *L. reuteri* NCIMB 30242-yoghurt formulation to 114 individuals with increased blood cholesterol values.

Further identified is the role of *L. reuteri* NCIMB 30242 in increasing the levels of vitamin D, a heart-protective vitamin. Other than improving the high blood pressure, it appears that vitamin D may lower the LDL-C levels to some extent.

Summing up

In a nutshell, L. reuteri NCIMB 30242 lowers the blood cholesterol levels by decreasing cholesterol absorption and augmenting cholesterol's elimination from the body. L. reuteri NCIMB 30242 is the strain of probiotic used in Microbiome Plus Probiotics.

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How *L. reuteri* NCIMB 30242 Increases Vitamin D Levels



Vitamin D deficiency affects over 1 billion people (including children and adults) worldwide. Vitamin D is essential for bone strength. This fat-soluble vitamin functions to enhance the absorption of calcium into the bloodstream. Calcium is a key nutrient for our body, bones, and teeth. In individuals with low vitamin D levels, the bones become brittle and are prone to rickets (in children), and osteomalacia and osteoporosis (in adults). Not only are the bones weakened by the lack of vitamin D, but the gastrointestinal, cardiovascular and endocrine (causing type 2 diabetes) systems are compromised as well. Other than increasing vitamin D intake in the diet and exposing the skin to sunlight, a probiotic supplement containing *L. reuteri* NCIMB 30242 is proven effective at

boosting the vitamin D blood levels.

How *L. reuteri* NCIMB 30242 increases vitamin D levels?

1. *L. reuteri* NCIMB 30242 raises 7-dehydrocholesterol (7-DHC)
2. *L. reuteri* NCIMB 30242 owns a unique bile salt hydrolase (BSH) activity. While the enzyme BSH reduces the cholesterol levels, the levels of an animal sterol called 7-DHC are also elevated in response to BSH activity. 7-DHC (present in the skin and other tissues) is a precursor to vitamin D and is converted to vitamin D on exposure to sunlight.

Lactobacilli lower the intestinal pH

Vitamin D requires an acidic medium to be absorbed. The acid in the lactic acid bacteria reduces the pH of the intestine, which enhances the absorption of the vitamin D ingested in the diet.

L. reuteri NCIMB 30242 enhances the expression of Vitamin D Receptor

Also recognized, is the role of *L. reuteri* NCIMB 30242 in augmenting the expression and activity of the vitamin D receptor (VDR). VDR facilitates the body to respond to vitamin D appropriately, increasing its uptake by the intestinal cells. The VDR is also critical to maintaining a state of balance in the gut, warding off the bad bacteria, blocking inflammation, and preserving the integrity of the intestinal lining. A dysfunctional VDR and consequently a paucity of vitamin D may thus provoke intestinal damage and inflammatory bowel disease.

Decreased intake of vitamin D is associated with an altered microbiome

Lately, it has been revealed that changes in the gut microbiome might contribute to the lack of vitamin D. In such instances, introducing a probiotic, primarily *L. reuteri* NCIMB 30242, restores the gut harmony and raises the vitamin D levels. According to a Canadian study conducted in 2013, probiotic supplementation

with *L. reuteri* NCIMB 30242 over a 9-week period significantly raises the circulating vitamin D levels by 25%. The authors concluded that either more vitamin D is being absorbed or more precursor (i.e. 7-DHC) is being made after supplementation with probiotic *L. reuteri* NCIMB 30242.

Summary

A variety of factors can incite vitamin D deficiency, including but not limited to, poor diet, inadequate exposure to sunlight, obesity, dark skin, heredity, problems with absorption, or inability to convert vitamin D to its active form. Popping the probiotic, *L. reuteri* NCIMB 30242 boosts the vitamin D levels, offering protection for the bones, heart, and gut.

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Probiotics and Anxiety- The Gut Emotions



Say Hello to The Tiny World Inside!

If you could see what's inside your gut, you'd see an endless number of tiny bacteria lingering around. The word 'bacteria' is enough to startle you as it is usually associated with illness. But these bacteria are the type that benefits you so called the friendly bacteria or probiotics.

The Gut-Brain Axis Explained

Researchers believe that the number of probiotic bacteria is ten times the number of your body cells (1). These bacteria have a profound role in disease and health. They even alter how your brain works. Brain? Yes, your brain. The bacteria in your gut actually communicate with your brain. Let's break it down to understand it better.

The gut-brain axis is quite complex and contains three important components: the Central Nervous System (CNS), the Enteric Nervous System (ENS), and the Hypothalamic Pituitary Axis (HPA). Don't lose it over these difficult sounding terms. Your CNS consists of your brain and the spinal cord. The ENS consists of a collection of nerve cells within your gut walls. In other words, your gut has a brain of its own. Finally, the HPA is the part of this system that secretes a number of hormones and other chemicals (2).

The gut-brain axis is a high-speed two-way lane. In simple terms, your brain signals your gut what to do and your gut signals back some feedback as well. The HPA receives some of these signals too and secretes hormones accordingly. So if your gut microbiome is happy, your brain will be happy too. If your gut microbiome is not doing well, things will go South for your brain too (3).

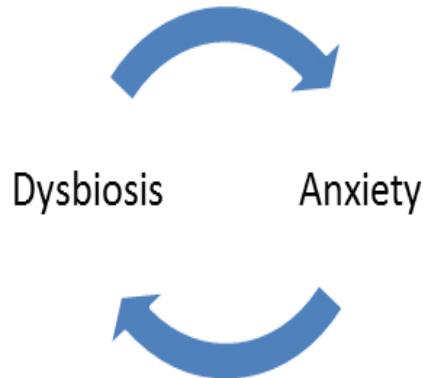
Gut Dysbiosis and Anxiety

Where it is good, there is bad too and same goes for your gut bacteria as well. In addition to the health promoting probiotic bacteria, your gut hosts a number of diseasing causing microbes as well. But not to worry! These boogers don't do much harm as long as you have an ample supply of probiotic bacteria.

Unfortunately, the modern lifestyle jeopardizes the well-being of your gut bacteria. Factors like the use of fiber-deficient diet, unnecessary use of antibiotics, lack of physical activity, exposure to pollutants, and leading a stressful life can inflict a colossal damage to your gut probiotics. That's when the bad guys take over and things go into a state of disorder, termed as the gut dysbiosis (4).

When that happens, the gut dysbiosis kick-starts a chain of events that ends up in a vicious cycle. Once your **gut microbiome balance** is out of order, the gut

starts to send stress signals to your brain and the HPA. As a result, the HPA starts releasing a lot of stress hormones like cortisol. The cortisol damages the gut probiotics even further and this cycle continues (5). To put in simple words, gut dysbiosis causes anxiety and vice versa.



Top 4 Ways You Can Set Things Right

The only way you can put an end to this cycle is by adopting a healthy lifestyle. Here is what you should do.

#1- Eat a Fiber-Rich Diet

You can start off by eating a healthy diet. Put those greasy hamburgers, pizzas, and chips away for a moment and make friends with healthier foods. You should eat a diet rich in fiber. Fiber acts as a food source for the probiotic bacteria and helps them flourish (6). Fiber rich diet includes:

- Fruits

- Vegetables
- Peas
- Lentils
- Beans
- Fresh fruit and vegetable juices

2: Try a Probiotic-Prebiotic Supplement

You can also get a little help by trying a good quality probiotic-prebiotic supplement. These supplements provide a quick fix for your condition, reduce your anxiety levels, and improve your mood.

In one research, scientists studied the effects of probiotic supplementation on the psychiatric status of 30 subjects. The subjects had low mood and suffered from anxiety and depression. They were divided into two groups depending on whether or not they received the **probiotic supplement**. At the end of the study, scientists discovered a remarkable improvement in the mood and anxiety levels among the probiotic group (7).

This shows how effective probiotics can be in treating the mood disorder, including anxiety.

3: Relax Your Mind

Another way you can put an end to this cycle is by engaging in some relaxing activity. This will reduce the levels of your anxiety and will help you deal with dysbiosis as well.

The activities you can try include:

- Yoga
- Meditation
- Breathing exercises
- Mindfulness

4: Avoid Antibiotics Unless Absolutely Necessary

You can deal with this issue is avoiding the frequent use of antibiotics. Antibiotics wreak havoc on your gut microbiome which then makes you prone to conditions

like anxiety.

It is, therefore, important that you don't use antibiotics without consulting with your healthcare provider first. Once you start taking antibiotics, take them as per your doctor's recommendations.

There you have it! A healthy lifestyle is pivotal for a healthy gut and a fresh mind. Follow the instructions given in this article and wave bye-bye to an anxiety-filled life!

