

PROACTIVE HEALTH: IMMUNITY AND GUT HEALTH

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Your immune system is a complex system that helps you stay healthy. Every day, your body is exposed to germs like bacteria and viruses, and your immune system works to protect you against getting sick.

Everyone's immune system responds differently to germs and injury. The response depends on many factors including age, genetics, vaccination history, medications, diet, physical activity, sleep, stress level, weight and smoking activity. One additional factor affecting the immune response that has recently attracted attention is the gut microbiome.

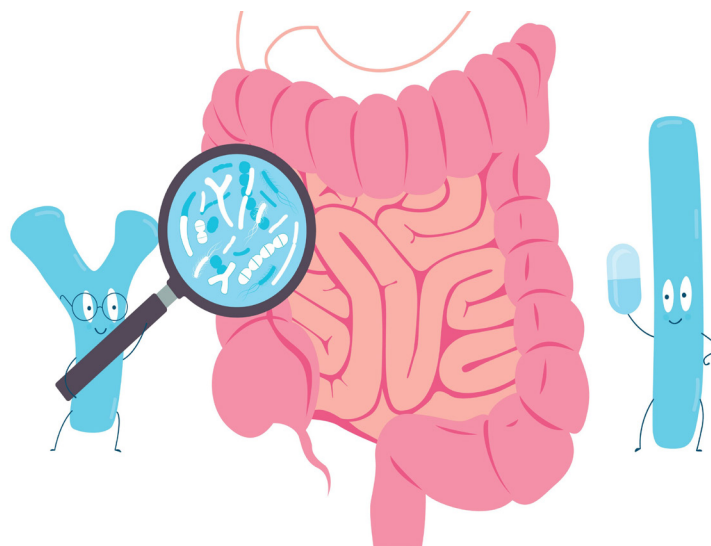
WHAT IS THE MICROBIOME?

The microbiome consists of trillions of microbes or "bugs" (bacteria, yeasts and viruses) that live on and inside your body. Most of these microbes live in your gut, especially in the large intestine.

The microbiome in your body is essential to your health. One of the important jobs of your microbiome is helping your immune system.

HOW DOES THE GUT MICROBIOME AFFECT IMMUNITY?

Gut microbiome consists of a variety of microbes, including about 500-1,000 species of bacteria and a large number of other microbes. Some of these microbes help your body, and some can hurt it. Helpful microbes, also called good



microbes, play important roles in improving your immunity. Good microbes can help prevent bad microbes from multiplying and causing harm. In addition, the human body does not have the right chemicals to digest some fibers that we eat. The good microbes can also breakdown these non-digestible fibers into nutrients called short-chain fatty acids, which play a role in improving the body's immunity.

HOW CAN YOU IMPROVE YOUR GUT HEALTH?

The microbes in each person's body are different. Factors shaping the community of microbes in each person include genetics, medications, environmental factors and lifestyle behaviors. For a healthy microbiome, it is important to maintain a balance in the amount and type of microbes living in your gut. You can increase good microbes in your gut by practicing healthy lifestyle behaviors, most importantly eating a healthy diet.

DIET AND THE MICROBIOME

What you eat plays an important role in determining the type and function of microbes in your gut.

You can improve your gut health by:

- Feeding the beneficial microbes that already live in your gut, through eating specific fibers (prebiotics)
- Consuming live, good microbes (probiotics)

Prebiotics

Prebiotics are the fibers mentioned earlier that your body can not digest. These fibers feed the good microbes in your gut and help them to grow.

Dietary sources of prebiotics are:

- Fruits and vegetables (like bananas, asparagus, onions and garlic)
- Legumes (like lentils and beans)
- Whole grains (like whole-wheat bread, oats and barley).

Prebiotic fibers can cause bloating, especially in people who have a sensitive gut. To add prebiotic fibers to your diet, start with small amounts and gradually increase them.



Prebiotic Food



Probiotics

Probiotics are live, good microbes that are helpful for your health.

Major dietary sources of probiotics are fermented foods, such as yogurt and kefir containing live microbes.

Not all fermented foods offer probiotic benefits. The probiotic benefits of a food depend on what type and how many microbes they have and whether those microbes are alive. The live microbes in some fermented foods are killed during food processing, so these foods do not provide probiotic benefits.

Foods to eat less

A typical Western diet is high in added sugars, processed foods, saturated fat and animal protein, and low in dietary fiber. Frequent consumption of a typical Western diet can have a negative impact on the gut microbiome.

To improve your gut health, limit intake of:

- **Added sugars**

The major sources of added sugars are sugar-sweetened beverages (regular soft drinks, sweetened coffee and tea, fruit drinks), desserts and sweet snacks.

- **Processed and high fat meats**

Replace processed or high-fat meats (such as bacon and hot dogs) with plant proteins (such as lentils and beans).

- **Saturated fat**

The main sources of saturated fat are animal foods such as meat and high-fat dairy. In addition, a few plant foods, such as coconut oil, contain significant amounts of saturated fat

OTHER LIFESTYLE BEHAVIORS AND THE MICROBIOME

Besides diet, other lifestyle factors that can potentially support a healthy microbiome are:

- **Exercise**

Emerging evidence suggests that exercise changes the gut microbes in a way that may have positive effects for human health.

- **Stress**

Recent studies indicate that stress and depression can disrupt the balance in the gut microbiome, negatively impacting immune responses. The link between the gut microbiome and mood is bidirectional. That is, stress can negatively affect the gut microbiome, and an unhealthy gut microbiome may increase the risk for depression.

SUMMARY OF PRACTICAL STRATEGIES TO IMPROVE GUT HEALTH

- Make a greater portion of your diet whole plant foods like fruits and vegetables, whole grains and legumes.
 - Avoid highly processed foods like potato chips, cookies and lunch meats.
 - Limit intake of high-fat animal products and added sugars.
 - Be physically active.
 - Manage stress.
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- A top-down view of a white plate filled with various healthy food items. The items include a slice of whole-grain bread, a glass of white milk, a small bowl of brown lentils, a head of broccoli, a green pear, a bowl of cooked quinoa, a red bell pepper, and several small piles of nuts and seeds. The background is a solid pink color.



ADDITIONAL INFORMATION

Are there recommendations for dietary probiotic supplements?

There are no recommendations about probiotics use for healthy people. For many probiotic supplements, no scientific evidence of their health benefits is available. It is important to consult with your healthcare provider before using a probiotic dietary supplement or making a major dietary change. Probiotic supplements may cause health problems, especially in people who have medical conditions or weak immune systems. In addition, probiotic supplements might have interactions with other medications that you take.

For more information about dietary supplements visit the [Frequently Asked Questions \(FAQ\) section of the National Institute of Health Office of Dietary Supplements website](#).

Disclaimer

This fact sheet provides basic information for educational purposes and should not replace medical advice. Talk to your healthcare providers (registered dietitian, physician, pharmacist, etc.) about the questions that you may have and what may work for your health.

REFERENCES AND ADDITIONAL RESOURCES

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