

MICROBIOME

# THE MICROBIOME TOOLKIT

*The Top Natural Ways  
to Support Your Microbiome*

# Contents

<i>Disclaimer</i> .....	3
<i>Introduction</i> .....	4
How to Tell if You Have a Healthy Microbiome?.....	9
Antibiotics.....	10
Processed Foods.....	11
Conventionally-Grown Foods.....	12
Birth Interventions.....	13
Ongoing Stress.....	15
Unresolved Trauma.....	16
Sedentary Lifestyle.....	17
Alcohol Consumption.....	18
Birth Control Medication.....	19
History of Food Poisoning or Traveler’s Diarrhea.....	20
Exposure to Mold.....	22
Inadequate Sleep.....	23
Dental Infections.....	24
Now What?.....	30
<i>Action Plan</i> .....	41

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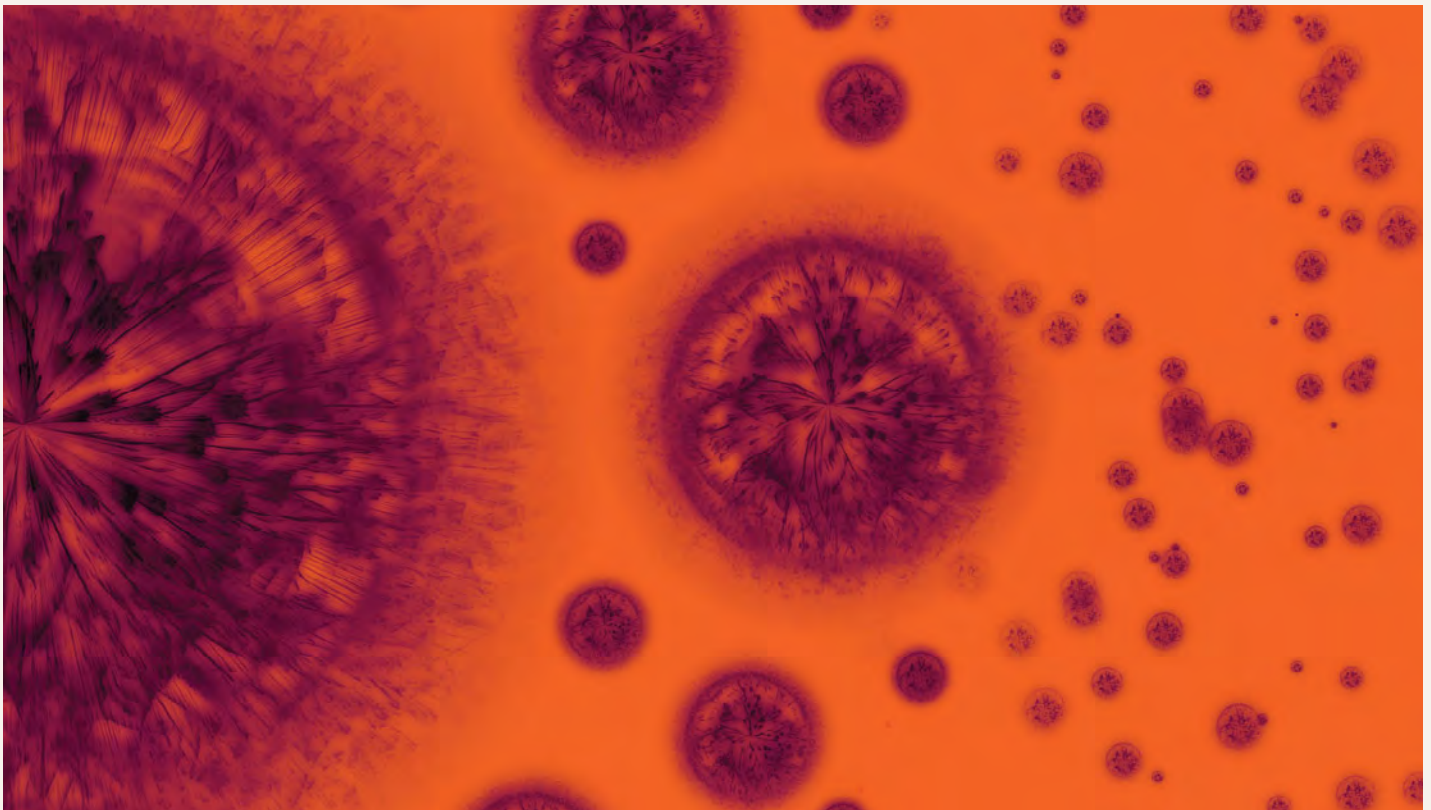
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# Introduction

One of, if not *the* most important factor that influences your overall health, is in fact, your gut, or more specifically, the **microbes** that live within your gut.



While your body includes about 22,000 human genes, it also hosts as many as 3.3 million microbial genes, 150 times more genes than our own genome.<sup>1</sup>

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[1] "Human gut microbiome: the second genome of human body." Aug. 2010, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4875195/>. Accessed 5 Dec. 2022.

These critters, in return for lodging in your body, pay their rent by working in harmony with your cells and tissues. In fact, your gut microbiome directly influences every major body system.

They help you to digest your meals, make essential nutrients that you are unable to produce on your own, influence the expression of your DNA, and protect you from disease.<sup>2</sup>

In fact, 70% of your entire immune system is located within your gut!<sup>3</sup>

These microbes also play a critical role in your appetite regulation, allergies, metabolism, and even neurological function and behavior.<sup>4,5</sup>

In short, they can have a huge impact on the way you feel.

These microbes are fungi, bacteria, and other single-celled organisms. Some of these microbes reside on the skin and internal surfaces of the body, but most take up residence in your digestive tract.