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Probiotics Increase Energy Levels



It is usual for many of us to experience fatigue and lethargy from time to time. The causes can range from trivial factors like poor diet and sleep to more serious factors like depression, fibromyalgia, or hypothyroidism. The gut microbiome has a lot to do with these fluctuating energy levels. They communicate with our brain (microbiome-gut-brain axis), and hence, can influence our mood and dynamism. How does supplementing probiotics hoist the sinking energy levels? Let's delve a little deeper to understand this.

1. Boost the Immune System

For reasons acknowledged, we know that the friendly gut bacteria strengthen the defense mechanisms of our body and fend off harmful invaders. **A healthy immune system** is the initial step towards boosting our energy levels and getting us back on the track.

Probiotics activate a variety of immune cells including but not limited to macrophages, natural killer cell, and white blood cells. These cells shield against contracting diseases by warding off foreign agents. In order to communicate, these immune cells require the help of protein molecules, called cytokines. Probiotics also stimulate the release of these cytokines, thereby enabling the immune cells to interact and function.

2. Burn Excessive Fat

Obesity, weight gain, and sedentary lifestyles are one of the primary causes of declining energy levels. The beneficial gut microbes help reduce the extra pound of flesh over your belly. Obesity has been associated with an imbalance in the microbial gut flora. In addition, it is observed that individuals with a flabby body have inflammation going on at the microscopic level. Probiotics ameliorate inflammation, restore the disturbed harmony of the gut flora, and accelerate weight loss. A body that is in a better shape is more energetic than that of a bad one.

3. Help you Snooze Better and Alleviate Depression

Sometimes, depression is the root cause of insomnia and both sleep deprivation and depression individually contribute to fatigue. Owing to the bidirectional communication between the gut microbiota and the brain, probiotics appear to benefit sleep, mood, and energy levels - thus, also known as psychobiotics. Quality sleep not only reinvigorates your body but also aids in getting rid of various other factors that tend to make you lazy, such as weight gain. The probiotic-induced increase in tryptophan might also account for these beneficial effects. Tryptophan is an amino acid that converts into serotonin - the happy neurotransmitter. The vast majority of serotonin (around 90%) is synthesized in the gut and its production is regulated by the gut flora.

4. Relieve GI issues and the associated Fatigue

In a randomized trial, patients with chronic fatigue syndrome (CFS) reported a significant reduction in the fatigue and anxiety symptoms after taking a probiotic. People with CFS tend to experience digestive issues, primarily leaky gut and IBS. Using probiotics repairs the gut lining, modulate the gut microbiota, and mitigate gut inflammation in CFS, all of which reduce exhaustion and infuse vitality from inside out.

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Probiotics and Antibiotics



The use of antibiotics has been expanding steadily over the past several decades. Presently, they are among the most widely prescribed medications. Though antibiotics can be life-saving for a plethora of infections, these bacteria-eradicating medications can themselves predispose to life-threatening infections. **Taking probiotics** during a course of antibiotic therapy replenishes the gut with the (lost) healthy bacteria and helps assuage antibiotic-associated side effects.

Antibiotic-Associated Diarrhea (AAD) and Antibiotic-Associated Clostridium difficile Infection (CDI)

Around 10% to 25% of individuals treated with antibiotics develop AAD. The occurrence of AAD leads to a poor compliance with the antibiotic therapy and an incomplete eradication of the infection.

Adding fuel to the fire, antibiotics cause overgrowth of a more harmful bacterium, called Clostridium difficile. Once infected, this pathogen incites a severe inflammation throughout the colon (colitis).

How do antibiotics Cause Diarrhea?

The antibiotics upset the composition and function of the intestinal flora (cause dysbiosis), which causes diarrhea. The proportion of the unfriendly gut commensals goes up, whereas that of the friendly ones plunges.

Antibiotics also reduce the breakdown of fermentable carbohydrates in the gut. These nonabsorbable carbohydrates osmotically draw more water into the gut, increasing the fluidity and frequency of stools (osmotic diarrhea).

Moreover, antibiotics can undermine the gut barriers, enabling the intrusion of the offending attackers like Clostridium difficile that lead to devastating colonic infections and intractable diarrhea.

Antibiotic-Induced Dysbiosis and Probiotics

The bad news is that antibiotics not only provoke diarrhea but a whole host of systemic illnesses. The dysbiosis can contribute to GI issues like IBS, IBD, as well as non-GI problems such as obesity.

The good news is, using probiotics concurrently with antibiotics reduces the risk of both AAD and CDI.

A systematic review conducted by the Department of Medicine at St. Michael's Hospital in Toronto showed a profound decline in the frequency of both AAD and CDI after consumption of probiotics.

Probiotics not only reduce the severity of CDI and AAD but when taken simultaneously with antibiotics, they can indeed preclude these imminent adverse effects.

Introducing probiotics replaces the disturbed microbial colony with the footprint of friendly microbes that line the gut barriers and serve as a line of defense against the pathogen-receptor binding. Their anti-inflammatory characteristics help alleviate the antibiotic-induced colitis.

The healthy microbes also elaborate protective gut antibodies like IgA that aid in neutralizing the toxins released by Clostridia. According to a research conducted by the Yale University School of Medicine in 2008, *L. rhamnosus GG* and *S. boulardii* were found to be effective in preventing AAD.

It is ideal to continue probiotics even after completing the course of antibiotic therapy

This is in view of the fact that AAD or CDI might develop 5 to 10 days after stopping the antibiotic, or rarely symptoms of CDI do not manifest until as late as 10 weeks afterward. Hence, continuing probiotics for an extended period will thwart the unwanted side effects.

Summary

Antibiotics carry a potential risk of messing up the harmony of the gut **microbiome**. Their use and benefits should be weighed against the risks associated with them. Precautionary measures should be taken, including the supplementation of probiotics.

Written By:

Dr. Rasheed Huma

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Top 4 Probiotic Foods



Given the present unhealthy Western dietary pattern, our gut microbial community is prone to perturbations. This makes the addition of **probiotics**, whether taken in the form of supplements or ingested as foods, vastly beneficial.

In this post, we'll highlight the top 4 probiotic-rich foods that you should consider supplementing to your dietary regime.

1. Yogurt

Yogurt is the most enriched source of probiotics. It contains live active cultures of bacteria, preferably *Lactobacilli* and *Streptococcus thermophilus*. These bacteria are used to ferment fresh milk and/or cream that results in the production of yogurt. Yogurt cultures are scientifically documented to boost gut health, immune function, and mental abilities. They can hasten your sluggish bowel movements or otherwise, they tend to slow down the intestinal peristalsis in diarrhea. To be brief, they regulate your bowel function.

The latest research conducted by the Iranian experts revealed a significant improvement in various mental health parameters, including depression, **anxiety**, and stress after a 6 week trial of probiotic yogurt consumption. This beneficial effect of yogurt can be attributed to the microbiota-gut-brain connection.

In another study published in the *Ailment Pharmacology and Therapeutics*, the subjects **experiencing IBS** demonstrated positive health effects after ingesting fermented milk containing *Bifidobacterium*.

2. Kimchi

Kimchi is one of the traditional cornerstones of Korean medicine. It is a vegetable probiotic food manufactured by fermenting vegetables with lactobacilli. Koreans serve kimchi with rice usually at every meal. This probiotic-loaded food possesses infinite advantageous, some of which are as follows:

- Kimchi accelerates the bowel movements and keeps constipation at bay
- It helps in blasting the excess body fat and fight obesity
- It is shown to prevent cancer
- It promotes brain health, immune function, and skin vitality

3. Kefir

Kefir is a fermented milk beverage produced by the action of bacteria and yeasts (occurring in tiny gelatinous grains) on milk proteins. Although yogurt is the most abundant source of probiotics, higher concentrations of a variety of healthy probiotic species in kefir render it as a relatively healthier choice. Kefir fends off

disease-causing bacteria from the intestine while restoring the good gut microbes. This yogurt-like drink lessens inflammation, **lowers cholesterol levels**, and serves as an essential source of calcium and vitamin D for people with lactose intolerance.

4. Kombucha

Kombucha (KBC) is a sweetened black or green tea manufactured by fermenting tea with a symbiotic colony of lactic acid bacteria and yeasts. This delectable probiotic brew exhibits several health benefits. Apart from its gut replenishing (with friendly bacteria) qualities, KBC fuels the production of a potent natural detoxifier called glucuronic acid. Glucuronic acid is a precursor of vitamin C, a water-soluble vitamin that is essential for gum and skin health. Moreover, KBC has anti-bacterial properties against potentially harmful microbes, like *Listeria monocytogenes* and *E.coli* to name a few.

Also recognized is KBC's ability to scavenge the highly inert cellular damage-promoting ions called free radicals. It is, therefore, effective against plaque formation in the arteries and heart diseases. The production of vitamin C, vitamin B, and DSL attributes to these antioxidant properties of KBC.

