

How to Reverse Insulin Resistance: The Secret is Sensitive Cells

The relationship between your cells and your hormones determines, to a large extent, how healthy you are.

For example, when our cells are resistant to the effects of insulin (one of the main anabolic and energy-storage hormones in the body), we have a higher chance of developing metabolic diseases such as type 2 [diabetes](#), obesity, and heart disease.

In contrast, insulin sensitive cells are able to efficiently and effectively respond to insulin in a way that allows us to carry out many of the vital mechanisms needed to maintain health and prevent disease.

Altogether, this biological phenomenon is known as insulin sensitivity, and it plays a significant role in fat loss, hormone balance, metabolic function, and disease prevention. When the majority of our cells aren't insulin sensitive, this can lead to a condition called insulin resistance, which significantly increases the risk of heart disease and type 2 diabetes.

Fortunately, you won't be stuck at a specific level of insulin resistance for the rest of your life. In fact, there are several strategies you can use to increase your receptivity to insulin and reverse insulin resistance – but before we implement them, let's take a closer look at insulin and insulin resistance.

Related: [*Holistic Guide to Healing the Endocrine System and Balancing Our Hormones*](#)

What is Insulin? The Lifesaving Effects of a Highly Misunderstood Hormone

Insulin is a protein-based hormone secreted by the [pancreas](#) in response to increases in [blood sugar](#) and certain amino acids. Insulin's primary role is to regulate the nutrients you absorb from food, primarily carbohydrates.

When you eat and digest carbs, it increases how much sugar is in your bloodstream. This is detected by the cells in your pancreas which will then secrete insulin into the blood. Once the insulin is traveling in your bloodstream, it will start binding to your cells and stimulate them to take in and utilize the sugar.

The purpose of this action is to reduce the amount of sugar in your blood and trigger the cells to use it and/or store it. This is essential for our health because abnormally high amounts of sugar in the blood can cause harm throughout the body. In some cases, having high blood sugar levels can even cause major health issues and become fatal if not managed properly.

With that being said, everything about insulin isn't "good." In fact, this (not so) superhero hormone hinders the one key metabolic process that allows us to lose fat: Fat burning.

Insulin, Carbs, Weight Gain, and Fat Loss: What is the Real Cause of the Obesity Epidemic?

With the increasing popularity of low-carb diets and the belief that carbs make you fat, insulin and carbs have been demonized as the reason why we gain fat. Although there is

some truth to this (because insulin tends to stimulate sugar use and shut down fat burning), the hypotheses that arose from this understanding are not supported by the evidence.

For example, one of the most popular explanations for the growing obesity epidemic in westernized countries is that our carb-heavy diets keep our insulin levels so high that it prevents us from burning stored fat. This is known as the “Carbohydrate-Insulin Hypothesis,” and it’s touted as the main reason for why low carb diets, like the ketogenic diet or the Atkin’s diet, are so effective at boosting fat loss.

Makes sense, right? Just cut the carbs to decrease insulin levels, and you will trigger fat burning and lose fat. This hypothesis is accurate in some aspects, but it neglects the bigger picture.

Related: [How To Heal Your Gut](#)

If we consider the totality of the biochemistry and physiology of digestion and energy metabolism – without exaggerating insulin’s effects on fat cells – insulin is simply one piece of information that feeds into what the body decides to do.

Put in another way: insulin provides our cells with info regarding glucose availability and energy status, and our cells will integrate that information with all the other information they have about their own energy status, needs, and abilities to come up with the appropriate actions.

The ultimate result is that cells burn energy when they need fuel and stop burning energy when they don’t – insulin is just one of the hormones involved in the decision-making process of the cells. This means that your energy intake (i.e., calorie consumption) is the ultimate determining factor of whether you gain or lose weight. Insulin is but one of the multitude of factors that determines what you do with the calories you consume.

The Relationship between Insulin, Insulin Resistance, and Insulin Sensitivity

With this deeper understanding of the relationship between insulin and our cells, a much more accurate model of insulin resistance arises as well. Although carbs are the main reason why insulin is released, what is going in the cell is the ultimate determinant of how it will respond to that insulin.

Thus, the key to reversing insulin resistance as a whole is increasing the insulin sensitivity of each individual cell. Sounds simple enough, but how can accomplish such a solely cellular feat? To answer this question, we must develop a better sense of insulin sensitivity.

What is Insulin Sensitivity Exactly?

Insulin sensitivity is the term that we use to describe how the cells in our body respond to insulin. The more insulin sensitive your cells are, the more responsive they will be to insulin, and vice versa.

To measure this phenomenon objectively, we need to figure out how much insulin your body needs to produce to deposit a certain amount of glucose (sugar). You are considered insulin sensitive if your body only needs to secrete a small amount of insulin to deposit glucose into the cells, and you are considered insulin resistant when you need a higher than normal dose of insulin for the cells to respond.

Insulin sensitivity has turned into a widespread phenomenon in the weight loss industry because of the strong correlation between insulin sensitivity and body fat percentage. The research literature suggests that increasing your insulin

sensitivity (which also means decreasing your insulin resistance) will reduce your risk of heart disease, type 2 diabetes, obesity, and Alzheimer's disease. In other words, if you want to lose fat and improve your overall health, it is probably best to optimize your insulin sensitivity.

Related: [*Sugar Leads to Depression – World's First Trial Proves Gut and Brain are Linked \(Protocol Included\)*](#)

What Determines How Insulin Resistant You Are?

Both modifiable and non-modifiable factors determine the degree to which you are insulin sensitive or insulin resistant.

Non-modifiable factors are factors that cannot be changed. Some examples of **non-modifiable factors** that decrease insulin sensitivity are:

- **Increasing age.** Research has found increasing age to be associated with increased insulin resistance. However, it is possible to prevent this decline in insulin sensitivity with the lifestyle changes we will talk about later.
- **Genetics.** Your genes can determine how sensitive certain cells are to insulin. For one example of what I mean by this, check out our article on [*polycystic ovary syndrome*](#) – a condition that is intimately linked with cells that were left vulnerable to insulin resistance by specific genes.
- **A family history of type 2 diabetes.** The combination of genetic and environmental factors that come with your family history can leave you with a higher risk of developing insulin resistance.
- **Ethnic background.** If you are of African-American, Asian-American, Latino/Hispanic-American, Native

American, or Pacific Islander descent, you have a greater likelihood of developing insulin resistance.

In contrast, **the modifiable factors** (i.e., what you can actually do to increase your insulin sensitivity) are

- losing weight
- reducing stress levels
- maintaining a calorie deficit
- decreasing caffeine consumption
- eating less processed foods and sugar
- exercising
- getting adequate sleep
- taking specific supplements and/or drugs that decrease insulin resistance
- fasting/intermittent fasting
- and many more that we will take a closer look at later in this article

By neglecting to use these modifiable risk factors to your advantage, you will steadily reduce your insulin sensitivity and set the stage for insulin resistance and the conditions that come with it.