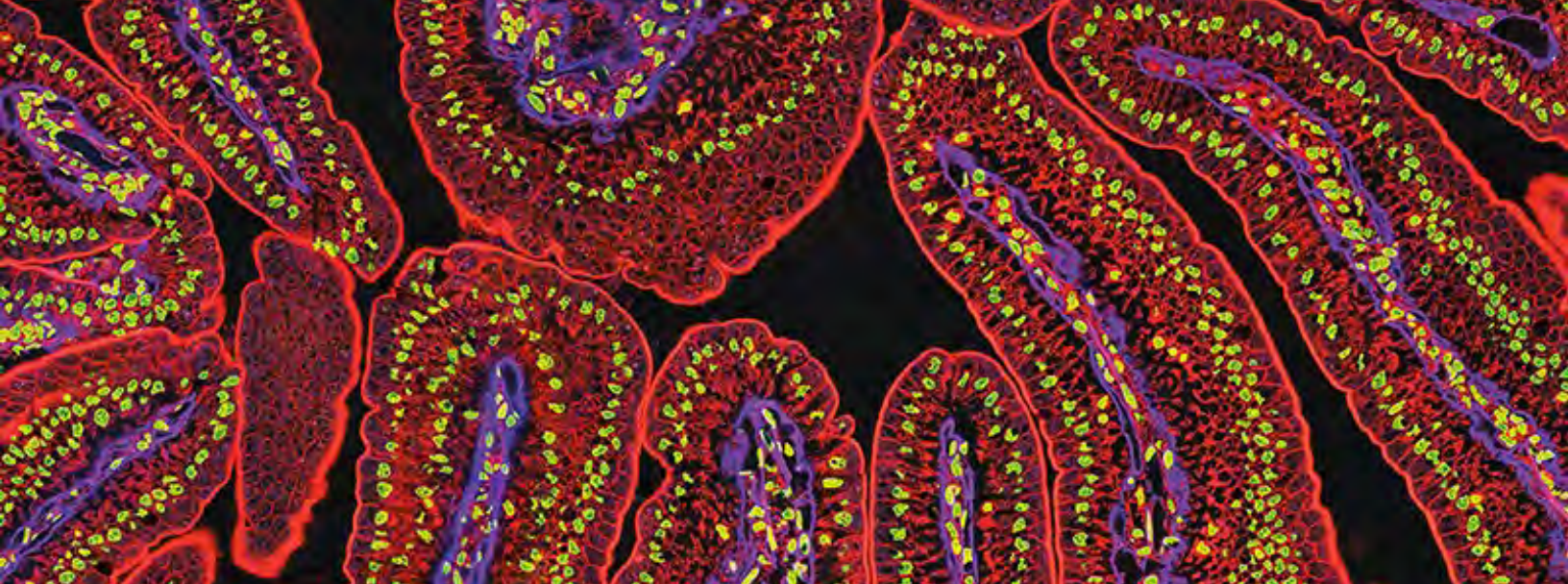
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[2] "Gut Microbiome: Profound Implications for Diet and Disease." Jul. 2019, <https://pubmed.ncbi.nlm.nih.gov/31315227/>. Accessed 5 Dec. 2022.

[3] "The Interplay between the Gut Microbiome and the Immune System in the Context of Infectious Diseases throughout Life and the Role of Nutrition in Optimizing Treatment Strategies." Mar. 2021, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8001875/>. Accessed 5 Dec. 2022.

[4] "gut microbiota-derived metabolites as key regulators - PubMed." 20 Jul. 2021, <https://pubmed.ncbi.nlm.nih.gov/34284827/>. Accessed 6 Dec. 2022.

[5] "The role of the microbiome for human health: from basic science to clinical applications." May 2018, <https://pubmed.ncbi.nlm.nih.gov/29748817/>. Accessed 5 Dec. 2022.



So as you can imagine, with all the functions they play, if these microbes are out of balance, it can lead to some serious problems and increase your risk of developing a host of chronic diseases such as diabetes, inflammatory bowel disease, and autoimmune disease, as well as neuropsychiatric illnesses like schizophrenia, ADHD, obsessive-compulsive disorder, and chronic fatigue syndrome.<sup>6,7,8,9</sup>

Gut problems are also super common.

In fact, in a large-scale multinational study published in 2020, researchers found that over 40% of people worldwide have functional gastrointestinal disorders.<sup>10</sup>

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[6] "Association Between Long-term Oral Contraceptive Use and Risk of ...." 23 Feb. 2016, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4928680/>. Accessed 6 Dec. 2022.

[7] "The microbiome in autoimmune diseases - PMC - NCBI." <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6300652/>. Accessed 6 Dec. 2022.

[8] "Does the microbiome and virome contribute to myalgic encephalomyelitis/chronic fatigue syndrome?" Mar. 2018, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5843715/>. Accessed 5 Dec. 2022.

[9] "The Microbiota/Microbiome and the Gut-Brain Axis: How Much Do ...." 28 Jul. 2021, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8401073/>. Accessed 6 Dec. 2022.

[10] "Worldwide Prevalence and Burden of Functional Gastrointestinal Disorders, Results of Rome Foundation Global Study." Jan. 2021, <https://pubmed.ncbi.nlm.nih.gov/32294476/>. Accessed 5 Dec. 2022.

The study found that 11.7% of people have functional constipation, 7.2% have functional dyspepsia, 4.7% have diarrhea, and 4.1% have IBS.

In the US, 20 million Americans suffer from chronic digestive diseases and digestive diseases necessitate 25% of all surgical operations.<sup>11</sup>

Gut symptoms such as diarrhea, constipation, abdominal pain, and bloating, are normal from time to time. But if these symptoms are a common occurrence in your life, they are warning signs of bigger problems, or at least problems that will become bigger down the track if they are not addressed.