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How Probiotics Help Boost The Immune System



Overview

Our internal defense system - the immune system does an incredible job of defending the body from foreign invaders. People with a compromised immunity can become vulnerable to different infections, especially cold and flu, as well as cancers. In addition to consuming a healthy diet, we can implement several other strategies to boost our body's defense mechanisms. Of these, using probiotics is a well-recognized immunity-enhancing approach. Approximately 70%-80% of our immune system resides within the gut, with the gut-associated lymphoid tissue

(GALT) representing the largest proportion. Since probiotics confer a healthy digestive system, they also ensure the proper functioning of the immune system occupying our gut.

How Probiotics Enhance the Immune System and Ward off the Pathogens?

1. Improve the Health of the Beneficial Gut Colonizers

Our gut flora and the defense system are in a reciprocal relationship with one another. What happens to one will influence the other. **Probiotics** restore the good bacteria, and hence, they automatically restore your immune function.

2. Fortify the Host-Gut Barriers

Our intestinal epithelial cells form a barrier against the invading microbes. Because probiotics strengthen these gut barriers, they prevent the disease-causing agents from entering into our system. The probiotic-dependent modulation of immunoglobulin A (IgA) responses accounts for the majority of their gut barrier-strengthening properties . IgA is an antibody that is present in abundant amounts in the mucosal linings, including the gut. This antibody serves as the first line of defense against the invasion of the bacteria and viruses into the intestinal membranes.

Moreover, the probiotics minimize the leakage from the intestinal membranes. Intact intestinal membranes deflect the entry of the microbes. The reduced microbial intrusion contributes to a healthy immune system.

Among different probiotics, the Lactobacillus strains are particularly shown to bolster the immune function.

3. Augment the Function of GALT

The lymph nodes constitute an essential component of the immune system, and as aforementioned, the GALT occupies a large section of the defense system. The IgA antibodies are one of the key elements of GALT. The others include the immune cells, the Peyer's patches in the small bowel, and the cytokines. Probiotics cause marked expansion of the GALT, its associated elements, and

their functions, all of which impede the access of the foreign intruders.

4. Secrete antimicrobial peptides

When ingested, the viable bacterial strains release substances that slay the monster pathogens. These substances, known as antimicrobial peptides inhibit the major component in the walls of certain bacteria, annihilating them before they make you ill.

5. Accelerate Cytokine Production

Cytokines are immune stimulators that signal the key cells of the immune system, called white blood cells (WBCs) to migrate toward the site of infection or inflammation. There, the WBCs engulf the immunity attackers. Probiotics bump up the cytokine production, and subsequently, rev up the immune performance through the protective actions of WBCs. Probiotics not only benefit adults but also reduce the frequency and severity of cold and flu-like symptoms in children.

Summary

To sum up, probiotics optimize immunity and fitness. They not only keep gastrointestinal and airborne infections at bay but also cure coughs and colds once you catch them.

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Factors that Increase the Risk for Yeast Infections

- Uncontrolled diabetes
- Antibiotics (since they disrupt the normal vaginal flora)
- Poor dietary habits, in particular, excessive consumption of sugar
- Weakened immune system
- Pregnancy (due to hormonal imbalances)

Treatments available

While pharmacological management, safe sex practices, maintaining a good hygiene, and a healthy diet all appear to play essential roles in treating yeast infections, the use of viable ***lactobacillus strains*** in alleviating yeast infections is also promising.

How Probiotics Ward off and Treat Yeast Infections?

Although the exact role of probiotics in getting rid of yeast infections is unclear, a few mechanisms have been proposed.

The vaginal pH is normally acidic and the lactic acid-producing bacteria tend to maintain it. These bacteria also keep the growth of the vaginal flora in check.

A study conducted on 33 women with recurrent vaginal candidiasis revealed that a daily administration of Lactobacillus-containing probiotic for 12 months reduced the vaginal symptoms and infection.

The Lactobacillus species preclude the adherence of the yeast to vaginal lining, and thereby fend off the fungi. What mediates this stickiness of Lactobacilli to the vaginal lining? It appears that the presence of some proteins and carbohydrates on the surface of these healthy bacteria accounts for this property of Lactobacilli.

Lactobacilli-containing Probiotics are Women's Best Buddies

Two Lactobacillus species, specifically, L. rhamnosus and L. reuteri have shown to be highly competent at repopulating the vaginal ecosystem and holding off the unwanted yeasts and bacteria. A controlled trial performed by the researchers at the Lawson Health Research Institute in London demonstrated the potential of these strains to considerably deplete the vaginal yeasts at week 4 as well as replace and preserve the normal urogenital flora after 2 months of the daily oral administration.

Summary

Recurrent yeast infections can lead to significant complications. Hence, timely recognition and management are crucial. The use of probiotics in mitigating vaginal infections is gaining momentum.

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Probiotics and Acne



Overview

Acne vulgaris is the most common skin disorder. A disturbed human skin microbiome results in acne. The overgrowth of an unhealthy bacterium, called P. acnes predisposes to acne. Microbiome probiotics are therefore vastly beneficial in acne. Introducing healthy microbes can help in getting rid of acne.

Association of Acne with Gut and Psychological Problems - THE

GUT-BRAIN-SKIN AXIS

A considerable overlap exists between gut issues, psychological problems (like depression and anxiety), and skin conditions such as acne. Individuals with acne sustain greater psychological fallouts (skin and brain). Likewise, gastrointestinal problems are more prevalent in those with acne (gut and skin). This gut, brain, skin triangle is referred to as the gut-brain-skin axis.

Gut Mechanisms Underlying Acne Flare-ups Explain the Implications of Probiotics in Acne

The Link between SIBO and Acne

A type of acne called rosacea occurs with greater frequency in adults with small intestinal bacterial overgrowth (SIBO). Studies report a significant link between SIBO and the flare-ups of acne rosacea. Since overgrowth of harmful bacteria characterizes SIBO, introducing probiotics balances the gut flora, improves the SIBO symptoms, and eventually can offset the accompanied skin rash and pimples.

Moreover, the enhanced intestinal leakage that triggers SIBO also appears to be present in acne. Because probiotics accelerate the repair of the gut lining and modify the fermentation patterns in the intestine, they ease not only SIBO but acne as well.

A study indicating compromised gut barriers in people with acne revealed augmented reactivity to toxins (isolated from E-coli) in the blood in those suffering from acne compared to those without acne. These toxins were also present in substantial amounts in the blood of adults with acne. These toxins penetrate the gut walls and provoke a severe inflammatory reaction in the body that also triggers the breakouts of acne. Having that said, probiotics strengthen the gut barriers preventing the body and skin from getting inflamed.

The Link between Constipation and Acne

Scientific data reveals that individuals with acne are more prone to be constipated. In addition, the levels of good bacteria plummet in constipation. A Russian study demonstrated a significant decrease in the levels of healthy

bacteria in those suffering from long-standing constipation. Likewise, the gut lining in these people also exhibited a high permeability just like in people with acne.

Owing to their gut-barrier and healthy microbiome-restoring properties, probiotics alleviate constipation as well as aid in clearing the skin.



The Role of Substance P in Acne: Added Significance of Probiotics in Acne

Substance P is a key inflammatory mediator that also plays a role in the sebum production of acne. Lactobacillus-containing probiotics can slow down the substance P-induced skin inflammation while simultaneously hastening recovery of the skin barrier function.

Summary

Although more research is warranted to identify the protective effects of probiotics in acne, ingesting or applying probiotics seems to benefit acne largely if not completely eradicate it. Acne can be managed by a balanced diet, avoidance of precipitating factors, and introducing healthy bacteria in the form

of probiotics.

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Probiotics for Hair, Skin and Nails



Various daily factors, including the foods we eat and drink and the products that we use on our skin and hair influence their health. Radiant skin and sleek hair is something we all desire. In addition to healthy food and correct products, probiotics can have amazing effects on the health of skin and hair. Wondering how? Let's see!

Probiotics speed up nutrient absorption

"We are what we eat." Eating a healthy diet help us go a long way and defy aging. Nevertheless, not everyone who eats healthy looks healthy. So, what are

we missing? It's the proper absorption of macro and micronutrients. The friendly gut bacteria help us assimilate more nutrients from our diet. Hence, our skin, hair, and nails get more of the nutrients that they require to be healthy.

Probiotics Accelerate Subcuticular Hair Follicle Cycling

Our hair grows in cycles of several phases, called as hair follicle cycling. Stimulating hair follicle beneath the outermost part of the hair shaft (the hair cuticle) during the growth phase results in a robust hair growth. Although mostly limited to animals, some probiotics up-regulate this subcuticular hair follicle cycling, speeding up the hair growth.

