

Gut Inflammation and Leaky Gut: What Most People Get Wrong and How to Fix It

Understanding LPS (lipopolysaccharides), gut bacteria, and the environment that drives inflammation

By Robert Ferguson

Robert's Note

We live in a world where gut health and inflammation are talked about more than ever, yet many people are still confused about what it all really means.

I wrote this article to give you a clear understanding of the fundamentals of gut health and gut inflammation, including what is actually happening inside your body and what you can do about it.

My goal is to help you move beyond the noise and focus on what truly matters.

If you have questions, feel free to email me at robert@dietfreelife.com.

Good luck, and please share this with someone who would benefit from understanding it.

It Starts with a Feeling

Julie told me she felt inflamed.

When I asked her how she knew, she said,
"I can feel it."

She is not alone.

Many people believe they are inflamed. Others believe they have poor gut health. They feel tired. Their joints ache. Their stomach feels off. Their energy is low.

Something does not feel right.

But feeling inflamed and understanding what is causing it are not the same thing.

To understand what is really going on, we have to start in a place most people overlook.

We have to start in the gut.

The Gut Is Full of Bacteria

Your gut is home to trillions of bacteria. This is called your microbiome. These bacteria help with digestion, immune health, and how your body uses nutrients [1].

Bacteria are not the enemy.

You need them to live.

But once you understand that bacteria are not the problem, the next question becomes:

What actually causes problems?

The answer starts with understanding how these bacteria are different.

Gram-Positive vs Gram-Negative Bacteria

With trillions of bacteria living in your gut, it is easy to hear people describe them as “good” or “bad.”

But that is not the most helpful way to understand them.

A better way to look at these bacteria is by how they are built.

They are commonly grouped into two categories:

- Gram-positive bacteria
- Gram-negative bacteria

This matters because it helps explain how certain bacteria can influence inflammation.

Gram-positive bacteria do not contain lipopolysaccharides (LPS). Lipopolysaccharides are natural components found on the outer layer of certain bacteria and can play a role in how the body responds, especially when it comes to inflammation.

Examples include Lactobacillus and Bifidobacterium.

Gram-negative bacteria do contain lipopolysaccharides (LPS).

Examples include E. coli, H. pylori, and Bacteroides. Some of these bacteria can live in the gut without causing problems, but certain types or high amounts can lead to issues.

LPS are not something you eat. They are part of certain bacteria that already live in your gut.

Not All Perceived “Bad” Bacteria Is Bad

For example, as mentioned earlier, E. coli is often labeled as harmful, but that is not always the full story.

Many forms of E. coli naturally live in the gut and do not cause problems [2].

The issue is not just bacteria.

It is the environment they live in.

What Are Lipopolysaccharides (LPS)?

Now that you understand what lipopolysaccharides (LPS) are and where they are found, we can take a closer look.

Lipopolysaccharides (LPS) are found on the outer layer of Gram-negative bacteria [3].

Under normal conditions, they stay inside your gut.

What Is Leaky Gut?

Leaky gut means your gut lining becomes weak.

The medical term is increased intestinal permeability [4].

How the Gut Lining Becomes “Leaky”

Your gut lining is made up of cells that are held tightly together by structures called tight junctions.

These act like gates.

When they are strong, they keep harmful substances out.

When they weaken, small gaps can form.

This allows substances such as LPS to enter the bloodstream.

What Damages the Gut Lining?

The gut lining can weaken over time due to:

- Diets high in sugar and ultra-processed foods
- Frequent alcohol intake
- Chronic stress
- Poor sleep
- Certain medications, such as NSAIDs and antibiotics
- Ongoing inflammation

When these are present, the gut becomes more vulnerable [4].

How LPS Leads to Inflammation

When LPS enters the bloodstream, your body reacts.

This is called metabolic endotoxemia [3].

LPS do not just affect the gut.

They can influence inflammation throughout the body, including the brain, heart, and metabolic system.

Signs Your Gut Environment May Be Off

Some common signs include:

- Bloating or gas
- Fatigue
- Brain fog
- Skin issues
- Joint discomfort
- Irregular digestion

These are signals, not diagnoses.

What Role Does Diet Play?

Food does not create LPS.

But food shapes your gut environment.

Diets low in fiber and high in sugar, ultra-processed foods, and high-fat foods without fiber can lead to an imbalance in your gut [5].

Meals that are high in fat and sugar and low in fiber can increase the likelihood of LPS entering the bloodstream. This is not because food creates LPS, but because it changes the gut environment.

Coffee with Butter and Gut Health

Coffee with butter is a high-fat, low-fiber intake.

It may set the tone for an unfavorable gut environment.

Foods That Shift Your Internal Environment

- Meals high in fat and low in fiber
- Meals high in sugar and low in fiber
- Meals high in both fat and sugar
- Ultra-processed foods

These influence how your body responds to LPS.

What About Polyphenols?

Polyphenols are natural compounds found in plant foods.

They improve the gut environment and reduce inflammation [6].

What About Omega-3 Fatty Acids?

Omega-3 fatty acids help improve the gut environment and support balance.

They reduce inflammation and support the internal environment [7].

What About Gut Health Testing?

Stool tests show what is leaving the body.

Blood-based tests show what is happening inside.

Markers such as kynurenine (KYN) and indole-3-propionic acid (IPA) provide insight into internal conditions.

Kynurenine (KYN) reflects the body's response to stress and inflammation [8].

Indole-3-propionic acid (IPA) is an antioxidant produced by gut bacteria that helps protect cells [9].

The “Good vs Bad” Bacteria Problem

The real question is:

What kind of environment is allowing bacteria to thrive?

What About SIBO?

Small intestinal bacterial overgrowth (SIBO) is a real-world example of imbalance.

It occurs when bacteria grow in the wrong place, the small intestine [10].

SIBO is often described as a bacterial problem.

But it is really an environmental problem.

Improve Your Internal Environment

- Eat enough dietary fiber
- Include polyphenol-rich foods
- Balance omega-6 to omega-3 fatty acids
- Support gut movement, meaning how food and bacteria move through your digestive system. When this slows down, bacteria can build up and shift into the wrong places [10]
- Prioritize sleep and manage stress
- Stay hydrated
- Limit ultra-processed foods

The Real Issue

The issue is not bacteria.

It is the environment.

What Should You Do Next?

You may not feel your gut lining weakening, but you will feel the effects of the environment it creates.

Focus on improving your internal environment.

This is why BalanceOil+ is my go-to for improving omega-3 levels and balance.

When you're ready for your BalanceTest and BalanceOil+, contact the person who shared this article, message me, or email me at robert@dietfreelife.com.

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