

# The Anti-Inflammatory Diet



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# What is Inflammation?

Inflammation comes from the word ignite, to set on fire. Signs of acute inflammation normally manifest as redness, swelling, pain and or loss of movement. These signs are important, this is your immune system kicking into gear to repair damaged tissue. Inflammation is a good thing. It often gets touted as being all bad, but it's not.

The problem arises when inflammation doesn't turn off. When inflammation doesn't turn off, this is when we start getting tissue damage, because the swelling, the lack of movement, the loss of functioning in the area can have

long-term consequences. We want to make sure that we have the right mechanisms in place so our immune system, responsible for regulating inflammation, knows when to switch on and switch off.

When it does not switch off, a number of disorders can follow:

- Inflammatory bowel and digestive disorders
- Immune disorders like hay fever
- Asthma
- Eczema
- Neurological disorders like autism
- ADHD
- Alzheimer's
- Heart Disease

Type two diabetes and cancer can also be tied back down to chronic inflammation.

## Causes of Chronic Inflammation: Leaky Gut

If we take a step back and look at digestion, imagine food as a string of pearls. When you eat, you have a long string of pearls moving through your digestive tract. This string gets broken up into smaller and smaller strands.

By the time absorption takes place in your small intestine, you are down to one or two pearls. They can fit through the very tight gaps between all of the cells lining your intestine, entering the bloodstream.

As a result, the tight junctions between your intestinal cells get a little bit wider, leaky and, perhaps strands of five, or seven, or nine pearls may be able to enter the bloodstream. What occurs next is that the immune system sees them as invaders, going into red alert, this is when inflammation begins to occur.

When your immune system is in this state of alertness, it goes on a search and destroy mission, around the bloodstream, around the body, looking for tissues, or compounds similar to what has just entered via the leaky gut, and starts to attack this as well.

Some of the partially broken-down food particles have a very similar shape to a number of our own tissues. This can confuse the immune system, rather than attacking actual foreign particles, it may attack parts of our own tissue.

For example, gluten peptides have a very similar shape and appearance to thyroid protein. If the immune system starts attacking your thyroid gland this can result in Hashimoto's Thyroiditis, an autoimmune condition.

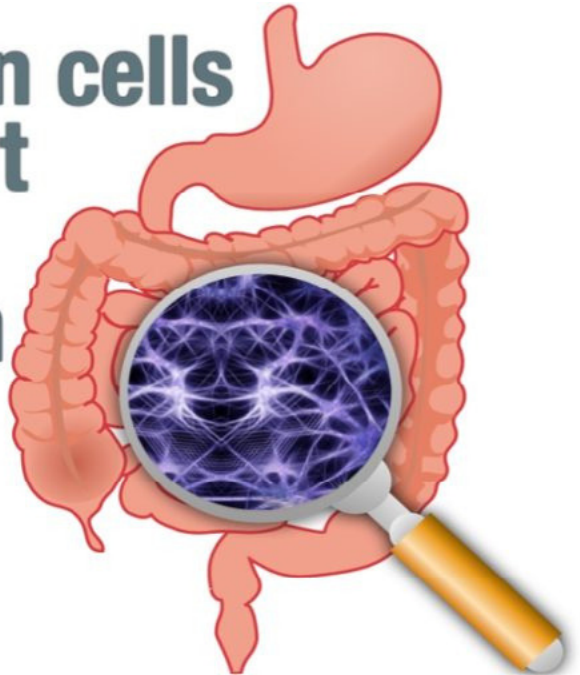


# The Brain-Immuno-Gut Link

Some foods, drugs, and environmental toxins that cause an increase in the leakiness of your gut barrier, also cause an increase in the leakiness of your blood-brain barrier. Once upon a time it was thought that the brain barrier was impermeable, or relatively impermeable. However, now we know there are quite a number of influential factors controlling how much can get in and out via the brain barrier. Things like gluten for example.

First of all, let's have a look at the relationship between the gut, the immune system and the brain. You have more brain cells in your gut than you do in your brain. This is your bigger brain.

**more brain cells  
in your gut  
than in  
your brain**



Not only that, but you have more immune cells in your brain than you do brain cells. They are called microglia.