Probiotics Add Moisture and Shine to Your Skin and Hair

The beneficial bacteria also stimulate the proliferation of cells that secrete sebum. Sebum is an oily substance that keeps your skin and hair moisturized.

Probiotics Work More than Skin Deep

Skin conditions like rosacea make our skin more dry and dull. Probiotics are effective in alleviating several skin complaints, especially rosacea. Rosacea is a skin disorder characterized by hypersensitive skin causing redness, facial flushing, and acne. Some probiotics elaborate antimicrobial peptides that have demonstrated to be significantly beneficial in individuals with rosacea. In 2013, the American Academy of Dermatologists proposed the use of **probiotics in treating rosacea**. When applied topically on rosacea or acne prone skin, our immune system recognizes probiotics as being foreign and reacts, thus easing inflammation, redness, or bumps.

Rosacea is associated with small intestinal bacterial overgrowth (SIBO). Because probiotics mitigate SIBO and replenish the healthy gut bacteria, they reduce the skin inflammation in rosacea.

Another common skin ailment is eczema. Eczema is a disorder where patches of skin become inflamed, itchy, red, cracked, and rough. Probiotics add more sebum and oil to the dry eczematous skin while their anti-inflammatory properties attenuate the redness and inflammation.

Probiotics Reduce the pH of the Hair

Our hair requires an acidic pH for luster and health. Alkaline pH increases the friction between the hair fibers via augmenting the negative electrical charge of the hair fiber surface. This may lead to cuticle damage, increasing the frizz and fiber breakage of the hair. Probiotics impart an acidic pH to the hair shaft, reducing the frizz, and increasing the vitality and glow.

Probiotics boost our immune system

We know that people with a healthy immune system have healthy skin and hair. If our immune system is down, our body is vulnerable to sickness and disease. Being unhealthy from inside can never make us (including our skin and hair) look healthy and beautiful. **Probiotics** fortify our immune system that eventually revives our health and the dull-appearing skin and hair.

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Do Probiotics Help With Weight Loss?



Overview

Being obese or overweight can have a critical impact on your health. The health consequences can vary from cardiovascular disease, diabetes, and stroke to cancers like colon and breast cancers. Individuals with obesity or excessive weight tend to have a varied gut microbial population than normal-weight

people. The good news is that probiotics possess the potential to help you shed some extra pounds.

In this post, we'll explore how can probiotics help you trim down

1. Probiotics Suppress the Dietary Fat Absorption

The dietary fat is the major contributor to our body and belly fat. Anything that inhibits dietary fat absorption will ease weight loss. Probiotics limit the absorption of dietary fat and simultaneously promote the elimination of fat via feces. The [Lactobacillus strains](#) primarily exert their anti-obesity effects through this mechanism.

2. Probiotics Replace Beneficial Gut Bacteria

An imbalance in the intestinal flora is another recognized cause of obesity. Probiotics promote weight loss by restoring the gut microbiome.

3. Probiotics Reduce Inflammation

One of the dominant factors linked to weight gain and obesity is low-grade inflammation. Since probiotics repair the leaky epithelial gut barriers, they prevent the pro- inflammatory stimuli from finding their way into the body. Moreover, they enhance the production of short-chain fatty acids (SCFA) - which are anti-inflammatory products derived from the fermentation of fiber by the healthy gut bacteria. The beneficial bacteria also decrease the expression of certain genes that drive inflammation. Hence, by acting at the molecular level, the probiotics slow down the low-grade inflammation and the consequent build up of body fat.

4. Probiotics Stimulate the Release of Satiety Hormones

The less we eat, the less we expand. The probiotics-induced SCFA production plays a significant role in mediating their satiety effects. SCFAs promote

secretion of a chief hormone that curbs appetite, called as GLP-1 (Glucagon-like peptide-1).

5. Probiotics Enhance Insulin Sensitivity

Insulin is a hormone secreted by the pancreas that lowers the blood glucose levels. It acts on target organs to facilitate the entry of glucose into the cells. However, the body cells can sometimes become resistant to insulin, triggering a metabolic state, known as insulin resistance (IR). There is a strong causal relationship between IR and obesity. Probiotics reverse insulin resistance and subsequently can help you drop some pounds.

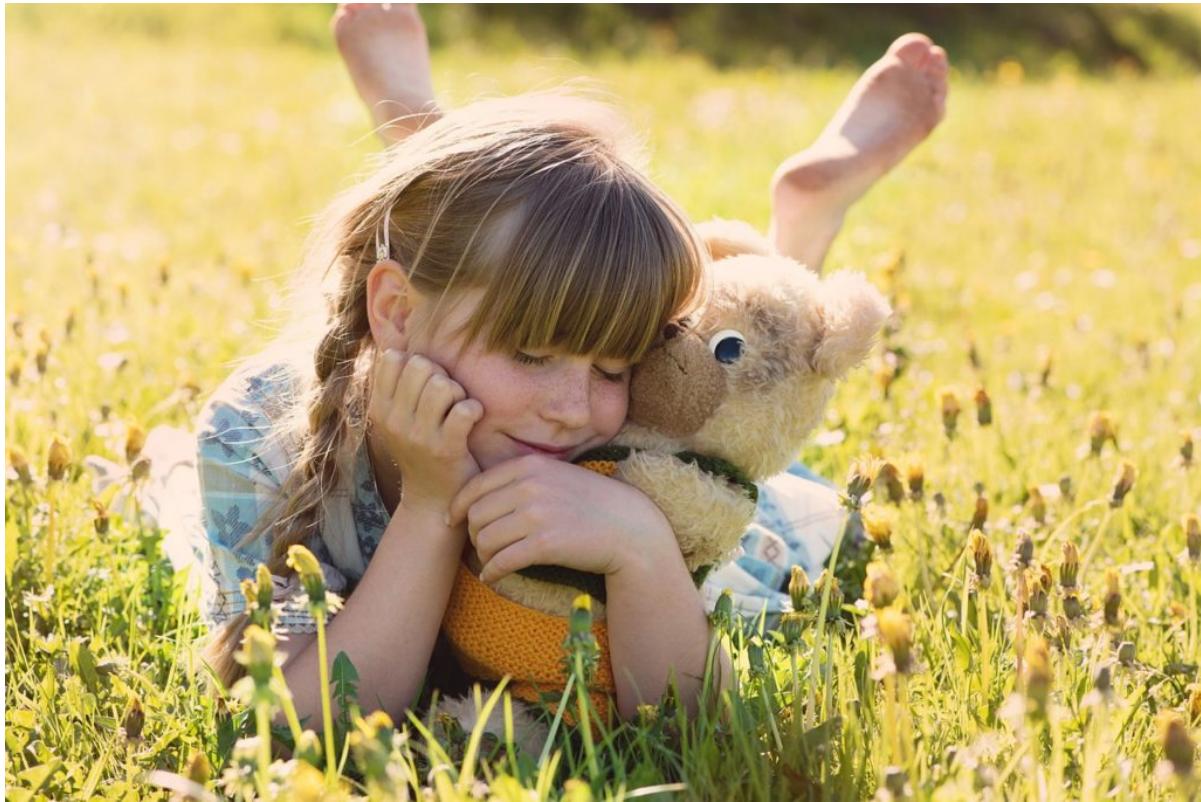
Summary

A healthy gut is a secret gateway to an effective weight loss. Experts now consider probiotics as a novel and promising approach for preventing and treating obesity.

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Probiotics for Kids



Why are probiotics useful for kids? In children, when the composition of the GI flora is out-of-whack, a myriad of illnesses (similar to that of adults) can ensue. Probiotics exert a major influence on the **microbiome**. A kid's microbiome begins to develop inside the womb and matures during infancy and childhood. The newborn leaves the germ-free environment of the mother's womb and enters a highly contaminated world, which mandates potent defenses to prevent disease. The pro- and **prebiotics** confer long-term health benefits on the developing immune system of a child. This post will highlight the significance of adding probiotics to children's diet.

Probiotics can Prevent Necrotizing Enterocolitis in Premature Infants

Some infants who are born prematurely can suffer from an intractable bloody diarrheal illness, called necrotizing enterocolitis (NEC). It is a condition in which the intestinal tissue undergoes inflammation, injury, and begins to die. Infectious agents seem to colonize the gut in these infants after the introduction of formula milk. Specific strains of bacteria, primarily the Lactobacillus and Bifidobacteria can preclude the occurrence of NEC when fed to the preterm babies. These probiotics break down carbohydrates to produce lactic acid, creating an acidic milieu in the gut. This promotes the growth of beneficial bacteria, whereas hampers that of the harmful ones.

These beneficial bacteria also strengthen the gut barriers, which fends off the harmful agents against navigating from the GI tract to the outside systems - a process called bacterial translocation.