The Big Picture – Insulin Sensitivity and Insulin Resistance

The physiology of insulin resistance is so complex that we aren't even close to explaining it all. However, it is possible to distill our learnings into one simple concept that will help you understand what causes insulin resistance and increases insulin sensitivity for most people:

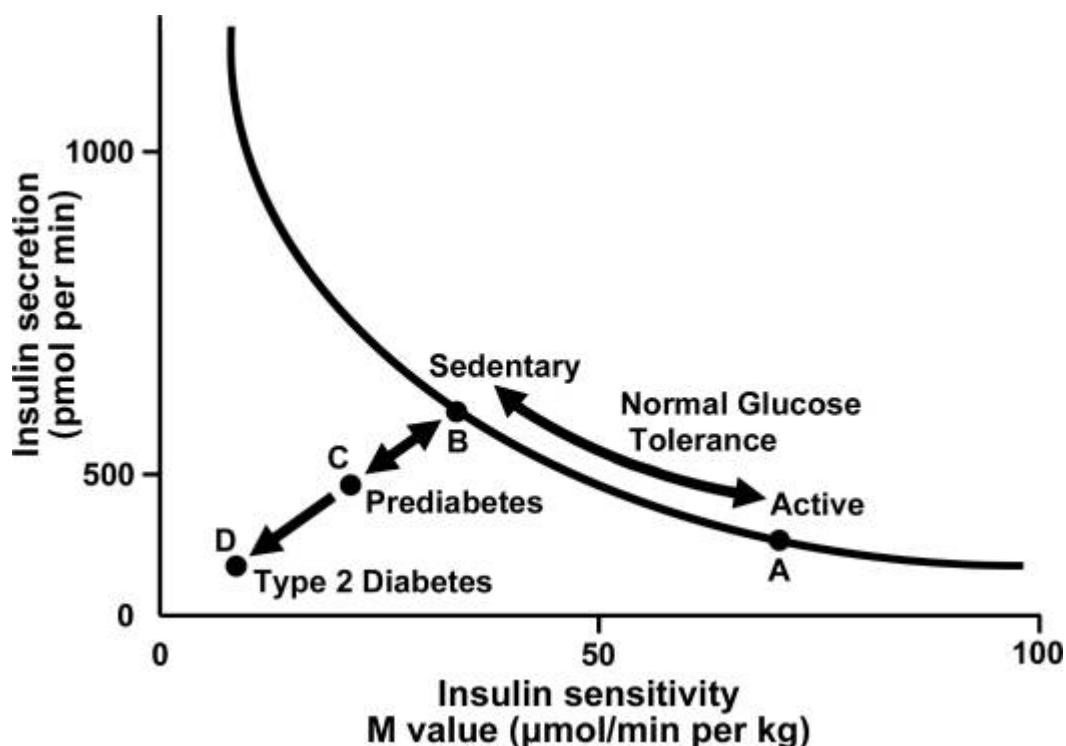
- Increased energy status will cause your cells to become more insulin resistant and less insulin sensitive over time.
- Decreased energy status will cause your cells to become less insulin resistant and more insulin sensitive over

time.

By energy status, I mean the current state of your cells. Are they being bathed in energy molecules without any demand to use it up? This is “high energy status”, and it occurs when we are inactive and overeat.

In contrast, if your cells are in need of more energy to keep up with your body’s demands, then this indicates that you are in “low energy status.” As a result, your cells will increase their sensitivity to insulin so that they don’t miss out on the opportunity to get more fuel.

To further illustrate the big picture of insulin resistance, here is a graph from an article published in [Comprehensive Physiology](#):



This graph depicts the relationships between insulin secretion and insulin sensitivity. Insulin secretion rises as insulin sensitivity falls when an individual goes from a state of exercise training/being physically active (point A) to inactivity/sedentary (point B).

Conversely, insulin secretion decreases as insulin sensitivity

increases when a person goes from inactivity/sedentary (point B) to physically active (point A). This is what commonly occurs in healthy individuals.

However, when insulin secretion fails to compensate for a fall in insulin sensitivity, the person will progress to prediabetes (Point C). If no changes are made at this point, the disease will progress from point C to Point D (type 2 diabetes). The only way to prevent this from happening is by improving your insulin sensitivity.

Ten Ways to Reduce Insulin Resistance and Increase Insulin Sensitivity

Luckily, insulin resistance isn't a fixed mechanism in the body (even if you have all of the non-modifiable factors). It can be drastically improved (and potentially reversed) with simple lifestyle modifications.

Here are ten proven strategies you can use to help you optimize your insulin sensitivity:

1. Follow a Whole Food, Plant-Based Diet.

Simple sugar stimulates the most insulin release of all the macronutrients so, theoretically, removing carb-rich processed foods from your diet should decrease insulin levels and improve insulin sensitivity to some degree. This speculation is backed up by the research on how low carb diets affect patients with type 2 diabetes.

Also worth noting is the fact that whole foods are much more satiating and contain more fiber than processed foods. By increasing the satiety of our diet, we tend to eat fewer calories (decreasing the energy status of our cells), and the extra fiber helps slow carbohydrate and protein absorption,

decreasing our insulin requirements and reducing insulin resistance.

2. Lose Fat.

Studies have shown that having high amounts of fat, especially around your midsection, can produce harmful chemicals and hormones responsible for increasing insulin resistance and inflammation.

Simply by losing excess fat, insulin sensitivity and metabolic function will improve significantly. More specifically, one study found that a weight loss of 5 percent is all obese patients need to experience some of the positive effects of fat loss on insulin sensitivity.

One of the most effective ways to lose fat is by replacing all the processed foods with high-quality whole foods.

3. Add Fasting and/or Intermittent Fasting to Your Lifestyle.

We learned earlier that low energy status increases insulin sensitivity. Although following a healthy diet is one of the best ways to achieve a lower energy status, sprinkling in some fasting and/or intermittent fasting throughout your diet plan can help as well.

A pilot study found that intermittent fasting for 2 weeks (with a 18-20 hour fasting window) helped to improve blood sugar levels with a trend toward improved insulin sensitivity in type 2 diabetics.

The research on dietary interventions for type 2 diabetes also suggests that calorie restriction is one of the major factors that can help manage and potentially reverse the disease. One way to achieve this, which was confirmed by the pilot study on intermittent fasting, is by restricting your feeding window,

so you eat fewer calories throughout the day.

By eating fewer calories, you decrease your energy status, which improves overall insulin sensitivity.

However, there is one caveat to fasting and intermittent fasting for people who have diabetes. Since both forms of fasting can cause significant changes in blood sugar levels, it is best to consult your doctor before adding them to your treatment plan.

4. Add Aerobic and Anaerobic Exercise to Your Weekly Schedule.

Want to improve your insulin sensitivity as rapidly as possible? Start working out, right now.

Exercise draws upon our energy stores so much that many of the cells throughout our body have to make themselves sensitive to insulin to ensure that they will get the energy they need.

Fortunately, both aerobic and anaerobic exercise will reduce your insulin resistance in a variety of ways, so the type of exercise you do is entirely up to you.

Aerobic exercise involves any form of physical activity that requires you to exercise for a prolonged period of time without rest breaks. This includes jogging, swimming, or anything where you're moving your body at a steady state for 30 minutes or longer.

Anaerobic exercise, such as lifting weights, sprinting, and intense rowing/cycling, can also drastically improve your insulin sensitivity.