These symptoms can be easy to brush off, but they should be taken seriously!

These gut symptoms are also inconvenient, uncomfortable, and can even be painful at times. They can severely affect your quality of life, from your performance at work to your social interactions.

The good news is that you can do something about it!

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[11] "Digestive Disease Continues to Rise Among Americans - GI Alliance." 23 Feb. 2021, <https://gialliance.com/gastroenterology-blog/digestive-disease-continues-to-rise-among-americans>. Accessed 6 Dec. 2022.

Addressing your gut problems can be a game-changer, and you will regret not having addressed them sooner!

The gut is super adaptive. Sometimes, it's just the small changes that you make that can yield big results. And because the gut is so interconnected with all your other organs, addressing your gut health has flow-on effects for your whole body.

Therefore, making small changes in your digestive health can improve your energy, skin, and mental health, not to mention save you from serious health problems down the road.

The question is, *where to start?*



# How to Tell if You Have a Healthy Microbiome?

The first step is assessing the health of your gut and to do this, you need to evaluate your risk factors, your digestive health, as well as your health history.



## Step 1: Evaluate your risk factors

Multiple factors can influence gut health. It's important to ask yourself the question: *Have you been exposed to any of these in the past or are being exposed currently?*

*Some of these risk factors include:*

# Antibiotics

While antibiotics have undoubtedly saved millions of lives, the overuse of antibiotics has led to many problems of its own. Antibiotics are not selective, therefore, they also reduce or remove resident bacteria that are important for gut health. Their overuse has also led to an abundance of antibacterial resistance genes.

The use of broad-spectrum antibiotics which target a wide range of bacteria reduces microbial diversity in the gut, reduces protective

and beneficial species such as *Bifidobacterium spp.*, and promotes the colonization of opportunistic pathogens such as *Clostridium difficile* that can cause antibiotic-associated diarrhea.<sup>12, 13, 14</sup>

Research has shown that some bacterial groups do not recover completely after an antibiotic course and, therefore, ***even a short course of antibiotics can have long-term effects on the gut microbiome.***<sup>15</sup>

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[12] "Determining the Long-term Effect of Antibiotic Administration on the ...." 28 Apr. 2015, [https://academic.oup.com/cid/article/60/suppl\\_2/S77/379378](https://academic.oup.com/cid/article/60/suppl_2/S77/379378). Accessed 15 Dec. 2022.

[13] "Intestinal microbiome is related to lifetime antibiotic use in Finnish ...." 26 Jan. 2016, <https://www.nature.com/articles/ncomms10410>. Accessed 15 Dec. 2022.

[14] "Role of the Intestinal Microbiota in Resistance to Colonization by *Clostridium difficile*." Feb, 2014, [https://www.gastrojournal.org/article/S0016-5085\(14\)00150-4/fulltext?referrer=https%3A%2F%2Finsight.microba.com%2F](https://www.gastrojournal.org/article/S0016-5085(14)00150-4/fulltext?referrer=https%3A%2F%2Finsight.microba.com%2F). Accessed 8 Dec. 2022.

[15] "Determining the Long-term Effect of Antibiotic Administration on the Human Normal Intestinal Microbiota Using Culture and Pyrosequencing Methods." May 2015, [https://academic.oup.com/cid/article/60/suppl\\_2/S77/379378](https://academic.oup.com/cid/article/60/suppl_2/S77/379378). Accessed 8 Dec. 2022.



# Processed Foods

Research has shown that highly processed foods such as sauces, chips, desserts, and drinks, as well as processed animal foods such as red meat and bacon, support unhealthy gut species associated with ***measures of blood sugar, cholesterol, and inflammation.***<sup>16</sup>

Not only do studies show that processed foods and animal-derived foods are consistently associated with a higher abundance of pathogenic bacteria including *Firmicutes*, but also with harmful bacteria that produce endotoxins that increase inflammation and damage the gut.<sup>17</sup>

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[16] “Association between ultra-processed food consumption and gut microbiota in senior subjects with overweight/obesity and metabolic syndrome.” Oct. 2022, <https://www.frontiersin.org/articles/10.3389/fnut.2022.976547/full>. Accessed 8 Dec. 2022.

[17] “Long-term dietary patterns are associated with pro-inflammatory and anti-inflammatory features of the gut microbiome.” (n.d.) <https://gut.bmj.com/content/70/7/1287>. Accessed 8 Dec. 2022.

# Conventionally-Grown Foods



The way your food is grown can also have an impact on your gut microbiome. For example, many studies have shown that exposure to multiple pesticides and herbicides can affect your gut microbiota.<sup>18</sup>



**Glyphosate**, which is one of the most widely used herbicides in the US, has been shown to cause significant decreases in healthy bacteria including *Bacteroides* and *Lactobacillus*. Tests indicate that exposure to glyphosates can induce depression and anxiety, thanks to the gut-brain axis.<sup>19</sup>

**Genetically-modified foods** can also have a negative effect on your gut microbiome as they have been shown to increase the use of pesticides.

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[18] “Toxicology and Microbiota: How Do Pesticides Influence Gut Microbiota?” May 2021, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8196593/#B17-ijerph-18-05510>. Accessed 8 Dec. 2022.

[19] “Glyphosate based- herbicide exposure affects gut microbiota, anxiety and depression-like behaviors in mice.” May 2018, <https://pubmed.ncbi.nlm.nih.gov/29635013/>. Accessed 8 Dec. 2022.