Moreover, the preterm infants afflicted with NEC lack the ability to tolerate anything through the mouth. Statistics show that probiotics given to these babies can improve oral (mouth) intake via accelerating maturation of intestine. Probiotic preparations containing either Lactobacillus alone or in combination with Bifidobacterium are found to be highly effective at keeping NEC at bay. What's more? Probiotics also appear to minimize the death rates associated with NEC.

Probiotics to Aid in the Formation of Nutrients in Children

The favorable bacteria help to form nutrients otherwise not made by the body (like vitamin K) and other beneficial nutrients (such as amino acids and short-chain fatty acids).

Probiotics May Benefit Kids with Allergies and Asthma

Type 2 helper T cells (Th2) are the white blood cells that play a triggering role in the recruitment of IgE antibody-producing cells of the body, which, subsequently precipitate allergic and airway diseases in children. Probiotics might slow down this Th2 immune response, thereby improving the breathing issues in children with asthma. In addition, these beneficial microbes balance the pollen-specific

antibody levels in seasonal allergic rhinitis that might alleviate the severity of symptoms of this condition. These theories are nonetheless controversial.

An additional promising area suggesting the effectiveness of probiotics in kids is eczema. Research reveals that probiotics can reduce the risk of eczema in babies when given to pregnant women or breastfeeding mothers.

Probiotics Ease Viral Diarrhea

The commonest cause of acute diarrhea in kids is rotavirus. A systematic analysis that merged the results from multiple studies demonstrated that probiotics (predominantly *Lactobacillus reuteri*) decreased the duration of acute rotavirus diarrhea in children. Also observed was a drop in the number of hospital admissions and the duration of the hospital stay in children infected with rotavirus.

Probiotics Can Control Antibiotic-Associated Diarrhea (AAD)

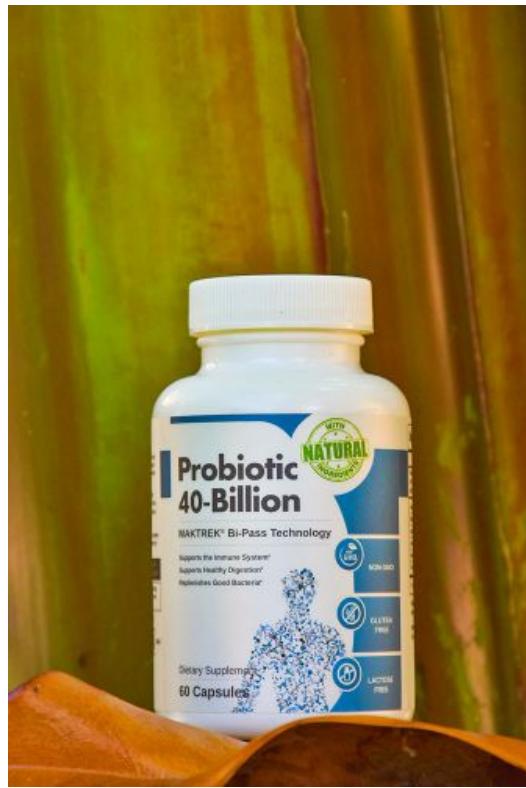
Just like adults, children who are given antibiotics are prone to microbiome perturbations and AAD. In these instances, probiotics stabilize the microbiome and prevent GI and non-GI-related illnesses.

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What are Prebiotics?



Although they sound similar, probiotics and prebiotics are not the same. Even though pro and prebiotics work in concert to promote the health of their host, they are drastically different in form and function.

Probiotics are defined as live microorganisms that confer a health benefit, when administered in adequate amounts, to a host, or those who consume them. Specifically, probiotics are microorganisms or live bacteria and yeasts, that assist primarily with digestion. The word probiotic means “promoting life”. These microorganisms promote life by maintaining a healthy digestive tract and immune system. Research indicates probiotic use may also provide several health benefits including promoting the health of the reproductive tract, oral cavity,

lungs, skin, and gut-brain axis.

When compared to probiotics, prebiotics are not as easily defined or understood. Over the years, the definition of prebiotics has changed. As defined by current research, prebiotics are non-digestible food ingredients, when metabolized by intestinal microorganisms, that facilitate changes in the composition and/or activity of intestinal microorganisms. These changes in composition and/or activity may result in potential health benefits appreciated by the host.

Simplistically speaking, prebiotics are ingested food ingredients that facilitate changes in the composition and/or activity in the bacteria in the gastrointestinal tract. These changes often confer benefits to the host's well-being and health. Prebiotics are substances that are not digested, rather, they are fermented. Fermentation is the process of converting food products, such as sugars, into acid, gas, or alcohol. The byproducts of fermentation are utilized as an energy source by intestinal bacteria. These byproducts may positively alter the composition of intestinal microorganisms. Essentially, prebiotics can be considered fertilizer for beneficial bacterial growth.

Our gut has several trillions of bacterial strains which confer many health benefits to us. In our current culture, millions of Americans are consuming probiotics to obtain health benefits. However, by consuming probiotics without prebiotics you may not appreciate the benefits probiotics confer to overall health.

Prebiotics may exert benefits on the colon, oral cavity, urogenital tract, and the skin. However, these benefits are in concert with the fermentation process performed by probiotics. The composition of prebiotics and the dose administered is an important factor that influences the fermentation process. The estimated daily dose recommended by the World Health Organization is ~ 5 g. Usually, prebiotics are found naturally in whole grains, fruits, and legumes.

Potential Benefits of Prebiotics:

- Increase levels of good bacteria, reduction in levels of bad bacteria
- Enhance absorption and bioavailability of minerals such as calcium and magnesium
- Improved colon, oral, urogenital, and skin health.

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Prebiotics Help with Stress and Anxiety



Stress takes a heavy toll on various bodily functions. Cardiac problems, psychological disturbances, GI sensitivity, you name it - virtually all body systems are targeted by stress and anxiety. **Prebiotic supplements** fuel the growth of the good bacteria while inhibiting the expansion of the bad ones. They can help you calm down when you're feeling keyed up. This post will address the subject on how prebiotics act as stress relievers.

Statistics indicate that the prebiotic fiber, which serves as a food for the

beneficial bacteria can alter the thoughts, emotions, and stress and anxiety levels in a number of ways.

Prebiotics Restore the Balance of the Gut Flora

Several experts now refer to the gut as our "second brain." The brain interacts with our gut and the friendly gut bacteria communicate with our brain, indicating that an imbalance in the gut microbiome (dysbiosis) can lead to psychological imbalances and vice versa. This dysbiosis, in particular, lower levels of bifidobacteria underlie functional bowel disorders like IBS. Also noted in IBS, is the reduced production of short-chain fatty acids, such as butyrate. Likewise, decreased levels of both Bifidobacteria and butyrate are responsible for the generation of mental disturbances like anxiety. Prebiotics, primarily fructo-oligosaccharides (FOS) amplify both the number of bifidobacteria and the butyrate production.

Moreover, people with IBS appear to be more sensitive to emotional stressors. Reciprocally, anxiety and stress constitute one of the most significant triggers of IBS.

By restoring the disproportion of the gut ecology, the prebiotic fiber can restore the mental serenity.

Prebiotics Lower Cortisol Levels

Individuals who suffer from anxiety or depression have a more pessimistic approach to life as compared to those without these mental ailments. Findings from an interesting paper published in a scientific journal revealed that subjects who received prebiotics paid more heed to the positive information in contrast to the negative stimuli. The researchers further reported that these anxiolytic effects of prebiotics were analogous to the prescription pills used for controlling anxiety and depression. The reduced cortisol levels, as measured in saliva

accounted for these anxiolytic effects of prebiotics. Cortisol is a hormone released by the adrenal glands as part of the flight-or-fight response during stressful events. A drop in cortisol is indicative of reduced stress levels.



Helps with Anxiety, Stress and Depression

Buy Now

Prebiotics Nurture the Good Bacteria that Facilitate the Action of GABA

Prebiotics nurture the healthy gut microbes that modulate the expression of GABA (gamma-amino butyric acid), a neurotransmitter that relaxes the nerves and muscles, helping us to unwind from the day more easily. The indirect relationship between prebiotics and GABA profoundly steers their use in anxiety-related disorders.

Summary

In summary, prebiotics can positively influence emotional behavior. Although studies have been mostly limited to rodents, modulation of the gut-brain axis by prebiotics is a proven novel remedy for anxiety. Further evaluation is however still required to prove the efficacy of prebiotics in anxiety.

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5 Reasons Why Probiotics and Prebiotics Should Be Taken Daily



Trillions of health-promoting bacteria reside in our bowels, where they function to fend off harmful microorganisms and accelerate digestion and normal bile metabolism. Mounting scientific evidence suggests that supplements containing beneficial bacteria (**probiotics**) or supplements supporting the growth of these good microbes (**prebiotics**) can preclude a variety of illnesses.