In general, it is best to aim for five hours of exercise per week. Research suggests that this is the sweet spot for significantly improving your insulin sensitivity.

To get the best results, I recommend doing a combination of

aerobic and anaerobic exercise throughout the week. Anaerobic exercise will help you build more muscle and burn through glycogen stores, which keeps your insulin sensitivity high, while aerobic exercise will ensure that your cells never have a chance to increase their insulin resistance to unhealthy levels.

5. Reduce Your Stress Levels.

Stress, physical or emotional, causes us to secrete cortisol.

When cortisol is circulating through the blood, it stimulates various mechanisms in your body that increase your blood sugar levels, providing you with the energy you need to handle the stressful situation. One way that cortisol does this is by increasing insulin resistance.

Once the body has taken care of the stress-inducing situation, cortisol will be broken down as insulin sensitivity is restored. This response to stress is healthy and normal – in the short term.

However, most people in modern society are typically stressed for the majority of the day. With every stressor comes more cortisol, decreased insulin sensitivity, and more stress. The only way to stop this cycle is by giving your body a chance to relax and recover from your daily stressors.

Here are some helpful strategies you can use reduce your stress levels and decrease insulin resistance:

- Meditate
- Take a short nap
- Do yoga, tai chi, and/or qi gong
- Quit smoking
- Exercise regularly
- Maintain a good sleep schedule
- Use adaptogenic herbs like Rhodiola and Ashwagandha
- Supplement with vitamins and minerals that you may be

deficient in (magnesium and vitamins C, E, B, and D, in particular, can help with stress)

6. Get Adequate Sleep Every Night.

When you don't get enough sleep, your body's hunger hormone, ghrelin, begins to fluctuate, and your cortisol levels elevate. Simply put, losing sleep will cause you to feel hungrier than usual while simultaneously increasing your stress levels and insulin resistance (thanks to cortisol).

Altogether, these hormonal changes will typically cause you to eat more and struggle to regulate glucose effectively when you do have those extra calories. The best way to counteract this is by going to sleep at the same time every night and waking up at around the same time every day after getting at least 7 hours of sleep.

7. Consume More Soluble Fiber.

Of the two types of fiber, insoluble and soluble, soluble fiber is most notable when it comes to reducing insulin resistance. This is because soluble fibers slow down the movement of food through the small intestines, which helps reduce the amount of sugar that enters your blood, decrease appetite, and lower cholesterol levels.

Not sure how to get more soluble fiber? Here are some of the healthiest sources (as long as your digestive system can tolerate them):

- Cruciferous vegetables
- Leafy greens
- Pumpkin seeds
- Sunflower seeds
- Legumes
- Oats

8. Add More Fruits, Vegetables, Herbs, and Spices to Your Diet.

Many studies have found that a diet rich in plant compounds from fruits and vegetables is linked to reduced insulin resistance. The healthiest plants tend to be low-carb fruits and vegetables like wild berries, leafy greens, and cruciferous vegetables.

Herbs and spices have also shown promising results for boosting insulin sensitivity. Some of the most effective are:

- **[Turmeric](#)**: This powerful herb contains a compound called curcumin, which has potent antioxidant and anti-inflammatory properties. It can indirectly increase insulin sensitivity by reducing free fatty acids and sugar in the blood.
- **[Ginger](#)**: This popular spice is linked to increased insulin sensitivity as well. Studies have found that its active component, gingerol, makes muscle cells more receptive to sugar.
- **[Garlic](#)**: Garlic has antioxidant properties that may directly increase insulin sensitivity, according to animal studies.
- **[Cinnamon](#)**: This popular spice is well-known for its ability to reduce blood sugar and increase insulin sensitivity. One meta-analysis found that consuming 1/2–3 teaspoons (1–6 grams) of cinnamon daily can significantly reduce short- and long-term blood sugar levels.

9. Drink Green Tea

Green tea an excellent choice for people who are struggling to manage their blood sugar levels. Several studies have found that drinking green tea can increase insulin sensitivity and reduce blood sugar levels.

The beneficial effects of green tea could be due to its powerful antioxidant epigallocatechin gallate (EGCG), which many studies have found to increase insulin sensitivity on its own.

Supplementing with decaffeinated green tea extract may be the best option since caffeine has been found to increase insulin resistance.

10. Experiment with Supplements that Help Reduce Insulin Resistance.

There are many supplements that can help with insulin resistance, but let's stick with the ones that are backed by research:

- **[Resveratrol](#)**: This is a polyphenolic compound that can be found in red wine and is known for its antioxidant benefits. High-quality evidence indicates that resveratrol can boost glucose uptake significantly without increasing insulin needs.
- **[Alpha Lipoic Acid](#)**: Alpha Lipoic Acid (ALA) is an organosulfur compound that is essential for aerobic energy metabolism. Many studies have reported that supplementation with this compound can help reduce insulin resistance in subjects with type 2 diabetes.
- **[Berberine](#)**. This is a plant alkaloid that has been shown to lower blood glucose in many cases. Some researchers have even found berberine to be as effective as the popular diabetes drug, metformin.
- **[Chromium](#)**: Some evidence indicates that this essential trace element has the ability to indirectly increase insulin sensitivity.
- **[Magnesium](#)**: This essential mineral is so crucial for proper insulin signaling that magnesium deficiency can worsen insulin sensitivity.
- **[Gymnema Sylvestre](#)**: It lowers blood sugar and is also

called gurmar, which means “destroyer of sugar” in Hindi.

How to Know If These Changes are Reversing Your Insulin Resistance

The quickest and safest way to find out if you are insulin resistant is to get a test done by your doctor. The most reliable test is called HOMA-IR, which makes an accurate guess regarding your body’s insulin resistance by tracking your blood sugar and insulin levels over time.

You can also measure your blood sugar fluctuations directly with an oral glucose tolerance test. This test consists of multiple blood tests and the ingestion of a glucose solution as a way to see how your body handles an increase in blood sugar levels.

Despite how helpful both of these tests are, they are inconvenient and unnecessary for most people. A more accessible way to track your level of insulin resistance is by seeing how your blood work and other key health indicators change as you make the appropriate dietary and lifestyle adjustments.

For example, if your blood sugar levels, blood lipids, and blood pressure reach healthier levels, then you are most likely improving your insulin sensitivity, reducing your insulin resistance, and optimizing your health. Furthermore, if you are losing inches off your waist, then you are almost certainly making your cells more sensitive and less resistant to insulin.

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 - [Insulin Resistance Isn't All About Carbs and Insulin – Chris Masterjohn, PhD](#)
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Obese Soldiers Are Too

Expensive, Army Study Suggests

Half of all active-duty male army soldiers are overweight, and one in five are obese. Obese soldiers cost the army much more in medical expenses, using nearly double the medical resources compared to those within a healthy weight. Obese soldiers were less likely to be seen medically for multiple trauma, but this may suggest that obese soldiers are not being deployed in combat as often, which is when such a medical emergency would be most likely.