For example, in the US, between 1996 and 2011, GM crops led to a 183,000-ton increase in pesticides, which is equivalent to 7% of the overall pesticide use for all crops.<sup>20</sup>

# Birth Interventions

Research shows that routine birth interventions may not be beneficial for the baby long-term as labor procedures and the birth environment may have a significant impact on the formation of the baby's microbiome.

Routine interventions such as vaginal examinations, fetal heart rate monitoring, induction, and the use of pain medication can interfere with what takes place during labor and birth, which can increase the risk of C-section birth or infection.

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[20] "Impacts of genetically engineered crops on pesticide use in the U.S. -- the first sixteen years." Sep. 2012, <https://enveurope.springeropen.com/articles/10.1186/2190-4715-24-24>. Accessed 4 Aug. 2022.

For example, common procedures to induce labor, like *Pitocin*, may increase the risk of C-section births. Some medical interventions during labor, such as multiple vaginal examinations or internal fetal heart monitoring can increase the risk of infection and subsequent antibiotic use.

C-section delivery, as opposed to natural vaginal delivery, has a huge impact on the transfer of beneficial microbes from the mother to the baby.<sup>21</sup>

Research has shown that the beneficial *Bifidobacterium* and *Bacteroides* are often lacking in babies born via C-section, while harmful bacteria associated with the hospital environment such as *Enterobacteriaceae*, *Clostridium*, and *Staphylococcus* are common.<sup>22</sup>

Studies also show that babies born by C-section have an increased risk of health problems such as **asthma**, **type 1 diabetes**, **obesity**, and **gut-related conditions** thanks largely to its effect on the gut microbiome.<sup>23, 24, 25, 26</sup>

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[21] “The Effect of Delivery Mode on the Gut Microbiota and Health: State of Art.” Dec. 2021, <https://www.frontiersin.org/articles/10.3389/fmicb.2021.724449/full>. Accessed 8 Dec. 2022.

[22] “Stunted microbiota and opportunistic pathogen colonization in caesarean-section birth.” Oct. 2019, <https://pubmed.ncbi.nlm.nih.gov/31534227/>. Accessed 8 Dec. 2022.

[23] “Early infancy microbial and metabolic alterations affect risk of childhood asthma.” Sep. 2015, <https://www.science.org/doi/10.1126/scitranslmed.aab2271>. Accessed 8 Dec. 2022.

[24] “Perinatal risk factors for early onset of Type 1 diabetes in a 2000–2005 birth cohort.” Nov. 2009, <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1464-5491.2009.02878.x>. Accessed 8 Dec. 2022.

[25] “Association of caesarean delivery with child adiposity from age 6 weeks to 15 years.” Jul. 2013, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5007946/>. Accessed 8 Dec. 2022.

[26] “Cesarean delivery is associated with celiac disease but not inflammatory bowel disease in children.” Apr. 2011, <https://www.tandfonline.com/doi/pdf/10.4161/gmic.2.2.15414>. Accessed 8 Dec. 2022.

# Ongoing Stress

Your intestinal mucosa is assailed by a network of nerve fibers and neuron cell bodies that are influenced by signals from the brain.

*Therefore the brain can easily affect gut function.*

Studies have shown that your gut is especially vulnerable to the presence of chronic stress which can cause changes in the gut microbiome, gastric secretion, gut motility as well as the permeability of the intestinal wall.<sup>27</sup>



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[27] "Stress and the gut: pathophysiology, clinical consequences, diagnostic approach and treatment options." Dec. 2011, <https://pubmed.ncbi.nlm.nih.gov/22314561/>. Accessed 9 Dec. 2022.

# Unresolved Trauma

Another surprising factor that can affect your gut is trauma.

The composition of your gut microbiome can be indefinitely impacted by intense, traumatic experiences due to the phenomenon of the *gut-brain axis*.<sup>28</sup>

One study found that those who had a history of trauma in their early lives had distinctly different gut microbiomes from both those who had the same digestive issues but no early life trauma, as well as people with neither digestive issues nor trauma.

What's more, experiences that may not meet the standard definition of trauma can induce a traumatic pattern in the gut that has lasting effects on one's health.

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[28] "Stress-related changes in the gut microbiome after trauma." Jul. 2021, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8243873/>. Accessed 9 Dec. 2022.



# Sedentary Lifestyle

Physical exercise impacts your gut microbiome by increasing the presence of beneficial bacteria and improving microbial diversity.

In contrast, a sedentary lifestyle leads to a loss of microbial diversity in your gut and the incidence of chronic disease – which has been associated with a lack of diversity – and the resulting chronic low-grade inflammation.<sup>29</sup>

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[29] “A Critical Mutualism – Competition Interplay Underlies the Loss of Microbial Diversity in Sedentary Lifestyle.” Jan. 2020, <https://www.frontiersin.org/articles/10.3389/fmicb.2019.03142/full>. Accessed 9 Dec. 2022.

# Alcohol Consumption

Alcohol is another risk factor that is highly correlated with changes in the composition of your gut microbiota.<sup>30</sup>

Alcohol can inhibit or promote the proliferation of your gut bacteria either directly or indirectly by changing the intestinal microenvironment. It does not affect the abundance of your gut microbiota but alters the strains of bacteria present.<sup>31</sup>



Alcohol also decreases your innate immune response in the intestinal mucosa, making your gut environment more susceptible to pathogens.

Inflammation in the gut caused by alcohol does not only affect the gut, it also generates bodywide inflammation.<sup>32</sup>

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[30] “The Gastrointestinal Microbiome: Alcohol Effects on the Composition of Intestinal Microbiota.” 2015, <https://pubmed.ncbi.nlm.nih.gov/26695747/>. Accessed 9 Dec. 2022.

