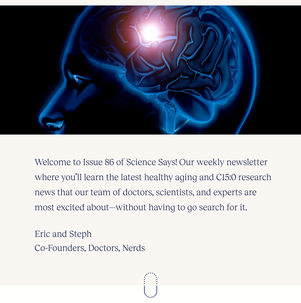
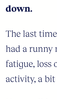
How calming our immune response can make us happier

May 5, 2024



Welcome to Issue 86 of Science Says! Our weekly newsletter where you'll learn the latest healthy aging and C15:0 research news that our team of doctors, scientists, and experts are most excited about—without having to go search for it.

Eric and Steph
Co-Founders, Doctors, Nerds



What Dr. Stephanie Venn-Watson, our co-founder and author of over 80 peer-reviewed scientific publications, is reading.

HEALTHY AGING

An exciting path to healthier and happier brains

Our days are getting sunnier and happier! While we're enjoying every opportunity to activate our vitamin D, this week's *Science Says!* shares progress being made on the science front to raise our happiness... interestingly, by getting our immune responses to calm down.

When our immune systems ramp up, our moods go down.

The last time you had a cold or the flu, you likely not only had a runny nose or fever, but probably also experienced fatigue, loss of appetite, lack of concentration, slowness in activity, a bit of sadness, and more.

Hmm... did you know that is the same list of criteria for depression? Well, back in 2000, Yirmiya et al. took note of these similarities, and they did a few interesting studies to test their hypothesis that a ramped up immune response can cause depression.

Okay, I'm in. What did they find?

Yirmiya et al.'s studies had three key findings:

- First, they showed that when humans have immune responses to infections, they develop symptoms of depression. But you have already experienced that yourself.
- Second, they showed that higher proinflammatory cytokine levels were closely correlated with the severity of mood-related symptoms. Cytokines are natural molecules in our body that are the leading instigators of inflammation.
- Third, compounds traditionally used to support healthy moods not only improved mood, they also lowered cytokine levels.

So, that's pretty interesting.

A surprising evolutionary exploitation of sadness.

Back in our cave days, we likely evolved to have symptoms of depression when infected with pathogens, which forced us to 1) rest and recover, and 2) stay in our caves to avoid being exposed to other things that may kill us when we're weak. As covered by Anders et al., this use of depression to heal our bodies is called the "infection-defense hypothesis".

This works great when we only got inflammation from pathogens and broken bones. This work less great when we're sitting on inflammation all the time.

Calming our immunity really does calm our minds.

Since Yirmiya's initial studies, numerous clinical trials have shown that compounds which have been traditionally used to calm our immune systems also calm our minds. What?

Indeed, in the 2019 meta-analysis led by Kohler-Forsberg et al., which included 36 randomized clinical trials, they concluded that immune calming compounds (like cytokine inhibitors) can help improve our mood.

A promising frontier for happier days.

Today, we are better understanding how cytokines (especially IL-6 and TNFα), which start as high in our bodies, can cross the blood-brain-barrier and activate immune-ramping microglia in our brains. The result? Sadness and anxiety. No, really.

As summarized by Chang et al., it is now well recognized that cytokines contribute not only to chronic, low lying and over-activated immune responses that negatively affect our metabolic, heart, and liver health as we age... this chronic state is also negatively impacting our mood, too.

The new hope? A new frontier of compounds that can calm our immune system, protect our whole body health, and feed our happiness.

C15:0 calms cytokines and mimics mood-calming molecules.

Interestingly, C15:0 is emerging as a potential central player in this story.

Here's why:

- **C15:0 is essential.** Numerous studies support that C15:0 is an essential fatty acid, which means we need to maintain adequate levels of C15:0 (around 20 μM) to maintain our baseline physiological health.
- **C15:0 calms immune responses.** Specifically, C15:0 lowers key cytokines, including IL-6 and TNFα. Can you guess the optimal immune-calming concentration of C15:0 in these studies? Yep, 20 μM.
- **C15:0 behaves like a mood-supporter.** As we published in *PLOS ONE*, C15:0 mimics the same immune calming profile as a leading compound used to help support healthy moods.

Understanding this, we are pursuing the hypothesis that global nutritional C15:0 deficiencies may not only result in over-activated cytokines that are compromising our metabolic, heart, and liver health... but our mental health, too.

More importantly, our studies are pursuing a fix - to replenish our C15:0 levels, support calmed immune responses, and promote both healthier bodies and happier minds. We'll be sure to keep you updated on these studies.

In the meantime, have a great and happy week, everyone!

Dive deeper into the science

READ THESE STUDIES

- Yirmiya et al. Illness, cytokines, and depression.
- Anders et al. Depression as an evolutionary strategy for defense against infection.
- Kohler-Forsberg et al. Efficacy of anti-inflammatory treatment on mood symptoms.
- Chang et al. Pro-inflammatory cytokines in stress-induced depression: novel insights into mechanisms and promising therapeutic strategies.
- Venn-Watson et al. C15:0 as an essential fatty acid and immune-calming nutrient.
- Venn-Watson et al. C15:0 mimics mood-calming molecules.
- Nerd out on all the C15:0 science at DiscoverC15.com.