An army doctor, Maj. Brian Shiozawa has been analyzing the height and weight data for 429,793 active male soldiers and cross-referencing those records with the soldiers' medical visits and treatments. Shiozawa recently presented his research at the Obesity Medicine Association's fall summit in Washington, D.C. He found that obese male soldiers sought medical treatment an average of 13 times a year in 2015 while normal-weight soldiers went an average of seven times a year.

"Are we employing them to go to the doctor, or are they fit to fight the nation's wars? At what point do we say to service members, 'You may be costing us more [than you provide to the military?]' Maybe we need a BMI ceiling. We are spending three to four times as much to maintain you than what we get from you." – [Dr. Shiozawa](#)

Shiozawa is a resident at the Uniformed Services University of the Health Sciences. He says he was inspired to do this research after serving as a battalion surgeon. He also says that his goal is to, "become an expert on Army obesity."

The study reports that 19.7 percent of the nearly 430,000 male soldiers within the study have a body mass index of more than 30, which qualifies as obese, and just more than half have a

BMI of 25 to 30, which is considered overweight. The largest percentage of soldiers found to be obese were between 25 and 34 years old.

Recommended:

- [How To Heal Your Gut](#)
 - [Detox Cheap and Easy Without Fasting – Recipes Included](#)
 - [Stop Eating Like That and Start Eating Like This – Your Guide to Homeostasis Through Diet](#)
 - [How to Make the Healthiest Smoothies – 4 Recipes](#)
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Genetically Modified Salmon Sold As Sushi In Canada, Coming to the U.S. Soon.

The Cornucopia Institute reports that GMO salmon is being sold as sushi and sashimi in Canada. AquaBounty Technologies is a Massachusetts-based biotechnology company that produces genetically modified fish called “AquAdvantage,” that they say is “The World’s Most Sustainable Salmon.”

AquaBounty is the first and only company selling genetically engineered salmon. Scientists inserted a growth-hormone gene from Chinook salmon and genetic regulatory elements from the ocean pout into Atlantic salmon.

Although AquaBounty, the makers of engineered fast-growing salmon, have refused to tell the public where their product is being sold, their CEO recently bragged to investors that it is being used in the Canadian buyer’s “high-end sashimi lines, not their frozen prepared foods.” Consumers must

continue to be wary of the origin of their food: know your farmer!" – [The Cornucopia Institute](#)

Ron Stotish, AquaBounty's CEO, told investors last Thursday that they have sold 4.5 tonnes of it in Canada so far this year, and that,

The people who bought our fish were very happy with it. They put it in their high-end sashimi lines, not their frozen prepared foods."

Related: [How to Avoid GMOs in 2018 – And Everything Else You Should Know About Genetic Engineering](#)

In Canada, GM fish does not have to be labeled as such. Consequently, customers may not know if the salmon they ordered is genetically modified.

AquaAdvantage Salmon is engineered to grow at twice the rate of regular salmon while consuming up to 2 percent less feed than regular farmed salmon.

This is an untenable situation. The fact that, once again, the company has let slip a piece of information to investors – but is information Canadian consumers need and don't have – exposes how much it is that Canadians need labelling." – [Lucy Sharratt](#) of the Canadian Biotechnology Action Network

Recommended: [How to Heal Your Gut](#)

The FDA has approved AquaAdvantage salmon for human consumption, but wild salmon is big business for Alaska, so Senator Lisa Murkowski and other Alaskan officials in Congress got the FDA to block AquaAdvantage imports until new GMO labeling regulations are in effect for food labels. Senator Lisa Murkowski [introduced the amendment](#) prohibiting the import of the GM eggs needed to produce AquaBounty's salmon, and she co-sponsored legislation mandating the labeling of

genetically engineered salmon.

How To Heal Your Gut

The gastrointestinal (GI) tract of a healthy mammal is home to a complex community of bacteria. This microbial community is often called “microbiota,” “gut flora,” or “beneficial bacteria.” These microbes have evolved with us to coexist in a mutually beneficial relationship.

An Introduction to Gut Microbes

We need beneficial gut microbes for proper B vitamin production, digestion, and assimilation. Some bacteria also synthesize vitamin K. In fact, we need bacteria for synthesization, digestion, and assimilation of many vitamins, minerals, proteins, fats, and many other nutrients. Healthy bacteria also keep the population of other microbes (like candida) down to healthy levels. Healthy bacteria colonies form a biofilm that keeps the intestinal wall healthy and acts as a barrier against pathogens. Healthy bacteria move slowly and crowd out unwanted pathogens. A healthy gut biofilm is a home to thousands of different beneficial bacteria, the more the better. And they don't just reside on our gut. Some of them can and do pass through the gut wall and they live all over our body. It's often said that bacteria in our body outnumber our own cells by about ten to one. That's incorrect, but there are more bacteria cells than human cells in the human body. The ratio is about 39 bacterial cells to every 30 human cells.

If you have ever been to a bio-dentist, they may have shown you what your mouth bacteria looks like under a microscope.

Generally, the fast-moving bacteria are up to no good. You can see these guys frantically swimming around looking for trouble, banging against the teeth and gums, maybe looking for a good spot to burrow in and make a home, feed, and reproduce. If you have teeth and gum issues try this: take the capsule of a probiotic, break it open, and empty the contents into your mouth. Leave it in there. Move it around. Swish it around when you've built up some saliva. You should notice that some of the pain subsides. Now picture how this works in your gut. Incidentally, oral health is a very good indicator of gut health.

Without enough healthy bacteria, the whole body suffers. Gut microbes can change brain chemistry and alter endocrine functionality. Depression is tied to irritable bowel syndrome. Autism is believed to be caused by or at least exacerbated by an unbalanced gut. In my experience, every single autoimmune disease resides in the body of someone with an unhealthy gut.

Hopefully, you're getting an idea of how important healthy bacteria are to our health. We need them for good health for many reasons, and likely most of which we aren't even yet aware of yet.

It should be noted that the phrases "good bacteria" and "bad bacteria" are pretty inaccurate. Bacteria are only responding to their environment. "Good" bacteria, under bad circumstances, will become "bad" bacteria very quickly.

Candida

We all have candida spores in our gut even if we're healthy. They're practically indestructible. Anything we could do to kill them would probably kill us. They can reside in the body dormant without causing problems for an estimated six months.

Antibiotics kill bacteria and sometimes antibiotics can also kill some other pathogens including some fungi. But spores are

left to rule. When there is an opportunity to flourish candida turns fungal, becoming pathogenic.

Common Causes of Candida Overgrowth

- Alcohol
- Antibiotics
- Vaccines
- Amalgam Fillings
- Refined foods
- Smoking

An often overlooked way that candida gets fed is damage to the body. Cells are mostly made up of glycogen and starch. Damaged, dying cells feed yeast and other pathogens.

Leaky Gut

The gut is permeable, so to some extent, it's always leaky. A health gut biofilm doesn't let unwanted things pass into the bloodstream. Some of the "good" bacteria will get through, but that's ok. Remember, there are bacteria all over our body. We want the good guys, not the bad guys. If candida takes over, an abundance of candida increases zonulin levels, the substance that controls the tight junctions between enterocytes in the gut, which leads to weaker junctions and the development of leaky gut. And here's a scary fact for you: candida filaments also penetrate directly through the wall of the gut lining and contribute to leaky gut in this manner as well. In other words, picture centipede looking things with very long legs that kind of drill into the gut lining. The intestinal wall will also get dry and cracked. All of this makes for a gut that is much more permeable than it should be. At this stage pathogens and undigested proteins make it into our bloodstream, overwhelming the body's immune system. Proteins have to be broken down completely or else the body sees them as foreign proteins and reacts accordingly. This is

how most allergies happen.