[31] “Gut microbiota dysbiosis: The potential mechanisms by which alcohol disrupts gut and brain functions.” Jul. 2022, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9372561/>. Accessed 9 Dec. 2022.

[32] “Reduced gut microbiome protects from alcohol-induced neuroinflammation and alters intestinal and brain inflammasome expression.” Oct. 2018, <https://jneuroinflammation.biomedcentral.com/articles/10.1186/s12974-018-1328-9>. Accessed 9 Dec. 2022.

# Birth Control Medication

Birth control medications all contain a small amount of synthetic estrogen and/or progestin hormones. These hormones work to inhibit your body's natural hormones to prevent pregnancy via various mechanisms.

In a 2017-2019 National Survey in the United States, it was found that 14% of women were using the oral contraceptive pill.<sup>33</sup>



[33] "Current Contraceptive Status Among Women Aged 15–49: United States, 2017–2019." Oct. 2020, <https://www.cdc.gov/nchs/products/databriefs/db388.htm>. Accessed 14 Dec. 2022.

While more research is warranted in this area, the current research shows that the hormones, specifically **estrogen**, contained in birth control medication can impact gut function.

Estrogen enhances cellular proliferation and the humoral immune system, alters the gut microbiome, disrupts the function of the intestinal barrier, and contributes to blood clotting which may lead to tissue death in the gastrointestinal system.<sup>34, 35, 36, 37</sup>

# History of Food Poisoning or Traveler's Diarrhea

Gastrointestinal (GI) infections are extremely common in the U.S., with 1 in 6 Americans reporting an episode of foodborne illness annually.

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[34] "Oestrogens in rheumatic diseases: friend or foe?" Jun. 2008,

<https://pubmed.ncbi.nlm.nih.gov/18504280/>. Accessed 14 Dec. 2022.

[35] "Combined hormonal contraceptives are associated with minor changes in composition and diversity in gut microbiota of healthy women." Jun. 2021,

<https://pubmed.ncbi.nlm.nih.gov/33876556/>. Accessed 14 Dec. 2022.

[36] "Impact of oral bisphenol A at reference doses on intestinal barrier function and sex differences after perinatal exposure in rats." Jan. 2010, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2806743/>. Accessed 14 Dec. 2022.

[37] "Environmental risk factors for inflammatory bowel disease." May 2010,

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2886488/>. Accessed 14 Dec. 2022.

The condition is most often caused by eating or drinking things that are contaminated with bacteria, viruses, or parasites (*i.e. food poisoning*). These germs settle in your intestine, causing inflammation and swelling. The primary pathogens that cause food poisoning include *E. coli*, *Salmonella*, and *Campylobacter*.<sup>38</sup>

Infections also commonly develop in Westerners who travel to developing countries (*traveler's diarrhea*).

Gastrointestinal infections can disrupt the gut microbiome and trigger persistent health problems that can last for years.

In fact, in one study, those with a history of bacterial infection reported symptoms up to 10 years after the food poisoning incident.<sup>39</sup>

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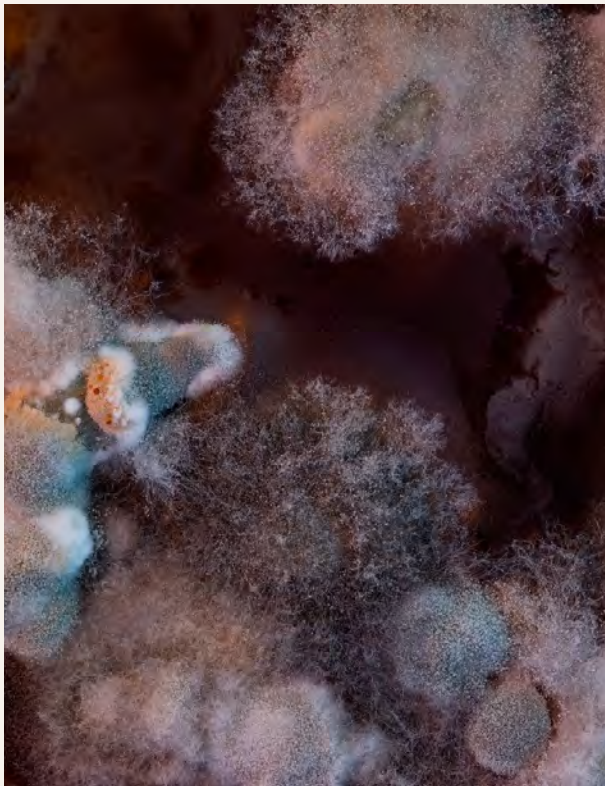
[38] “Postinfectious irritable bowel syndrome: follow-up of a patient cohort of confirmed cases of bacterial infection with *Salmonella* or *Campylobacter*.” Nov. 2011, <https://pubmed.ncbi.nlm.nih.gov/21883703/>. Accessed 14 Dec. 2022.

[39] “Postinfectious irritable bowel syndrome: follow-up of a patient cohort of confirmed cases of bacterial infection with *Salmonella* or *Campylobacter*.” Nov. 2011, <https://pubmed.ncbi.nlm.nih.gov/21883703/>. Accessed 14 Dec. 2022.

# Exposure to Mold

**Mycotoxins** produced by mold can impair your gut health in many different ways.

They increase levels of harmful gut bacteria and deplete beneficial microbes. This decreases the production of short-chain fatty acids and subsequently impairs gut immunity.<sup>40</sup>



Several mycotoxins including trichothecenes, fumonisins, and aflatoxins, increase intestinal permeability, causing leaky gut, and rendering the gut vulnerable to infection.