So you can imagine if anything is affecting your immune function, it can very closely and directly have an impact on your logical function. Partly because of proximity, and partly because the immune system. The gut and the brain use many of the same chemical messengers like cytokines and neurotransmitters.

80% of our immune system is in the lining of the gut wall. So whatever is going on in the gut directly affects the immune system, directly affects the nervous system. So this is how tightly linked the gut immune brain link is.

When we get this inflammation, anywhere in the body, it can affect our brain inflammation levels. This also applies the other way around. If there is inflammation of the brain for whatever reason, it can also trigger inflammation in other areas of the body.

# Visceral Inflammation

An important point to consider is the impact of visceral inflammation on different health conditions. Visceral inflammation stems from inflammation of the digestive organs and other organs in the abdominal cavity.

If there is inflammation of the gallbladder, liver or intestines, then what happens in this situation is your stabilizing core muscles get switched off, leaving you more prone to accidents and sore backs, slip discs and clumsiness, because you do not have the same neuro-muscular communication going on that you would if there was no inflammation present. With uncoordinated children, for example, one important thing to have a look at is what is going on in their gut.



## Causes of Chronic Inflammation: Gluten

Gluten we pick on quite a bit, and part of this is because it does create a lot of problems. One thing we know in terms of inflammation is that when you ingest gluten, in 100% of the population, it increases an enzyme called zonulin.

Zonulin increases both your gut permeability and your blood-brain barrier permeability. It acts as a gateway allergen, exposing your immune system to many particles that would not normally be able to enter the bloodstream. Even if you are not having an allergic reaction to gluten, but you have other allergies present, it is always a good idea to eliminate gluten, to help heal these allergies.

Other things that cause chronic inflammation other than gluten and leaky gut include:

- Excess body fat
- High or prolonged stress
- Pollutant exposure
- Lack of exercise
- Too much exercise
- A lack of or poor-quality sleep
- Nutrient or poor-quality diet
- Allergies and sensitivities
- Gut and immune disorders
- Dysbiosis
- Chronic infections like a root canal
- Chair sitting

# Inflammatory Foods



## The most common triggers for inflammation in the diet include:

- Sugar
- Gluten
- Refined grains
- Cooking oils because of their fatty acid rations
- Trans fats
- Grain fed meat has a very different fatty acid profile to grass-fed and finished meats
- Alcohol
- Store bought juices

Studies are finding that gluten can in some people be purely neurological in its target tissue. Somebody may have perfectly fine digestion, but if there is any depression, changes in mood, anxiety, sleep issues, problems concentrating, this could also be gluten. There is also links between autoimmune neurological conditions such as multiple sclerosis (MS) being triggered by gluten.

In the autism spectrum disorder (ASD) population there is a particularly high proportion of children and adults who have a sensitivity to gluten. It does increase risk of autoimmune diseases like rheumatoid and MS, and a lot of studies have shown improvements in symptoms with the removal of gluten such as normalization of pain threshold, improved language, eye contact, speech, concentration and or focus.

## Gluten, Glutamate and GABA

Gluten also ties into the glutamate and GABA picture. Glutamate is the main excitatory neurotransmitter in your brain. It is required for learning, concentration and focus. GABA is important for rest, mindfulness, the ability to concentrate and the ability to fall asleep.

Both glutamate and GABA need to be balanced, we never want to have too much of one or the other.

Without enough GABA, our neurons fire too frequently, and can result in things like anxiety, panic and seizures.

It can also occur in children who are really agitated, or aggressive and have quite erratic kinds of behaviour and trouble settling at night.

The effect gluten has on this, is its affect on the enzyme required to convert glutamates to GABA. If a gluten sensitivity is present, antibodies will develop. If you develop antibodies to this particular enzyme, you can't use the enzyme properly, you can't break down your glutamate to GABA, and you end up with excess glutamate.

We also know that inflammation increases glutamates. So it is going to have the result of affecting behavior, moods, anxiety level, and sleep. We know that the more inflammation there is, the higher the glutamate level is in the brain.