And that gut drilling thing candida does – it does it all over the body as well, opening up pathways for infection throughout the body. It's easy to see how candida wrecks havoc on the liver. Consider the gut-liver axis. 70% of the blood flow to the liver is flowing from the gut. The liver quickly becomes overwhelmed with the toxins produced by candida.

I could go on and on about candida, but I'm attempting to write my shortest gut-health article to date, so I'll stop here. But if you want to know more, read [Best Supplements To Kill Candida and Everything Else You Ever Wanted To Know About Fungal Infections](#). I'll bet it'll blow your mind. Candida is a fascinating creature.

Supplements

If you want to see a list of the top 25+ supplements for killing fungi, this is your list. Below is a list I put together a supplement stack with just a few that work very well to put the gut back into homeostasis.

- [Activated Charcoal](#): Binds with positively charged things in the gut, like candida in its pathogenic form, and many of the toxins it produces, which then gets defecated out of the body. ([more on activated charcoal](#))
- [Astragalus](#): A potent antimicrobial that also is anti-inflammatory, boosts the immune system, slows tumor growth, helps prevent and reverse diabetes, and more.
- [Berberine](#): This plant-root alkaloid extract has confirmed and potent antiviral, antibacterial, and anti-fungal properties.
- [Biotin](#): With the presence of the B vitamin, biotin, it is said that yeast is unable to change into its mycelium form. On the other hand, there are some studies that suggest candida can feed off of biotin.
- [Black Walnut](#): Studies have shown that black walnut can

effectively kill canker sores, herpes, and syphilis sores. The husks of black walnuts have potent anti-fungal powers; more powerful than many prescription drugs. Fungi and parasites thrive in an acidic environment.

- **[Caprylic acid](#)**: A the fatty acid in coconut which contains antibacterial, antiviral and antifungal properties. Coconut or coconut oil by itself does not have very strong antimicrobial properties.
- **[Chlorella](#)**: It's not an anti-fungal, but chlorella is negatively charged like charcoal and has a host of other benefits that counter candida symptoms. Chlorella also helps remove heavy metals and limited amounts of positively charged candida from the blood.
- **[Cinnamon](#)**: A potent natural antifungal with tons of other health benefits. [Read more on cinnamon](#).
- **[Clays](#)**: Like activated charcoal, bentonite clay can bind with candida and heavy metals and other positively charged items to pull them out of the body through defecation.
- **[Cloves](#)**: This strong smelling spice contains some of the same compounds as oregano oil. Studies have shown that cloves contain powerful antimicrobial and anti-fungal compounds.
- **[Cranberry](#)**: There is nothing better for a urinary tract infection than unsweetened, unadulterated cranberry juice. [Click for Recipe](#).
- **[Diatomaceous Earth](#)**: Often called DE for short, this supplement is another negatively charged chelator (like charcoal and bentonite clay, but not as effective in that way), that also kills pathogens, but candida biofilm protects itself well from DE. [More on DE](#).
- **[Enzymes](#)**: Hemicellulase, protease, and Cellulase have been shown to break down the cells walls and the biofilm of candida. These must be taken within a protective capsule that will break apart in the gut and not the stomach acid. [More on enzymes](#).

- **Garlic**: Allicin, a compound in garlic, has antifungal, antibacterial and antiviral properties, and garlic helps strengthen the immune system. [Read more about garlic](#).
- **Goldenseal**: A popular herb that has been used by Native Americans for hundreds of years, with potent antimicrobial activity, including some pretty decent antifungal properties.
- **Goldenrod**: Goldenrod is antifungal, diuretic, diaphoretic, anti-inflammatory, expectorant, astringent, antiseptic, and carminative.¹⁰
- **Magnesium**: Breaks down the toxic metabolites (byproducts) of candida albicans. Read about [homemade calcium and magnesium here](#).
- **Molybdenum**: Also breaks down the toxic metabolites (byproducts) of candida albicans.
- **Mushrooms**: Fight fire with fire, and fungi with fungi! Many mushrooms produce natural anti-yeast factors to prevent other fungi from taking over their turf. The reishi mushroom is well known throughout the world for its plethora of health benefits, including powerful antifungal properties, but there are many other mushrooms that help clean the gut as well.
- **Lemongrass**: Lemongrass oil is the most powerful antibacterial and antifungal essential oil.
- **Neem**: This plant's properties include immunomodulatory, anti-inflammatory, antihyperglycaemic, antiulcer, antimalarial, antifungal, antibacterial, antioxidant, antimutagenic, and anticarcinogenic.
- **Oil of Oregano**: This extract is very well known for its ability to kill off pathogenic activity, and there are plenty of studies that demonstrate its efficacy.
- **Olive Leaf Extract**: This extract is known for killing fungal and pathogenic bacterial infections without harming healthy bacteria. I suspect this is because it's weak and doesn't penetrate biofilm.

- **[Pau D'Arco](#)**: Also known as Lapacho, this supplement has received worldwide attention in recent years due to the numerous studies proving its amazing health benefits including the ability to kill antibiotic-resistant bacteria and difficult fungal infections like candida.
- **[Probiotics](#)**: Most everyone knows to take probiotics to fight yeast infections, but make sure the probiotic is of quality. Lots of cheap probiotics break down in stomach acid and the ingredients end up actually feeding yeast. Also, they need to be able to pass through stomach acid and into the gut to do its job. Taking probiotics with antimicrobial supplements will reduce the effects of both.
- **[Spirulina](#)**: For purposes of candida killing, it works just like the other aforementioned algae, Chlorella. Check out [How to Grow Spirulina at Home](#)
- **[Turmeric](#)**: Turmeric is a potent antimicrobial herb with proven antifungal properties and a host of other amazing health benefits. Check out [How to Optimize Curcumin](#).
- **[Undecylenic acid](#)**: This fatty acid is six times more effective than caprylic acid. It's been shown in studies that candida cannot build a tolerance for undecylenic acid, which probably makes it the most potent candida killer on this list.
- **[Wormwood](#)**: This is a potent antimicrobial's active ingredient is Artemisia, and it is better known the world over for its ability to kill parasites.
- **[Zinc](#)**: helps with protein digestion, enzymatic reactions, energy production, antioxidant functions, and it is imperative for proper mineral balance. It's common to see a zinc deficiency in a candida-laden body.

Fungal Supplement Stack – Knock Out Yeast, Candida, Mold, Fungus

The first three should be plenty for most people, but for impatient people with really prominent fungal issues and

bigger budgets could use all of these:

- [Formula SF722 – Thorne Research](#)
- [Syntol AMD – Arthur Andrew Medical](#)
- [Berberine 500mg – Thorne Research](#)
- [MycoCeutics MycoPhyto Complex – EcoNugenics](#)
- [MicroDefense – Pure Encapsulations](#)
- [Abzorb Vitamin & Nutrient Optimizer \(500mg\) HCP Formulas](#)

I recommend taking the SF722, Berberine, MycoCeutics, and Microdefense with meals, and the Abzorb and Syntol separately, on an empty stomach (like in the morning and before bed). The Abzorb and the Syntol are a bit redundant, but I find good results using both if the budget can afford it. If money is really tight, just get the SF722 and put your money into your diet.