They also interfere with nutrient absorption, leading to further gut imbalances, as well as cause oxidative stress and inflammation and increase your susceptibility to bacterial, viral, and parasitic gut infections.<sup>41</sup>

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[40] "Mycotoxin: Its Impact on Gut Health and Microbiota." Feb. 2018,

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5834427/>. Accessed 14 Dec. 2022.

[41] "Aflatoxin B1 and aflatoxin M1 induced cytotoxicity and DNA damage in differentiated and undifferentiated Caco-2 cells." Sep. 2015, <https://pubmed.ncbi.nlm.nih.gov/26051350/>. Accessed 14 Dec. 2022.

# Inadequate Sleep

Just like every other aspect of your physiology,  
*your gut runs on a circadian rhythm.*<sup>42</sup>



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[42] “Circadian Rhythm and the Gut Microbiome.” 2016, <https://pubmed.ncbi.nlm.nih.gov/27793218/>. Accessed 9 Dec. 2022.

Even the organisms in the microbiome are circadian in nature. When you don't get enough rest, microbes in your gut produce more toxic LPS (*lipopolysaccharides*) and there is an unfavorable shift in your microbiome.

The combination of increased inflammatory compounds in the gut and the damage to the microbiome are both harmful to your gut lining.

# Dental Infections

Oral bacteria can directly contribute to dysbiosis, leaky gut, and systemic inflammation.

Studies have shown that oral bacteria can translocate to the gut and change its microbiota and possibly immune defense.<sup>43</sup>

Various chronic diseases including obesity and diabetes have been linked to oral childhood diseases.<sup>44</sup>

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[43] "Can oral bacteria affect the microbiome of the gut?" Mar. 2019, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6427756/>. Accessed 9 Dec. 2022.

[44] "Exploring the Interplay Between Oral Diseases, Microbiome, and Chronic Diseases Driven by Metabolic Dysfunction in Childhood." Sep. 2021, <https://www.frontiersin.org/articles/10.3389/fdmed.2021.718441/full>. Accessed 9 Dec. 2022.

Furthermore, oral infections commonly warrant antibiotic use, which further jeopardizes the diversity in your gut.



## Step 2: Evaluate your digestive health

Poor digestion can be so chronic and common that many people think it is normal. It is not!

*If you regularly experience any of these symptoms, it's time to take a closer look at your gut:*

- *Bloating after meals*
- *Bloating that gets worse throughout the day*
- *Heartburn*
- *Reactions to certain foods*
- *Burping*
- *Regurgitating food between meals*
- *Loose stools*
- *Hard, “rabbit poo” stools*
- *Abdominal pain or cramping*
- *Excessive flatulence*
- *Irregular bowel movements*
- *Having more than three bowel movements a day or less than three per week*
- *Constantly having to strain*
- *Nausea*
- *Yellow or red pigments in your stool*
- *Slow or fast bowel transit time*
- *Nutritional deficiencies*

## Step 3: Evaluate your health history

There was a reason that Hippocrates, a Greek physician who lived 2400 years ago, said that ***“all disease begins in the gut.”***

In the last few decades, science has discovered that the health of your gut microbiome does not only affect the function of your other organs but is also a central player in many diseases.

An imbalance in gut microbes can impact the gut barrier, the intestinal lining of cells that, when working properly, forms a tight fence that controls what gets absorbed into the bloodstream.

An unhealthy gut lining may become more permeable and have larger cracks or holes, popularly known as "leaky gut", allowing partially digested food, toxins, and harmful bacteria to penetrate the tissues beneath it and gain access to the bloodstream.

This triggers the immune system and promotes ongoing inflammation.<sup>45</sup>

This malfunction in the immune response triggers an inflammatory cascade, leading to many diseases such as asthma and food allergies to autoimmune conditions such as rheumatoid arthritis and multiple sclerosis.<sup>46</sup>

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[45] "The Role of Gut Microbiota in Intestinal Inflammation with Respect to ...."

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6722800/>. Accessed 9 Dec. 2022.

[46] "Dysbiosis and the immune system | Nature Reviews Immunology." 6 Mar. 2017,

<https://www.nature.com/articles/nri.2017.7>. Accessed 9 Dec. 2022.

These microbes also play a critical role in appetite regulation, metabolism, and in the production and regulation of neurotransmitters.<sup>47</sup>

Thus the gut microbiota may also factor into your risk of developing metabolic diseases such as obesity and diabetes, as well as neuropsychiatric illnesses such as schizophrenia, ADHD, obsessive-compulsive disorder, and chronic fatigue syndrome.<sup>48, 49</sup>

Therefore, evaluating bodywide symptoms can help you determine the health of your gut. ***If you have a history of experiencing any of these symptoms, there's a high chance your gut is contributing to your health problems:***

## Low Immunity:

- *Frequent Infections*
- *Food Sensitivities*
- *Seasonal Allergies*
- *Slow Wound Healing*
- *Fatigue*
- *Exhaustion*
- *Fever*
- *Achy Joints*
- *Mouth Ulcers*
- *Cold Sores*
- *Anemia*
- *Hair Loss*

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[47] “Microbial endocrinology in the microbiome-gut-brain axis: how bacterial production and utilization of neurochemicals influence behavior.” Nov. 2013,

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3828163/>. Accessed 9 Dec. 2022.

[48] “Gut Microbiota and Metabolic Disorders.” Jun. 2015,

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4483604/>. Accessed 9 Dec. 2022.

[49] “Influence of gut microbiota on neuropsychiatric disorders.” Aug. 2017,

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5558112/>. Accessed 9 Dec. 2022.