However, the question that arises is do we need to consume them on a regular basis?

Here are the top 5 reasons for taking the pro-and prebiotics daily!

1. Regulate the Normal Bowel Function and Soothe Gastrointestinal Symptoms

Pro - and prebiotics are a gateway to a healthy gut and a healthy gut is a gateway to a healthy body. It's no secret that these viable bacterial strains regulate absorption and digestion of nutrients and strengthen the protective mucosal gut barriers, and thus, prevent the invasion of the disease-causing microorganisms. The subsequent reduction in the gut inflammation aids in obviating and healing gastrointestinal (GI) tract ulcers.¹

The daily domino effect is a healthy, flourishing gut (flora) and body, conducive to functioning optimally.

In short, you can count on probiotics for virtually any GI complaint.

2. Maintenance of Optimal Cardiovascular Health

A deranged lipid profile, a high blood pressure, and obesity are major cardiac risk factors. Daily consumption of probiotics has a positive impact on our cardiac health. They lower the bad cholesterol (LDL) levels while improving the HDL

(good cholesterol) levels.² The improved cholesterol levels, in turn cause a modest drop in blood pressure.³

What's more? Daily ingestion of these favorable microbes can help you jumpstart weight loss. Excerpts from several studies support the notion that weight gain and obesity have an association with altered gut flora.⁴

Thus, populating our intestine with the good ones will optimize our cardiac health.

3. Rev Up the Immune System

Our immune system does a remarkable task to safeguard us from sickness-inducing invaders and keeping infections at bay. Taking probiotics every day serves to fortify the immune system and prevent infections like cold and flu. If you're looking for another reason to work more pro - and prebiotics into your schedule, this is the one.

4. Prevent and Treat Antibiotic-Associated GI Side Effects

In the course of severe infections, antibiotics are hailed as lifesavers. Having that said, the usage of antibiotics causes GI upset predominantly nausea/vomiting, and diarrhea.⁵ Moreover, antibiotics are shown to alter the framework of the gut microbiota.⁶ Needless to say, supplementing pro - and prebiotics in these cases will help restore the lost healthy gut flora as well as mitigate GI distress.⁵

The bottom-line: Antibiotic-associated GI upset warrants the use of probiotics.

4. Reinstate the Gut Ecosystem Destroyed by the Standard Western Diet

The genetically engineered foods have taken over the major part of our nutritional regime by leaps and bounds. The current trendy Western diet largely comprises of foods with a high-GMO content. These foods disrupt the composition of gut bacteria in ways that aggravate a whole host of systemic illnesses. The smoking gun is glyphosate.⁷

Thankfully, regular supplementation with probiotics can reverse the diet-triggered incongruity of the microbial gut system.

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Prebiotics and Probiotics Work Best Together



Prebiotics and probiotics are the yin-and-yang of gastrointestinal health. They are opposites in many ways. One is living, and the other is not. One is found in vegetables, and the other is found in dairy. There is no redundancy between them, and they each have their specific job. Their differences are what make them such a dynamic team and what make them the most effective when they are taken in tandem.

Prebiotics act as fertilizer and nurture the positive bacterial inhabitants in our guts that aid us by digesting things we can't, producing vitamins we don't, and

creating an acidic environment that inhibits the growth of disease-causing bacteria. **Prebiotics** are plant-based fibers that promote the growth and activity of these beneficial microorganisms in the large intestine and colon. They also increase calcium absorption and bone health.

Foods that are high in fiber are typically high in prebiotics, but not all fiber is prebiotic. A prebiotic is defined as a food that is non-digestible, meaning it passes through the stomach and small intestine. In the colon, the good bacteria use it as food which is great because it amplifies their population. While the good bacteria are proliferating, they ferment it and release fatty acid byproducts that nourish our intestinal lining and help regulate electrolyte levels.

Artichokes, bananas, leeks, onions, garlic, and whole-wheat products are rich, natural sources of prebiotics. Keep in mind that heating usually alters the food's structure, so eating raw food over cooked food is recommended for maximum prebiotic benefits.

Probiotics are living bacterial cultures and are quite different from nonliving organic prebiotics. Probiotics are naturally found in foods like yogurt (Greek or not), kefir, and other dairy-based foods. Because probiotics are alive, they are sensitive to acid and heat, and the stomach acid can destroy most of these good bacteria before they even reach the intestines. Thus, probiotics need help to survive and multiply, and here prebiotics come into play.

Every day, somewhere around 70 million people suffer from gastrointestinal distress. Some of those include people with an infection that take antibiotics to intentionally wipe out bad bacteria. Unfortunately, the nonspecific nature of antibiotics also wipes out the beneficial bacteria, which are critical for optimal digestive health. Whether it is a temporary GI problem or a chronic one, probiotics are often recommended to help ease symptoms by beneficially altering the intestinal flora. Prebiotics are not as popular, but for probiotics to be the most effective, a prebiotic should be involved as well. A supplement that contains both is called a synbiotic because they work synergistically. The prebiotics give the probiotics an edge and a substrate to latch on to, increasing the probiotic's chance of surviving the gastrointestinal tract. Prebiotics set up the stage so that probiotics can have their best chance at survival and success.

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The importance of the probiotic strain *Lactobacillus reuteri* NCIMB 30242



Walk into any health food store and you will find an overwhelming variety of probiotic supplements. Be careful though; there is little FDA oversight in the industry, and some products have even had severe contamination in their distributions.

Our company has had no such issues. We are meticulous about the quality of our products, and we have tremendous pride in our supplements because they are developed using tailored ingredients based on extensive research and scientific data. They contain the culture *Lactobacillus reuteri* NCIMB 30242 that has proven to be safe and well tolerated with no dangerous toxicological effects.

Many probiotic suppliers try to dazzle consumers with a laundry list of ingredients. They focus on quantity over quality. What many of them don't offer is the probiotic culture *L. reuteri* NCIMB 30242, one of the many *lactobacillus* (*L. reuteri* probiotics) strains. There are several cultures of "lactobacillus", but the *reuteri* strain has its own specific microbiome niche. *L. reuteri* affects the intestinal balance between bile salts and bile acid, which is important for the proper absorption of fats. The right amount of healthy fats and its proper absorption is important for energy and metabolism as well as digestive and cardiovascular health. This particular strain has many beneficial functions that are due to its effects on absorption, all verified by clinical studies.

- *L. reuteri* NCIMB 30242 lowers cholesterol. A study including over 110 high cholesterol individuals involved subjects taking capsules of the strain or a placebo over a 9-week period. Results showed that the capsules of this strain unequivocally reduced cholesterol. Furthermore, this strain was actually found to be the only strain that caused a significant decrease in LDL levels.
- *L. reuteri* NCIMB 30242 capsules increase 25-hydroxyvitamin D levels in the blood, which was demonstrated in a 13-week study involving over 130 subjects . Vitamin D deficiencies are associated with cardiovascular decline, asthma, cancer, and even cognitive impairment.
- Another study conducted with 127 subjects evaluated their gastrointestinal (GI) health over a 9-week period, and those treated with *reuteri* NCIMB 30242 had a significant improvement in self-reported GI symptoms with the most significant improvement being reduction of diarrhea .

The multi-faceted effects of functioning *L. reuteri* is not only confirmed by these studies, but also by the fact that disruption of the bile salt/bile acid balance is associated with obesity, liver, and GI problems .

Not all probiotics are created equal, and Microbiome Plus+ supplements have an edge because they contain the vital strain *L. reuteri* NCIMB 30242 which can ameliorate several physiological problems. Try it out and see for yourself! You won't be disappointed.

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10 More Reasons to Take Probiotics



Around 100 trillion microorganisms reside in our bodies, including over 400 bacterial species. The bacteria that live in our intestine are known as our gut flora, and it is well known that taking probiotics to restore the beneficial bacteria helps with digestive issues such as diarrhea, constipation, bloating, and even more serious conditions including irritable bowel syndrome (IBS) and Chron's

disease. Many people don't know that there are many additional benefits of **probiotics** including the following.

1. Probiotics prevent type 2 diabetes and help to maintain a healthy weight.

Many studies show the danger of the buildup of *unhealthy* bacteria in our gut. There is a protein called toll-like receptor 5 (TLR5), and mouse models show that without this protein, the beneficial bacteria in the gut are overrun with the bad kind. Any mice lacking the TLR5 protein had inflammation and insulin-resistance which is a hallmark of type 2 diabetes. The study also transferred the TLR5 knockout mice gut flora to skinny mice with functioning TLR5. Due to the alterations in their intestinal bacteria, the skinny mice changed their eating habits. Many even became obese and showed resistance to insulin over time. An unhealthy microbiome seemingly caused weight gain and type 2 diabetes in some of the mice, suggesting that it does so in humans as well. Other studies show that a healthy gut flora lowers fat absorption, decreases fat storage, and raises levels of a hormone that reduces appetite which are all important for weight loss and maintenance.