Diet

You could probably take lots of SF722 every day and eat like the average health-conscious person does and be fine. If you don't want to take supplements forever, you'll need to adopt a much healthier diet.

Here are three articles I put together on diet. This is indicative of how my family eats every single day. The first article has recipes for cranberry lemonade and salads.

- [Detox Cheap and Easy Without Fasting – Recipes Included](#)
- [Start Eating Like That and Start Eating Like This – Your Guide to Homeostasis Through Diet](#)
- [How to Make the Healthiest Smoothies – 4 Recipes](#)

Make cranberry lemonade every day. The cranberry lemonade helps keep the kidneys and liver working optimally. These organs typically get sluggish quickly when lots of candida are killed. If salads are #1, this cranberry lemonade is #2, and supplements are a distant #3.

Eat a very large salad (7-9 cups) for breakfast. The salad has at least 10 different vegetables and a few different herbs.

Don't let anyone cook or prepare your food for you. This means no boxes or cartons or almond milk. Make it yourself. No restaurants, not premade dinners, no prepackaged meals, your foods you buy should have only one ingredient.

Start off with cranberry lemonade and a huge salad every morning. For lunch, for those that aren't very sick, do a smoothie or snack on some nuts and/or fruit, or we finish that massive breakfast salad.

For dinner, cook from scratch, which will take preparation and time, but it gets easier. Try rice and beans, quinoa, lentils, millet, and amaranth. Some of these foods are not recommended on candida-cleanse diets, but I feel they are beneficial when one is eating the aforementioned salads. Also, we add lots of raw vegetables and herbs to our dinners as well. For instance, the rice and beans go great with raw chopped tomatoes and avocado, diced onions and garlic, and shredded turmeric and ginger. Eat raw herbs and cooked herbs together for maximum health benefits.

The salads are the most important part of this protocol. More than supplements, more than anything save getting enough water, the salads are imperative. Eat lots of raw vegetables. Eat a variety of them. Your fridge should be full of produce! There is nothing more beneficially life-changing than developing a salad habit when the salads are big and diverse and homemade. They do more than any supplement or any other food to clean the intestinal walls of filth and develop a beneficial gut ecosystem.

For those with very serious gut issues, legumes and grains may be a no-no for the first few weeks at least, but when enough salad has been consumed, the gut should be able to reap many benefits from cooked foods like the dinner meals

aforementioned. I recommend, for those who are very sick and who have a hard time digesting foods, to slowly add in the aforementioned dinner foods into salads first.

Sweet fruit should be severely limited, and for those who are chronically ill, avoided until the gut is working well. Grapefruit, cranberry, avocado, lime, and lemon do not fall under this category.

Juicing with fruits is not much better than refined sugar, so don't make the common mistake of thinking a fresh-juice fast is going to get you well.

Modern fruit has too much sugar in it; I don't recommend being a fruitarian, especially with an abundance of candida. The key to fixing the gut is a very wide variety of fresh raw vegetables and herbs. Some fruit is great, but too much fruit can send even a healthy gut into fungal overload.

Wheat and oats should be avoided until gut health is restored. Wheat and oats tend to be drenched in glyphosate before they are harvested, and wheat has a host of other issues regarding health. If you want to eat bread, make your own using heirloom seeds and old-school practices. Check out [*Gluten Intolerance, Wheat Allergies, and Celiac Disease – It's More Complicated Than You Think*](#) for more information.

Variety

You need a lot of different kinds of bacteria to make a healthy gut colony. Different bacteria like different foods, and the most beneficial bacteria like the healthiest foods. Raw vegetables and herbs feed the gut the best, producing the healthiest bacteria. If you think about it, nature really wouldn't work any other way. A lot of health practitioners want to limit the diet when someone is sick. They also often say to avoid raw produce. These two ideas are wrong! I work the other way. Limit sweets, including fruits, and eliminate

refined and processed foods, but expand your healthy whole foods that don't feed pathogens, and fresh raw produce is best.

Six Months

It takes around six months for spores to die off. It takes about as long for the gut lining to heal. Fortunately, you can build a healthy biofilm full of beneficial microbes much faster than that. Unfortunately, spores are ready to come to life as soon as they're feed. For anyone with systemic fungal related health issues, it takes six months of being very careful and strict on the diet – six months from the day, after all, symptoms are gone – to really get rid of candida, other fungi, and chronic illness.

Sources:

- [Scientists bust myth that our bodies have more bacteria than human cells – Nature](#)
 - [Why gut bacteria are essential for a healthy immune system – Medical Express](#)
 - [The role of gut microbiota in immune homeostasis and autoimmunity – NCBI](#)
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Myth of Moderate Alcohol Benefits Debunked, and How Science Gets Corrupted

We've all heard many times that a glass of wine a day is good for you. Improbable, considering what alcohol does to the gut, but study after study seemed to verify alcohol's heart-health

benefits. The only problem was that the studies never actually said that moderate alcohol consumption is healthy. In fact, most studies simply pointed to potential benefits of red wine, and the studies were flawed in many ways, but the news ran with the idea that a regular drink is good for us because this is what most of us wanted to believe.

How Industry Corrupts Science

One recent study was attempting to lay the doubts to rest and confirm that a drink or two a day was, in fact, beneficial to our health. The problem is that this study was funded by the alcohol industry.

One of the many problems with previous alcohol studies is that if you compare a group of people who only drink a moderate amount to people who don't drink you're comparing people with restraint to people who may or may not have restraint with other lifestyle choices. A person who only has one glass of wine a day is likely going to have more willpower than the average person. For instance, maybe many members of the non-drinking control group don't like alcohol but instead smokes and eats junk food all day.

A proper study on the effects of alcohol would randomly assign one group of people to drink a moderate amount while they assign another group of people to abstain. This is tough to do with a large enough control group, but in 2013 the National Institute on Alcohol Abuse and Alcoholism, a division of the National Institutes of Health (NIH), set out to do just that. The *Moderate Alcohol and Cardiovascular Health* study was poised to be a breakthrough in public health. The 10-year, \$100 million government trial is now underway.

The NIH is said to be one of the world's foremost medical research centers. it's a federal agency that invests more than \$30 billion of taxpayer money into health research yearly. The National Institute on Alcohol Abuse and Alcoholism

is an agency under NIH that oversees the alcohol industry.

The idea is to pay thousands of people to drink in four continents. This amounted to 3,500 daily drinks for six years. The math proved to be incredibly expensive. NIH decided to rely on the alcohol industry to foot the bill. In October of 2017 [Wired reported](#) that,

Five corporations—Anheuser-Busch InBev, Diageo, Pernod Ricard, Heineken, and Carlsberg—have since provided a total of \$67 million. The foundation is seeking another \$23 million, according to its director of development, Julie Wolf-Rodda.”