## Brain Problems:

- *Depression*
- *Anxiety*
- *Brain Fog*
- *Memory Loss*
- *Inability to Concentrate*
- *Dementia or Alzheimer's Disease*
- *Headaches*
- *Migraines*

## Autoimmune Conditions:

- *Hashimoto's Thyroiditis*
- *Rheumatoid Arthritis*
- *Celiac Disease*
- *Psoriatic Arthritis*
- *Psoriasis*
- *Vitiligo*
- *Grave's Disease*
- *Multiple Sclerosis*
- *Addison's Disease*
- *Systemic Lupus Erythematosus*

## Hormonal Problems:

- *PCOS*
- *Endometriosis*
- *Adenomyosis*
- *PMS*
- *Infertility*
- *Erectile Dysfunction*
- *Uterine Fibroids*

## Metabolic Problems:

- *Weight Gain*
- *Unexplained Weight Loss*
- *Insulin Resistance*
- *Diabetes*
- *High Cholesterol*
- *Fatty Liver Disease*
- *Cardiovascular Disease*
- *Thyroid Dysfunction*

## Skin Problems:

- *Acne*
- *Psoriasis*
- *Eczema*
- *Rosacea*

While these lists are by no means exhaustive, they can give you a good indication of various symptoms and conditions you may be feeling if your gut needs some addressing.

# Now What?

At about this time, you may be beginning to feel quite concerned about your health or the health of someone near and dear to your heart.

If this is you, you'll be glad to know that there is A LOT that you can do to restore the microbiome and get your health back on track before it is too late!

# #1. Diagnostic Testing

Often the best place to start is to test.

Test, don't guess!

As many conditions cause similar symptoms, it can be difficult to know the underlying drivers and this is where testing can be really helpful.

There are several different tests that can help you understand what your gut health is like. Stool tests and microbiome mapping tests can give you a pretty good picture of your microbiome makeup; food intolerance testing can help you identify any specific foods you are reacting to and breath tests can determine if a bacterial overgrowth is an issue.

Testing is best done through a health professional who can also interpret your results for you.

# #2. Prebiotics, Probiotics, and Herbs and Supplements for the Microbiome

There are a number of things you can do to promote diversity in your gut microbiome.

Supplementing with prebiotics and increasing your intake of foods rich in prebiotic fibers provides your gut bacteria with fuel to grow and proliferate.

Probiotic supplements can help replenish the diversity of bacteria in your gut and there are various herbs and supplements such as garlic, ginger, and oregano that can also help support your gut microbiome.

## #3. Natural Remedies for Leaky Gut

Leaky gut, technically known as intestinal hyperpermeability, is essentially where your intestinal lining is porous.

Along the intestinal tract, you have many microvilli, which are finger-like hairs that increase the area of absorption in your gut and help to absorb your nutrients and eliminate waste.

If they get damaged, it can lead to the intestinal barrier becoming “leaky” and your intestinal lining becoming porous.

A leaky gut means things like waste products and toxins, food proteins, bacteria, and other compounds are able to seep through the membranes and enter the bloodstream. Your immune system then mounts a response to what they see as foreign bodies in the bloodstream leading to inflammation, immune dysregulation, and subsequent diseases.

Healing a leaky gut is therefore one of the most important things you can do for your overall health.

There are a number of supplements that are important for repairing your intestinal barrier including *L-glutamine*, *vitamin D*, *vitamin A*, and *zinc*.

Several herbal supplements including *slippery elm*, *aloe vera*, and *medicinal mushrooms* can also assist in this process and modulate your immune system.

## #4. Simple and Sustainable Improvements to Your Diet

When it comes to gut health, it only makes sense that your diet can have a significant impact. ***The more plants you eat, and the less processed and refined foods and animal products you consume, the happier your gut will be.***

Plant foods are anti-inflammatory and contain fiber which is essential for feeding the good bacteria in your gut. Plant foods are also nutrient-dense, providing your body with the building blocks it needs to function optimally.



On the other hand, **fiber** is often removed when foods are processed and refined, and numerous chemicals are added to enhance their flavor or color and preserve their shelf life. These additives have been associated with numerous adverse health outcomes.

Animal products including dairy are also associated with increased inflammation, numerous chronic diseases, and a shorter life span.<sup>50</sup>

Fortunately, there are many great plant-based alternatives that are easily accessible and affordable. There are also many recipes on the internet so you can make your own.

## #5. Natural Remedies for Bloating, Constipation, Abdominal Pain, and Heartburn

Fortunately, nature has provided us with various herbal remedies which can help alleviate gut symptoms such as bloating, constipation, abdominal pain, and heartburn.

For example, **chamomile**, **ginger**, and **licorice** can help soothe abdominal pain and reduce bloating after meals.

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[50] “Association Between Plant and Animal Protein Intake and Overall and Cause-Specific Mortality.” Sep. 2020, <https://europepmc.org/article/med/32658243>. Accessed 13 Dec. 2022.

*Cascara*, *senna*, and *magnesium oxide* are remedies that can help alleviate constipation and prompt a bowel movement, and fennel and licorice are just two of the many herbs that are effective for heartburn and reflux.

## #6. Fermented Foods

The process of fermentation makes foods more nutritionally rich by creating probiotics and prebiotics and making vitamins and amino acids more bioavailable.

Fermentation thus enhances protein quality and increases the absorption of nutrients.

Fermented foods contain not only probiotics but also food components that increase the survival of these microorganisms.

Molecules formed during the fermentation process also have health benefits. For example, lactic acid bacteria generate many bioactive peptides that promote cardiovascular, immune, and metabolic health.<sup>51</sup>



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[51] "Bioactive Molecules Released in Food by Lactic Acid Bacteria: Encrypted Peptides and Biogenic Amines". 9 June 2016, <https://pubmed.ncbi.nlm.nih.gov/27375596/>. Accessed 13 Dec. 2022.