## Herbs and Nutrients

Herbs and nutrients that help promote GABA function, however they assist with GABA's function not increase it:

- Valerian
- Kava
- American ginseng
- L-Theanine
- Taurine
- Magnesium
- Serotonin, or the precursor to serotonin, 5-Hydroxytryptophan
- P5P, active B6



# Anti-Inflammatory Foods



**Foods that can help turn all the inflammation around, or dampen the inflammatory response:**

- Organic blueberries, cherries, raspberries, acai berry
- Coconut oil
- Green tea
- Eggs
- Cod liver oil
- Caviar
- Enzymes and probiotics
- Papaya
- Pineapple
- Omega 3s found in oily fish
- Flax seeds
- Chia
- Cruciferous vegetables



## Herbs and spices:

- Anise
- Red chili
- Cardamom
- Turmeric
- Licorice
- Fenugreek
- Clove

Turmeric is the most widely studied spice on the planet. There are over 3,000 studies on turmeric alone, and about half of those are involved in cancer studies. It is an amazing anti-inflammatory, it is neuroprotective, it is an antioxidant, and it is great for the liver. Turmeric also provides excellent support for detoxification issues.

A number of the active constituents in turmeric are fat-soluble. This means you want to consume turmeric with fat, so that you can increase the benefit of these compounds. Studies has also shown that pepper increases the bioavailability of the active ingredients in turmeric.

Ginger is particularly fantastic when there is inflammation in the respiratory system such as asthma, bronchitis, and allergies.





## Vitamin D

In Australia we live in a sunny country, however the rate of vitamin D deficiency, even the rate of suboptimal vitamin D levels is extremely high.

Low vitamin D levels increase the rates of inflammatory disorders, autoimmune disorders and gut disorders.

Depression and seasonal affective disorder in countries that do not get a lot of sunshine, are very well documented.

This is because vitamin D levels start to drop.

### ***Sources of vitamin D:***

- Cod liver oil
- Grass-fed butter
- Ghee if you are avoiding all dairy solids
- Fats from pastured animals
- Eggs
- Caviar
- Getting sunshine on your skin without sun cream
- Pork fat is the highest source of vitamin D out of pastured animals

## Probiotics

There are certain strains, particularly the Lactobacillus family, that have been very well studied and quite a lot of them have very potent anti-inflammatory activity.

It is extremely important to ensure you have good bugs growing in your gut. We are outnumbered ten to one by microbes, ten times as many of them, living in you and on you as there are human cells. So you are a more bug than human, and you want to make sure you are playing host to the right ones. The better shape your body is in, the better tenants you are going to get. Therefore you need to create a good environment.

## Enzymes

Are found particularly in all fruits, with tropical fruits like papaya, pawpaw, and pineapple being particularly high. The enzymes from these fruits such as papain and bromelain are some of the most studied.

Sauerkraut and other fermented veggies are incredibly high in enzymes. When there is digestive issues such constipation, diarrhoea, or malabsorption, because you are unable to break down your foods correctly,

introducing fermented foods in to your diet can really resolve a lot of general digestive symptoms.

## Coconut oil

has anti-inflammatory and pain relieving properties. It is also antifungal, so it's good when dealing with yeast overgrowth.

## Catechins

are compounds found in quite a range of plants. From green tea to cacao. However, avoid cacao for children, it is far too stimulating, particularly if they are already a bit too stimulated.

## Quercetin

Is found in foods such as onions and many other fruits and vegetables and is an important antiinflammatory.

## Phytochemicals

the chemicals found in plants. There are polyphenols found in fruits, vegetables, barks, roots, and teas. These compounds will also help with mitochondrial function, little energy organs in each of your cells.

We often see problems with mitochondrial function in ASD, in digestive disorders, or under-methylators, so having lots of these polyphenols in your diet is a really important support for your mitochondria as well. In addition will help regulate your glutamate uptake, so that you are not getting overly stimulated.

## Blueberries

are the king of berries. There is an incredible wealth of research on these being neuro-protective, reducing oxidative stress and inflammation, and helping to slow down age-related neuronal decline.



# What to Eat, in Summary

- Fresh live foods, you do not get much more alive than your fermented foods.
- Antioxidant-rich food, your brightly colored fruits and vegetables.
- Coconut oil, ghee, chia seeds and fish. All of the beautiful fatty foods.
- Vitamins, A, C, E and D.
- Green tea and polyphenols.

Then we want to make sure other things outside of food are addressed. Sit less, play more, address any organ dysfunction, breathe deeply, meditate, and sleep.

## Further Reading

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