In May of 2018, [The New York Times published a scathing report](#) that showed the NIH's ties to the alcohol industry. The article opens with:

It was going to be a study that could change the American diet, a huge clinical trial that might well deliver all the medical evidence needed to recommend a daily alcoholic drink as part of a healthy lifestyle.

That was how two prominent scientists and a senior federal health official pitched the project during a presentation at the luxurious Breakers Hotel in Palm Beach, Fla., in 2014. And the audience members who were being asked to help pay for the \$100 million study seemed receptive: They were all liquor company executives.

The Times article reported that documents and interviews proved that the NIH courted the alcohol industry with a plan to endorse moderate drinking as healthy. The alcohol industry previewed the trial design and was allowed to vet the researchers.

Besides the industry influence, two other major problems with the study include the fact that the study is too short to see

increases in cancers and other health issues that could be linked to alcohol consumption and too many people are excluded from the study. People are not allowed to partake in the study if they have never had a drink or have a history of addiction, psychiatric care, liver problems, kidney problems, and certain cancers.

You're picking off the people who are most likely to have the harms." – Dr. Richard Saitz, chair of the Department of Community Health Sciences at Boston University

Incidentally, research has shown that alcohol consumption in any amount increases the risk of breast cancer.

A month after the Times article was published Stat News published an article titled, [NIH rejected a study of alcohol advertising while pursuing industry funding for other research.](#)

...at the 2015 meeting the director, George Koob, would leap out of his seat and scream at the scientists after their PowerPoint presentation on research the agency had eagerly funded on the association between alcohol marketing and underage drinking. 'I don't fucking care!' Koob yelled, referring to alcohol advertising, according to the scientists.

Fortunately, thanks to all of the journalist reporting on this corrupt clinical trial, NIH terminated it last June.

A New Study Not Funded By Big Alcohol

It may not be wise to put any credence into a vaccination study funded by the Bill & Melinda Gates Foundation, but they aren't tied to the alcohol industry. The Lancet has just

published a study stating that all alcohol consumption is a health risk, moderate or not.

The [Global Burden of Disease](#) study looked at alcohol consumption in 195 countries between 1990 and 2016 and analyzed data on people ranging in age from 15 to 95. Researchers compared people who completely abstained from alcohol to those who had one alcoholic drink per day and to people who drank more.

With the non-drinking group, 914 people out of 100,000 developed an alcohol-related health problem such as cancer or suffered an injury. An extra four people would suffer an alcohol-related health problem or injury if they drank one alcoholic drink a day.

For people who had two alcoholic drinks a day, 63 more developed a condition within a year and for those who consumed five drinks every day, there was an increase of 338 people, who developed a health problem. Two alcoholic drinks a day equated to 63 more people developing a health condition, and five drinks every day increased the number of people who developed a health problem to 338.

The study reports:

Alcohol use is a leading risk factor for global disease burden and causes substantial health loss. We found that the risk of all-cause mortality, and of cancers specifically, rises with increasing levels of consumption, and the level of consumption that minimises health loss is zero."

To an individual, the one drink a day idea doesn't look like much statistically but keep in mind, the study is looking at one year. It's taking into account people's drinking habits and health within one year's time. This does not represent the likelihood that one may be diagnosed with cancer after drinking a glass of wine every day for a decade. It's near

certain that the longer one drinks regularly the greater the risk of adverse health effects. In addition, Prof Sonia Saxena points out that while, “One drink a day does represent a small increased risk but adjust that to the UK population as a whole and it represents a far bigger number, and most people are not drinking just one drink a day.”

Conclusion

Alcohol has a few health benefits, but this doesn't make it healthy. Every health benefit alcohol can provide is better achieved through diet and exercise. To put it bluntly, nobody who suffers from chronic disease can get well while consuming alcohol.

Our biggest concern with alcohol consumption is that it severely disrupts the gut flora. Beneficial bacteria gets killed and washed away, as well as pathogenic microbes, but guess what gets left behind. Yeast. It's incredibly difficult to kill Candida spores. Alcohol irritates the gut lining and harms the healthy gut microbiome. Then it raises blood sugar, and Candida is left to flourish in its wake. For more on how this works, check out [Best Supplements To Kill Candida and Everything Else You Ever Wanted To Know About Fungal Infections.](#)

**FDA Loophole That Allows
Farmers To Administer**

Antibiotics Indefinitely

Antibiotics benefit farmers by speeding up the time it takes livestock to be ready for slaughter. Cows and chickens and other livestock grow faster with antibiotic use than they would otherwise. For cattle, the time from birth to slaughter can be cut in half. But antibiotic resistance is a growing public health concern. Antibiotic-resistant bacteria like e.coli can be pathogenic to humans and even deadly. Farm water runoff and animal waste are damaging our ecosystems in a myriad of ways. Consequently, in 2017 the FDA was compelled to act.

The C.D.C. states that 23,000 Americans die each year due to antibiotic-resistant bacterial infections and they [estimate](#) that more than 400,000 United States residents become ill with infections caused by antibiotic-resistant food-borne bacteria every year. They believe that one in five of these antibiotic-resistant infections may be caused by pathogens from food and animals.

Recommended: [Best Supplements To Kill Candida and Everything Else You Ever Wanted To Know About Fungal Infections](#)

In 2017, the [Food and Drug Administration enacted rules](#) that prohibited antibiotics from being used for growth promotion in livestock. Previously these antibiotics could be purchased over the counter but the new rules require a prescription from a veterinarian.

Despite the ban, it's widely believed that ranchers still use antibiotics to speed growth. The F.D.A. rules have a glaring loophole: farmers can use antibiotics for disease prevention.

You don't even need a sick animal in the herd to use antibiotics in the feed and water as long as the justification is 'disease prevention' not 'growth promotion,'
" Avinash Kar, a senior attorney at the Natural Resources

