

# THE HEALTH BENEFITS OF BUTYRATE: MEET THE ANTI-INFLAMMATORY FAT



Butyrate is a type of fatty acid that helps your gut work right, and it might be important for gut-related diseases from autoimmunity to obesity to colon cancer. Here's what it does, and how to make sure you're getting enough of it.

## What Is Butyrate?

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You can get butyrate from food or supplements, but your gut flora can also make it out of fiber. Healthy gut flora digest food by fermenting it. When they ferment certain types of fiber, they create butyrate.

Your digestive system needs butyrate to function properly. Butyrate helps control the growth of the cells lining the gut, to make sure there's good balance between old cells dying and new cells being formed. It's also the most important source of energy for those cells.

Powering the lining of the gut would be important enough, but butyrate also has powerful **anti-inflammatory effects** that go beyond the gut. Ultimately, the anti-inflammatory benefits are helpful for...

### *Cancer Protection*

Butyrate is most famous for protecting against colon cancer. The protection comes from its anti-inflammatory effects, which reduce oxidative stress and help control free radical damage. This review connected colon cancer risk to a lower amount of bacteria that produce butyrate.

## ***Immunity and Autoimmunity***

This review goes over the effects of butyrate on the immune system. The overall anti-inflammatory effects are already an immune benefit – inflammation is an immune response, and controlling inflammation helps keep the immune response properly regular. Butyrate may also have some other immune benefits. For example, it helps regulate the production and development of regulatory T-cells in the colon.

Regulatory T-cells help your body distinguish between itself and everything else. If that ability breaks down, your immune system might end up mounting a full-blown attack on your own pancreas (Type 1 Diabetes) or your own thyroid. It's a pretty important job, and butyrate helps the T-cells stay on track.

In rats, butyrate also helps maintain healthy gut barrier function and reduce abnormal intestinal permeability ("leaky gut"). Gut barrier function is huge for immune health and avoiding autoimmunity. We also have some evidence that the butyrate-autoimmunity connection exists in people. For example, people with autoimmune (Type 1) Diabetes have a lack of butyrate-producing bacteria in their gut.

## ***Therapy for Inflammatory Gut Diseases***

Butyrate problems are also tied up with inflammatory gut diseases (like Inflammatory Bowel Disease, including Crohn's Disease and Ulcerative Colitis). For example, people with IBD have a reduced ability to metabolize butyrate. That might contribute to their inflammatory symptoms.

But there's also good news! A recent study found that oral butyrate supplements (4 grams per day for 8 weeks) improved symptoms of Crohn's Disease in 9 out of 13 patients: 2 significantly improved, and 7 actually went into remission. The researchers' explanation was the anti-inflammatory effect of the butyrate.

## ***Weight Loss***

Speaking of autoimmune, inflammatory conditions, you know what else is on the list? Obesity (yes, obesity has an autoimmune component).

This review goes over the role of short-chain fatty acids, including butyrate, on weight and obesity. There are actually some conflicting data on this. Some studies show that

obese humans have increased amounts of butyrate in their feces. But other studies suggest that people with obesity have a lower ability to ferment carbohydrates into butyrate. Normal-weight people have more butyrate-producing bacteria in their gut than obese people. If you take the gut flora from a normal person and transplant them into the colon of someone with metabolic syndrome, the recipient's insulin sensitivity improves along with their ability to ferment carbohydrates into butyrate.

There are also some other ways that butyrate might affect body weight. There's some evidence that it suppresses appetite by affecting the levels of hormones in the gut. In mice, it also influences metabolism and energy expenditure, and pushes the body towards burning more fat for energy.

It's not totally clear what exactly all the relationships are – there's probably a whole tangle of adaptations and counter-adaptations and overcompensation going on. But the takeaway seems to be that **butyrate is one more reason why you need a healthy gut for sustainable weight loss.**

## Butyrate and Your Diet

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So this butyrate stuff is pretty important. The logical question to ask next is: what foods can you eat to get it? And the answer is...butter. And to a much lesser extent, other foods that contain some dairy fat. The fattier the food, the more butyrate it will have, so whole milk has more than skim milk, and heavy cream has more than either.

That's great for people who can tolerate dairy products. It might be one of the reasons why full-fat dairy is actually associated with lower BMI, not higher. But what about people who don't even tolerate butter or ghee? What about people on the autoimmune protocol? What about people with dairy allergies?

If that's you, don't panic: your gut flora are about to come to the rescue.

You can DIY butyrate, or at least your gut flora can, provided you eat enough **fiber**. Eating fiber increases production of butyrate, which might be one of the reasons why fiber intake is so strongly associated with reductions in inflammation and improvements in gut health. It's not the fiber *per se*; it's the butyrate that your gut flora make with it.



That doesn't necessarily mean to run out and start chugging Metamucil. Almost all fruits and vegetables are high in fiber. A particularly powerful type of fiber is resistant starch, but if you're not huge on cold potatoes or raw bananas, just about any whole plant food will do the trick.

Of course, that's all assuming that your gut is healthy enough to make butyrate out of all that fiber, and that the fiber doesn't set off gut symptoms of its own. Most people will probably feel better ramping it up a little at a time. And if even a little is too much, there are always **supplements**. Butyrate supplements are available over-the-counter; that might be a good choice for people with inflammatory gut diseases that prevent them from eating

a huge amount of fiber in the first place.

## Summing it Up

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Butyrate is really just one more entry on the long, long list of things your gut flora do for you. It's got some powerful anti-inflammatory effects that translate into protection against colon cancer, gut disorders like IBD, and autoimmune disease, and possibly also obesity.

To get butyrate from foods, you can either eat butter, or eat a lot of vegetables for the fiber, or double up for the most delicious route: a big pile of vegetables slathered in plenty of butter. If anyone gives you grief, tell them your regulatory T-cells will thank you.

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