2. Probiotics can eliminate side effects of antibiotic treatment.

Antibiotics are effective in destroying bad bacteria, but a problem with oral antibiotics is that they also wipeout many of the beneficial bacteria in our gut. An instant microbiome change due to the use of antibiotics wreaks havoc on the digestive system, leading to diarrhea in about a third of patients. Taking probiotics can reduce this risk by almost 50%.

3. Probiotics boost the Immune system.

Healthy bacteria add a layer between ingested food and the intestinal wall. Good bacteria break down fiber, make vitamin K, and have acidic byproducts that decrease inflammation. Some of the good bacteria even produce selective antibiotics and even make white blood cells that are harmful to bad bacteria but not to themselves. Without the good bacteria, not only are these substances not made, but also the bad bacteria cause inflammation of the gut.

Inflammation is a negative consequence of an unhealthy gut because it prevents important chemical and nutrient absorption. This leads to problems with organs that aren't getting the substances they need to optimally function. The brain, the heart, the skin, and even the reproductive system are affected by microbial misbalance as described in the following five benefits.

4. Probiotics benefit mental health.

Studies show that probiotics ease anxiety and depression and that our microbiome contains bacteria that produce neurotransmitters such as serotonin and dopamine. These are both important substances for mental health. Healthy bacteria also decrease levels of the stress hormone cortisol. Studies also show that consequences of not having a healthy microbiome within three weeks of birth is associated with the development of autism, ADHD, learning disabilities, and allergies in children.

5. Probiotics reduce the risk of coronary heart disease.

Rat studies show that probiotics lower triglyceride levels which significantly reduces the risk of coronary heart disease. Also, the acid byproducts of the gut flora reduce cholesterol levels, and some bacteria even directly degrade cholesterol. Reduced cholesterol levels lead to improved cardiovascular health.

6. Probiotics clear up the skin.

Even the complexion may benefit from the use of probiotics. Studies show that acne, eczema, and rosacea improve with probiotics most likely due to the reduced inflammation of the gut. Gut flora reduces toxin, pathogen, and allergen absorption of substances that affect the skin.

7. Probiotics are good for women's health.

Symbiotic bacteria in our body play an important role in estrogen degradation and excretion. It is extremely important that estrogen levels fluctuate appropriately because lingering estrogen leads to symptoms including PMS symptoms such as bloating, menopausal symptoms such as hot flashes, and other symptoms such as weight gain and even breast cancer. Probiotics also help vaginal health and prevent yeast infections, urinary tract infections, bacterial

infections, and sexually transmitted diseases. Osteoporosis prevention is important for women as they age, and gut flora are important for the production of vitamin K, an important compound for bone strength.

8. Probiotics are also good for men's health.

Not only do bacteria help women with estrogen, but there are also some in the gut that are natural testosterone synthesizers. Male mice on a probiotic diet are thinner, shinier, have bigger testicles, and inseminate females more successfully. Studies on men's semen have found that those with more probiotics in their diet have higher sperm quality.

9. Probiotics improve oral hygiene.

Probiotics have been shown to reduce plaque, gum-disease, and halitosis, or bad-breath. Once again, the anti-inflammatory effects of probiotics include the mouth, and the better immune system significantly improves oral health.

10. Probiotics keep you young.

Around 60 years old, healthy bacteria count in the gut drops significantly. Disease-causing microbes set up camp and proliferate, and the microbiome shift increases gut inflammation and a slew of other problems as a result. In one study on people between 63 and 84, probiotic treatment substantially increased white blood count and effectiveness, suggesting that supplemental probiotics are increasingly important as we age.

Collectively, all these studies show that probiotics are critical for the optimal functioning of the *entire* human body.

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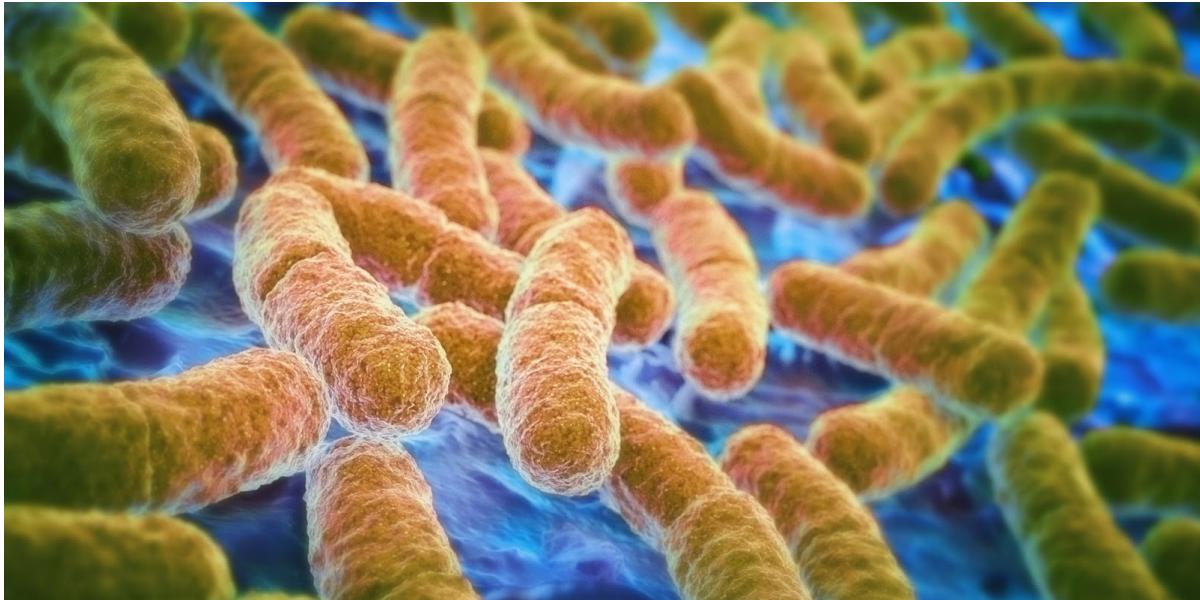
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The Importance of Microbiome Genetics



In 2003, the human genome project found the sequence of all of our 3 billion base pairs of DNA. In 2008, a new, extended study began in order to discover the DNA contained within the 30 to 50 trillion beneficial bacteria cells that reside within our body. These bacteria significantly outnumber our own cells and make up 3% of our body mass. This microbiome project is investigating the over 1,000 genes that our bacterial inhabitants contribute to our body's functionality.

So what is a gene and why are scientists so interested in sequencing them? Genes are bits of DNA that code for proteins, and proteins facilitate every single chemical reaction in our body. Think of DNA as instructions on how to build something. By themselves, they are just letters. It is only when interpreted that they become functional. Bacterial instructions are simple and would be akin to

"how to build Jenga blocks or a Lego cube." Human instructions, in contrast, are infinitely more complicated and would be akin to "how to build the Empire state building". The four letters of DNA are indeed conserved across all organisms, but as you can see, their "words", "reading level", and sheer numerical differences result in life's diversity.

Even though bacteria are so much simpler than humans, they contain genes that we do not. The **microbiome** in our body includes a whopping 3.3 million total genes. This is surprising due to their simplicity; however, it is a collective number that includes hundreds, and possibly even thousands of bacterial species.

Bacterial cells have taken up residence in our intestine because it benefits them by giving them easy access to food. It is not an altruistic motive by any means, but it works for us by facilitating digestion as well as overall health. They provide the following actions that we are incapable of doing on our own, such as:

- Absorbing excess nutrients so that harmful bacteria can't consume them and survive
- Establishing intestinal residence that blocks harmful bacteria from attaching instead
- Producing vitamin K which is important for bone metabolism and blood clotting
- Producing B vitamins that are important for blood formation and energy
- Boosting the immune system
- Contributing to neutralizing acidity in the colon, protecting our cells from damage

None of these effects would exist without the ability of the gut flora to degrade almost half of the indigestible fiber and other carbohydrates we consume such as cellulose and lactose. Because our bacterial friends degrade these carbohydrates, we are able to absorb them and reap their nutritional benefits. Studies show that our modern diet of processed foods, artificially modified foods, and fast foods is drastically reducing the diversity of the microbiome and allowing pathogenic bacteria to establish residence. Studies also show that these disruptions are contributing to obesity and intestinal problems such as Chron's disease and irritable bowel syndrome.