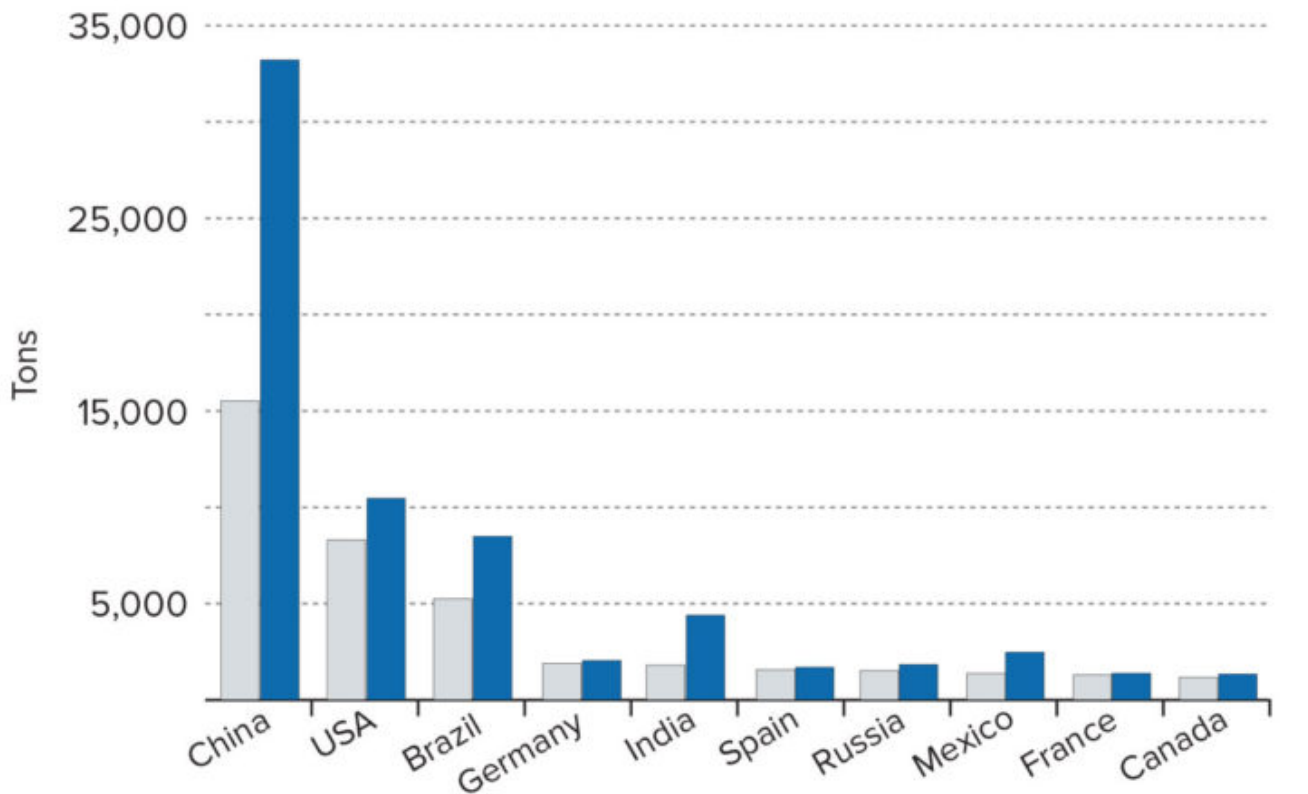


Figure 0-3: Antibiotic consumption by livestock, top ten countries 2010-2030 (projected for 2030)
Source: Van Boeckel et al. 2015



Courtesy of the CDDEP

More in-depth reading: [Antibiotics in Meat Could Be Damaging Our Guts](#) & [New Report Tracks Rise of Antibiotic Resistance in Humans and Livestock](#)

Our health depends on our gut's ecosystem. Antibiotics, vaccinations, glyphosate, and GMOs are known to disrupt the bacteria in our gut. If you eat meat, we recommend careful consideration regarding who you buy meat from.

Related Reading:

- [We Consume Livestock Vaccines When We Ingest Meat](#)
- [Majority Of Meat Contain Antibiotic-Resistant Bacteria](#)
- [How to Avoid GMOs in 2018 – And Everything Else You Should Know About Genetic Engineering](#)

Nitrates from Cured Meat Have Been Linked to Mania in New Study

No one mistakes hot dogs for health food, but a new study published in *Molecular Psychiatry* suggests that they might be even worse for you than previously thought, linking hot dog, beef jerky, salami, and processed meats to mania. Examining 1,101 individuals, researchers at Johns Hopkins noticed that the subjects who had been hospitalized for mania were 3.5 times more likely to have consumed cured meats. The same outcome did not occur with other untreated meats or fish. Researchers then fed rats nitrates in a dose equivalent to what a human would eat in a hot dog or beef jerky. The second part of the study confirmed that nitrates negatively impact gut bacteria and the brain. Dr. Robert Yolken, the lead author of the study and professor of neurovirology in pediatrics at the Johns Hopkins University School of Medicine, says,

We looked at a number of different dietary exposures and cured meat really stood out. It wasn't just that people with mania have an abnormal diet...There's growing evidence that germs in the intestines can influence the brain...And this work on nitrates opens the door for future studies on how that may be happening."

Related: [How Farmed Fish Degrades Our Health and the Environment – Better Options Included](#)

Needed Nitrates

This is not the first time nitrates have been mentioned in conjunction with serious health issues. Past studies have linked the compound with early death, an increased risk of cancer, and male infertility.

Nitrates are more complicated than that, though. Once they're ingested, they're turned to nitrites by your oral bacteria. From there these nitrites turn into nitric oxide or N-nitroso compounds. Nitric oxide is a free radical, protecting cell mitochondria, and relaxing blood vessels. Plants like celery, spinach, lettuce, onions, broccoli, and peas are excellent sources of naturally occurring nitrates that don't turn into carcinogenic N-nitroso compounds, which are carcinogenic. This is because plants are excellent sources of vitamin c and polyphenols, which keep those compounds from forming.

Naughty Nitrates

Meat, on the other hand, has all the conditions needed for nitrites to turn into carcinogenic N-nitroso. There are no anti-oxidants or polyphenols. Meat also has higher quantities of protein and heme. Heme is an iron-containing compound found in hemoglobin and has been in the news recently as the ingredient responsible for the Impossible Burger's meaty flavor.

Processed meats have nitrites added as a preservative and a coloring. They're responsible for that pink color you see in so many lunch meats. The World Health Organization has classified processed meats as carcinogenic to humans since 2015. Cooking (especially over high heat) makes the numbers of carcinogenic chemicals worse, making hot dogs the worst (seriously, though, the worst).

Gut-Brain Connection

These researchers found a link between human mental illness and a food group. Then they manufactured the same conditions in rats to find an even deeper connection and a greater risk of long-term health conditions.

Related: [*Sugar Leads to Depression – World's First Trial Proves Gut and Brain are Linked \(Protocol Included\)*](#)

Much has been made of our increasing mental issues. Mania is most commonly associated with bipolar disorder, and diagnoses of that disorder have been on the rise for over a decade. Young people have been hit especially hard. Yet the exact cause of that is unknown.

However, not enough attention has been paid to how crucial the gut-brain connection is. The enteric nervous system controls the function of the gastrointestinal tract and has been referred to as the second brain. It follows that what you fuel the gut with profoundly affects both brains. We are losing our the diversity of our gut bacteria at an alarming rate. We are beginning to see what happens when those microbes are permanently lost.

Related: [*Does Meat Cause Cancer? Yes and no...*](#)

How can we take care of this world, of anything else when we're constantly on the verge of losing control of our own sanity? We often hear about mental health coping strategies or mental health tools for dealing with situations. Why is diet not one of those tools, indeed the very foundation? The gut dictates brain function. What does your brain food look like?

Sources:

- [*Hot Dogs and Beef Jerky Linked to Mania in Study – Newsweek*](#)
- [*Nitrated meat products are associated with mania in*](#)

[humans and altered behavior and brain gene expression in rats – Nature.com](#)

- [Why Some Nitrates Are Healthy While Others Are Harmful – Dr. Mercola](#)
- [The Impossible Burger: Inside the Strange Science of the Fake Meat that Bleeds – Wired](#)
- [WHO report says eating processed meat is carcinogenic: Understanding the findings – Harvard School of Public Health](#)
- [Bipolar disorder cases rise sharply in U.S. children – NY Times](#)