Fermentation can also activate certain compounds. For example, some bacteria convert flavonoids to other metabolites that have high bio-availability and biological activity, improving the nutritional value of the fermented food.<sup>52</sup>

Lastly, fermentation can reduce toxins and anti-nutrients. For example, the fermentation of soybeans can reduce the concentration of phytic acid, an anti-nutrient factor that can reduce the absorption of certain minerals.

## #7. Learning to Better Manage Stress

Chronic stress can have an immense impact on the proper functioning of the gastrointestinal system, as it alters the composition of the gut microbiome (*dysbiosis*), reduces gastrointestinal secretions, increases inflammation, and modifies the immune response in the gut.<sup>53</sup>

This increased permeability of the gut barrier as well as the stress-induced changes in the gut microbiome can also influence the immune response in a way that eventually triggers an attack of the body, causing the development of various autoimmune diseases.<sup>54</sup>

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[52] "Metabolism of phenolic compounds by *Lactobacillus* spp. during fermentation of cherry juice and broccoli puree". 30 Aug 2014, <https://pubmed.ncbi.nlm.nih.gov/25475296/>. Accessed 13 Dec. 2022.

[53] "Principles and clinical implications of the brain-gut-enteric microbiota axis." May 2009, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3817714/>. Accessed 13 Dec. 2022.

[54] "Psychological Stress, Intestinal Barrier Dysfunctions, and Autoimmune Disorders: An Overview." Aug. 2020, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7477358/>. Accessed 13 Dec. 2022.

Therefore, learning to manage your stress is key to maintaining a healthy gut.

There are many different things you can do to keep your stress levels at bay. Some ideas include meditation, journaling, exercise, taking a bath, talking with a friend or a health professional, deep breathing exercises, and yoga.

It's important to determine what works for you and make it a priority in your day.



## #8. Getting Great Sleep

Not getting enough quality sleep can also cause changes in the composition of your gut microbiome and affect your overall gut health.

Alterations in the gut microbiome increase the leakage of harmful molecules from the gut into the bloodstream, leading to an immune response and promoting body-wide inflammation.

Also, research has found that there are specific species of bacteria in our gut that have a “housekeeping” function within the microbiome and within the rest of your body as well.

It is during sleep, when your body is in its fasting state and no food or drink is coming into the system, that these microbes are triggered to clean out the gut and throughout the body and trigger processes such as mitophagy and autophagy.<sup>55</sup>

These microbes are critically important to maintaining a healthy gut ecosystem, maintaining a healthy gut lining, and repairing cells during sleep, all of which are essential in the prevention of disease.<sup>56</sup>

Therefore, getting enough sleep consistently is as important as adopting a healthy diet and exercising regularly.

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[55] “Circadian Rhythm and the Gut Microbiome.” 2016, <https://pubmed.ncbi.nlm.nih.gov/27793218/>. Accessed 12 Aug. 2022.

[56] “Circadian rhythms and the gut microbiota: from the metabolic syndrome to cancer.” Oct. 2020, <https://www.nature.com/articles/s41574-020-00427-4>. Accessed 14 Aug. 2022.

## #9. Holistic Dental Care

The oral microbiome and the gut microbiome are inextricably linked. In fact, you can't have a healthy gut without a healthy mouth. Disruption of the oral microbiome leads to an imbalanced gut microbiome and causes both oral and systemic diseases.<sup>57</sup>

The mouth houses the second most diverse microbial community in the body, harboring over 700 species of bacteria.<sup>58</sup>

It is one of the leading sources of chronic inflammation and toxicity in the whole body. If you have gum disease, you have a 10 times greater chance of a heart attack, a 700% higher incidence of having pregnancy complications, and everything – from Alzheimer's to colorectal cancer – has a link to what's going on in the mouth.<sup>59</sup>

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[57] “Oral microbiome: Unveiling the fundamentals.” Jan-Apr. 2019, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6503789/#:~:text=Oral%20microbiome%20is%20crucial%20to,to%20manifest%20and%20cause%20disease>. Accessed 14 Dec. 2022.

[58] “The oral microbiome – an update for oral healthcare professionals.” Nov. 2016, <https://www.nature.com/articles/sj.bdj.2016.865#citeas>. Accessed 14 Dec. 2022.

[59] “The Mouth-Body Connection: The 28-Day Program to Create a Healthy Mouth, Reduce Inflammation and Prevent Disease Throughout the Body.” by Dr. Gerry Curatola & Diane Reverand, Center Street: 2017.

Therefore, looking after your oral microbiota is imperative. Your diet should be alkalizing, anti-inflammatory, and antioxidant-rich.

There are a number of nutrients and supplements that can also nourish and support the indigenous flora including *prebiotics*, *xanthan gum*, *vitamin C*, *vitamin D*, *coenzyme Q10*, *vitamin E*, and *folic acid*.

Finally, avoid using chemical toothpaste and antiseptics (*even natural ones!*) which can reduce the diversity of flora in your oral microbiome.



# Action Plan

The truth is, even if you don't have gut problems, making these adjustments would trigger profound transformations in your life!

And if you are among the many people who are suffering from gut problems ranging from mild digestive discomfort all the way to serious medical conditions, you now have the roadmap you need to get your health back on track.

Either way, you won't want to miss the ***MICROBIOME*** masterclass world premiere.

Tune in as today's leading doctors, researchers, and educators guide you through this critical information, one step at a time.

Not only will you discover ***how to tell if your gut is compromised***, you'll also learn exactly what you must do now to protect your health.

Plus, you'll ***walk away with proven and practical natural remedies you can start using at home right away.***

***Be part of MICROBIOME*** so you can know how to improve your health, reduce your risk of disease, and upgrade your quality of life... and the lives of those you love.