

# The Link Between Depression and Inflammation



## How depression relates to immune responses and the brain

Recent research is showing that the immune system and inflammation can play a large role in depression. Inflammation is the body's natural response to infection, injury or foreign invasion, and when inflammation is triggered, the body produces many chemicals, such as cytokines.

## Symptoms of flu and symptoms of depression

Think for example, about how you feel when you're sick with the flu or a bad cold. It most certainly affects your mood, you feel more tired, you have a reduced appetite, your sleep changes and your sensitivity to pain increases. These behaviors are adaptive to make you rest, and to free up available energy to fight the infection. Interestingly, this state looks a lot like depression. Scientists have been studying these similarities, and what both conditions have in common is inflammation.

## Inflammatory cytokines in depression

In studies, both cytokines (which are inflammatory molecules) and inflammation have been shown to greatly increase during depressive episodes, and in people with bipolar disorder, to drop off in periods of remission. In another study, when healthy people are vaccinated for typhoid, which causes a spike in inflammation in the body, they are temporarily put into a depressed and anxious state.

What this means, is that in depression, we should also be looking for signs of inflammation and the many possible causes of inflammation for a more thorough treatment and assessment.

## **There are many causes of inflammation**

- Infection
- A diet high in trans fat
- A high sugar diet
- Any autoimmune disease
- Obesity (abdominal fat cells especially produce cytokines)
- Stress

## **Infections and the brain**

The link between infection and the brain is an interesting one to discuss in more detail. There is a condition called “PANDA’s”, (Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections), which can cause profound mood and behavior changes in children – obsessive compulsive behavior, violence, inability to focus and other erratic behavior. This rare condition is brought on by a simple streptococcal infection (such as strep throat). It is theorized that the streptococcal bacteria may mimic brain proteins, causing the body to produce antibodies that mistakenly target the brain. This condition is fairly easily treated with antibiotics, and dietary strategies to lower inflammation, and the psychiatric symptoms immediately go away. PANDA’s is quite an extreme example, but it shows us the potentially profound effect of infection and inflammation on the brain and mood.

## **Autoimmune conditions and the brain**

Another example is the autoimmune condition lupus, where studies have shown that 70% of people who suffer from this autoimmune condition also develop neurological and psychiatric symptoms, such as depression, anxiety, psychosis and dementia. The systemic inflammation appears to cause both body and brain symptoms.

## **Food intolerance and your mood**

In my 11 years of practice, I have had many patients whose mood has changed dramatically by identifying key food intolerances. The most common culprit is gluten, which has clearly been proven to affect the brain in many ways: depression, seizures, headaches, ADHD, neuropathy and more. The hard part is that it takes 3 whole months of avoidance of an intolerance food to make a significant difference in the brain. Given how much easier it currently is to eat gluten-free, or free

of other intolerances, it is definitely worth a try. Other foods that can affect the mood include: sugar, soy, eggs and dairy on the top of the list.



*Foods that help fight inflammation in the body*

## **Treatment possibilities for depression**

Clearly there is a potential link between depression and inflammation that should be explored in detail, especially in cases of depression that are not directly related to life events. My suggestion is to look for possible causes of inflammation such as infection, inflammatory markers in blood-work, food intolerances, autoimmune disease, celiac disease and gluten intolerance.

Even if nothing clearly is found, an anti-inflammatory diet, re-balancing digestive flora to clear out gastrointestinal infections, and anti-inflammatory supplements such as omega-3 from fish oils and turmeric extracts are worth a try, as all of this will reduce inflammation in both the brain and body.