



Module 6 Transcript

Inflammation and its Effects

"As I see it, every day you do one of two things: build health or produce disease in yourself."
-Adelle Davis

In the last section, we addressed antidepressants, their relationship with serotonin, and how they are used to treat depression and anxiety. When I first entered the field of psychiatry and learned about the effects of these medications, one of their properties surprised me more than others. It turns out that these medicines actually have profound anti-inflammatory properties. Now why is this important? Because depression is an inflammatory condition. In fact, the sheer importance of inflammation as both a symptom and as a cause of depression and anxiety cannot be overstated.

Historically, inflammation is not something that we've considered much in mental health or in psychiatry. In fact, in my training we touched on it almost not at all. That's certainly changed, and as we think about a more comprehensive and integrative model of mental health, everyone agrees, inflammation is a huge piece of this and maybe part of what we've been missing.

Recent studies show that combining an antidepressant medication with anti-inflammatories is more therapeutic than antidepressants alone in patients with major depressive disorder, but they are also known to improve depressive symptoms among patients with a somatic disease.

A recent report from, a leading psychiatric journal says, "Increasing evidence indicates that inflammatory processes can cause and contribute to the development of depression or symptoms of depression." *Great, you're probably thinking. So how do I reduce inflammation?* Or, if you want to back up a little bit, what even is inflammation? So let's get into it.



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Inflammation is our immune system's protective response that helps us fight off injury or infection. It's a good thing, in theory. When the body suffers injury or illness, the immune system will release a variety of different proteins and hormones, including white blood cells, special cytokines like interleukin-6, and proteins like c-reactive protein (CRP). These help to fight off invaders, clear out damaged cells, and even help the body heal. You probably noticed inflammation the last time you got a scratch on your arm. When you think about inflammation, think about swelling, redness, pain, and loss of function.

Issues may arise, however, when inflammation continues to occur for prolonged periods of time. Inflammation is our body's natural response to protect and heal itself. It fulfills a purpose. But too much inflammation, or inflammation in the wrong places? Not so good.

We're continuing to understand inflammation of the brain, and its effects on mental health. We know, definitively, that there's a strong correlation between mood and inflammation levels. We even know that simply having depression leads to a spike in inflammatory factors. We also know that chronic stress, environmental toxins, and social isolation, just to name a few, can lead to an imbalance in the release of pro-inflammatory and anti-inflammatory molecules—with too many pro-inflammatory chemicals let loose in the body and brain.

So to summarize, when the careful balance between pro-inflammatory and anti-inflammatory reactions in the brain is out of sync, this leads to chronic inflammation.

Today, thanks to dozens of groundbreaking studies, we now understand that chronic inflammation does have a hand in depression and anxiety disorders. In fact, many studies have now shown that approximately one-third of patients diagnosed with depression have high levels of different inflammatory markers, like CRP or interleukin-6, coursing through the body. And when those inflammation levels are elevated in the brain, over time, you will



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see serious consequences. In fact, when researchers from Emory University scanned the brains of depressed individuals with high levels of CRP, they found less activation in key circuits connecting the brain's reward areas to those responsible for executive function. It's almost like that same swelling you see around a cut in your arm, only occurring in the brain—and it significantly influences the ability of different regions to coordinate and talk to one another, contributing to common depressive symptoms like brain fog and low mood.

And more and more, we're seeing that treating the inflammation in concert with a mood disorder can make traditional antidepressant medications work even better.

So the obvious question becomes, what's causing all this inflammation? And what, specifically, can we do to ease this inflammation to help with these symptoms? The answer, as it turns out thankfully is a whole lot.

As we investigate diet, exercise, sleep, stress, the microbiome, mindfulness, and risk factors, we see that while nutritional and physiological root causes run deep--and trust me, we'll be getting deep into the science--some simple lifestyle changes can monumentally decrease your risk of chronic inflammation while improving well-being and mood. Some more obvious things like smoking and alcohol also have a strong impact. Even your habits around socialization have an effect. But remember, none of this happens in a vacuum.

As a proponent of mental fitness, part of my job is to give you the facts. I can show you the science as we best understand it. I can dissect the data and give strong recommendations. Ultimately, however, it's up to you to decide how these fit into your life. Few of us are interested in living by stringent codes that prevent the enjoyment of our lives and a sense of freedom. But by understanding the risk factors associated with inflammation and how this relates to our mental health we can move further toward developing a plan and making changes to feel better and live better today, tomorrow, and every day.