It is essential to maintain a healthy microbiome, and one way to do this is to increase consumption of healthy fiber and reduce the consumption of processed food and artificial ingredients. Another way to optimize digestive health is to supplement your diet with a prebiotic/probiotic regime. Go to any pharmacy and you will find prebiotics and probiotics that only contain bacterial cultures. Our product expands upon the business model of the traditional supplement industry. Our innovative research developed ways to ease digestive symptoms by increasing bacteria's *genetic* impact. In addition to our products' customized blend of safe and natural ingredients and essential vitamins, our products address the *cause* of the symptoms. They boost protein *functionality*.

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Health Benefits of Probiotics



Our bodies are full of bacteria. Normally bacteria are thought of as disease causing agents. However, there are "good" bacteria that help keep us healthy. Our bodies continually attempt to maintain a balance of good and bad bacteria. Age, genetics, and diet may influence the balance of bacteria in our bodies. Stress, lack of sleep, antibiotic overuse, drug use, and environmental factors may also influence the balance of bacteria in our bodies. Unfortunately, an imbalance

may predispose you to diseases including Crohn's, irritable bowel, ulcerative colitis, obesity, and diabetes.

Probiotics are microorganisms or live bacteria and yeasts, that assist primarily with digestion. The word probiotic means "promoting life". These microorganisms promote life by maintaining a healthy digestive tract and immune system. Research indicates probiotic use may also have several other health benefits. Ongoing research indicates probiotics may promote the health of the reproductive tract, oral cavity, lungs, skin, and gut-brain axis. Probiotics may even prevent obesity and diabetes.

Probiotics should not be considered a replacement for medications treating certain conditions. However, daily consumption of probiotics may confer several benefits to those who utilize them. That being said, probiotics should be considered a compliment to rather than a replacement of prescribed medications. Specific health benefits related to probiotic use include:

Urinary health - Often, urinary and vaginal tract infections occurring in women are caused by bacteria common to the intestinal tract. These infections are easily treated with antimicrobial therapy, however, not without occasional side-effects. Studies suggest utilizing probiotics, specifically, lactobacilli, may have a preventative role in urinary and vaginal tract infections.

Immunity and allergies- Believe it or not, our gut plays a large role in our ability to fight off infections. Cells that help fight off infections and coordinate allergic reactions develop and mature in our gut. Data indicates probiotics may positively affect this development and maturation process and increase our ability to fight off and respond to infective processes. Probiotics may also improve our bodies ability to respond to common allergens such as pollen, hair, and mold.

Obesity and diabetes - A daily dose of probiotics was found to prevent weight gain and insulin resistance in lab mice. Daily consumption of certain probiotics increased the ability of these mice to process diets high in fat. Probiotics were also thought to be involved in appetite suppression and improve the ability of how these mice processed glucose. Although these results were observed in mice, researchers are optimistic the same benefits may be appreciated by humans. Researchers also believe the proper balance of bacteria in the gut may combat and prevent obesity.

Hypertension - 50 million Americans have been diagnosed with and take daily medications for hypertension. Hypertension, or elevated blood pressure, has significant negative effects on overall health. Data indicates daily consumption of probiotics may decrease blood pressure. Although the decrease in blood pressure were small, significant decreases were appreciated. Of note, the benefits appreciated were not directly caused by the probiotics but secondary to how probiotics process milk products.

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Could There Be More to the Proverb “The Way to a Person's Heart is Through His Stomach”?



Cholesterol: The Good and Bad__ The trouble arises when the balance between the two cholesterol carriers gets out of whack. High LDL-cholesterol that result from poor diet, age or genetics may result in plaques in the arteries that can burst, leading to heart attack or stroke. Due to its connection with heart disease it's no wonder that LDL-cholesterol is referred to as "bad" cholesterol. Indeed, a 1% drop in LDL-cholesterol may reduce the risk of heart disease by up to 3%. The Way to Our Hearts Through Our Gut What is not necessarily obvious is the role our gut plays in cholesterol and heart health.

Scientists are now studying how the microbial communities in our gut (collectively known as our microbiome) interact with each other (<http://www.economist.com/node/21560523>). Interestingly, for metabolic diseases such as obesity, type 2 diabetes and heart disease, the microbiome seems to play a vital role. Researchers now suggest that the types and levels of microbes in the gut may be used to predict a person's chance of having a heart attack (<http://www.fasebj.org/content/26/4/1727.long>).

Microbiome Plus+™ for Heart Health One strategy to shift the microbiome to health is through the ingestion of probiotics. But research also shows that probiotics are not "one size fits all". Two recent clinical studies showed that

when patients with high cholesterol levels were given daily doses of the probiotic bacterium Lactobacillus reuteri NCIMB 30242 (Microbiome Plus+™), their blood cholesterol levels dropped by 10-12% compared to patients that were given a placebo. (<https://microbiomeplus.com/lac...>). Microbiome Plus+™ was selected and optimized for production of a key enzyme called bile salt hydrolase. Once ingested, Microbiome Plus+™ uses its potent enzymatic machinery to help modulate cholesterol levels and promote heart health.

Microbiome Plus+™ for Inflammation: In addition to keeping LDL-cholesterol in check, calming inflammation in the body may be just as important for preventing heart disease. Starting in 1997, Dr. Paul Ridker of Harvard Medical School began finding a relation between an inflammation compound called C-reactive protein (CRP) and heart disease (<http://annals.org/article.aspx?articleid=712737>). It was shown that elevated CRP levels almost tripled the risk for heart attack and doubled the risk for stroke. Indeed, Microbiome Plus+™ when given twice daily for 9 weeks, was shown to reduce CRP levels by a significant amount when compared to patients taking placebo. Microbiome Plus+™ also greatly reduced the number of subjects with CRP levels in the so-called “high-risk” group. With rapidly increasing rates of heart disease throughout the world, the development of Microbiome Plus+™ as a safe and effective probiotic is timely. When it comes to probiotics, the way to our hearts are indeed through our gut.

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How Dogs Benefit from Probiotics



Similar to your intestinal tract, your pet's gut is also home to trillions of bacteria that keep their gut in a healthy state. Once the defenses break down, the dogs can also fall a victim to various GI diseases. Hence, the question arises, "can probiotics help your dog?" Research shows that probiotic therapy is a promising strategy for canines' GI disorders.

Lactobacilli are phenomenal probiotics for dogs!

The primary probiotics studied to benefit dogs are the lactic acid bacteria. (This is ascribable to the potential of these live bacteria to survive in the intestinal tract of these animals.

Lactobacilli help ease inflammatory bowel disease (IBD)

Dogs also tend to experience GI disorders like IBD and small-intestinal bacterial overgrowth. In fact, IBD is one of the common bowel problems experienced by canines. These illnesses cause chronic diarrhea in dogs, and on top of that, IBD and SIBO are treated with antibiotics (just like in humans) because of which the microbiome gets more out of control. Probiotics restore the balance of the microbiome in dogs that is thrown into turmoil by these inflammatory gut ailments and by their use of antibiotics. This alleviates the associated diarrheal symptoms in canines. Probiotics also enhance the nutrient absorption (that is compromised in these disorders) in puppies required for the maintenance of their health.

Probiotics lessen the severity of acute diarrhea in dogs

The good bacteria strengthen the gut barriers in dogs, which prevents the invasion of harmful agents into their system that can induce acute diarrheal infections. In 2009, Dr. Kelly and colleagues from the Procter & Gamble Pet Care Technical Center reported that supplementation with a particular strain of *probiotic* reduces the duration of diarrhea in dogs. Also noted was a drop in the need for antibiotic treatment by about 38.5% (for the probiotic group) over placebo.

Probiotics benefit a great deal of worm infections in canines

The hygiene and dietary habits of the pets render them susceptible to a wide range of infections. Especially worth mentioning is the hookworm infection, one

of the universal infections identified in these animals. These parasites can critically harm the dogs, contributing to symptoms such as anemia, irritability, weight loss, and abdominal cramps and in severe cases, death. The dog hookworm, in turn, can trigger detrimental infections in humans. Feeding certain probiotics to dogs infected with hookworm reduces the elimination of eggs laid by the hookworm, thereby improving the accompanying symptoms. Probiotics not only provide protection against hookworm infection but a variety of other parasitic infections in dogs appear to benefit from probiotics.

Probiotics help ease IBS in canines

Just like the human version, IBS in dogs can be distressing. Probiotics can alleviate IBS symptoms via improving the frequency and quality of the stools in dogs with sensitive guts.

Probiotics boost the immune system in dogs

Probiotics prime the immune defenses in pets by promoting the production of secretory IgA, a protective antibody.

Probiotics minimize the production of inflammatory substances in dogs

Very much like in humans, probiotics exert anti-inflammatory effects in canines by stimulating the release of anti-inflammatory substances, and hence, ease symptoms related to long-standing enteropathies like IBD.

Summary

In the light of the given reasons, many veterinarians recommend probiotic use for the health of pets, including dogs.

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Dear all thank you for spending time
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