Finding Bliss with Your Own Endocannabinoids

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Welcome to Issue 135 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 *The Longevity Nutrient* and over 80 peer-reviewed scientific publications, is reading.

HEALTHY AGING

How C15:0 Boosts Your Endocannabinoid System

While cannabis is known to all and used by some, one thing is clear. Our natural endocannabinoid system (aka, our "ECS") is critical to keeping our body and mind balanced. This week, let's dive into the ECS, how it changes as we age, and how C15:0 naturally supports this bliss system.

Why should I care about my endocannabinoid system?

If you like to get a good night's sleep, keep an even-steven mood, support your cognitive health, and promote joint comfort, then you'll love an optimized endocannabinoid system (ECS).

As described by Lu et al., the ECS consists of the following components:

- **Cell-based receptors, called Cannabinoid 1 (CB1) and Cannabinoid 2 (CB2).** When activated, CB1 and CB2 help keep our metabolism, immunity, sleep, and mood balanced. While most CB1 receptors are in our brain, most CB2 receptors are found throughout the rest of our body. Hence, body + brain health.
- **Endocannabinoids.** These molecules are made by our body to activate CB1 and/or CB2. While there are a number of known endocannabinoids that activate either CB1 or CB2, there has long been only one known body-made molecule that fully activates both CB1 and CB2: anandamide. Spoiler alert: We found a second one. But more on that in a bit.
- **Fatty acids.** Fatty acids are the ingredients our body uses to make endocannabinoids. For example, arachidonic acid is an omega-6 that our body uses to make anandamide.
- **Fatty acid amide hydrolase (FAAH).** This enzyme quickly breaks down endocannabinoids. Doctors have long wanted to use anandamide to help support a healthy ECS, but FAAH breaks down endocannabinoids so fast that these happy molecules don't get a chance to do any good. This is why the scientific world has been actively searching for ways to stop FAAH from breaking down endocannabinoids.

Together, these components of the ECS determine our metabolic, immune, sleep, mood, and cognitive health, along with our overall comfort.

How does aging affect our ECS?

Alas, multiple components of our ECS are negatively impacted with advancing age, as demonstrated in aging rodents. For example:

- Ginsburg et al. showed that CB1 receptor binding sites decline in the cortex.
- Nidadavolu et al. demonstrated that endocannabinoid levels go down, too.

Understanding all this, it starts to make a whole lotta sense why, as we age, our metabolism slows. Our immune system becomes unhinged. Sleep is not so deep. We get moodier. And our joints become less comfortable.

So, what does the ECS have to do with cannabis?

Well, thanks to cannabis, researchers were able to discover an entirely new system in our body that we didn't even know existed. While cannabis has been used by humans for thousands of years, it wasn't until the 1980s that scientists discovered how it worked. As reviewed by Svizenska et al.:

- Previously unknown receptors throughout our brain and body (CB1 and CB2, respectively) were discovered that responded to cannabis, resulting in the well-known effects of calmer mood, deeper sleep, and improved body comfort.
- This was closely followed by the discovery of molecules our body makes that activate CB1 and/or CB2.

While we have cannabis to thank for unlocking this whole-body-and-mind health system in mammals, the world has entered an exciting new age of understanding how to protect and optimize our ECS as we age – by supporting your body's natural endocannabinoid levels.

Two groundbreaking discoveries about C15:0 & our endocannabinoid system.

Discovery #1: Back in 2022, we published in *Nature's Scientific Reports* the discovery of a new endocannabinoid that our bodies make – using C15:0. This molecule is called pentadecanoylcarnitine (PDC), which combines C15:0 (pentadecanoic acid) + carnitine. Surprisingly, we found that PDC fully activates both CB1 and CB2 receptors, making it the second-ever discovered full-acting endocannabinoid. Awesome.

Discovery #2: Then, just a month or so ago, we reported in the *International Journal of Molecular Sciences*, that pure C15:0 is a dose-dependent inhibitor of FAAH. By doing so, C15:0 helps *all* endocannabinoids stick around longer and do all the good things they do.

Together, these discoveries explain how C15:0 provides a robust one-two support system to protect our ECS, especially as we age. Better yet, C15:0 is a crucial nutrient that every mammal gets from birth, showing that we need C15:0 to protect and promote our ECS… which supports our metabolic, cognitive, immune, sleep, and mood health, along with our whole-body comfort.

With that, enjoy a blissful week, everyone!

Dive deeper into the science

READ THESE STUDIES

- Lu et al. Review of the endocannabinoid system.
- Ginsburg et al. Age-related changes in CB1 receptor expression and function and the behavioral effects of cannabinoid receptor ligands.
- Nidadavolu et al. Dynamic changes in the endocannabinoid system during the aging process: focus on the middle-age crisis.
- Svizenska et al. Cannabinoid receptors 1 and 2 (CB1 and CB2), their distribution, ligands and functional involvement in nervous system structures – a short review.
- Venn-Watson et al. Pentadecanoylcarnitine is a newly discovered endocannabinoid with pleiotropic activities relevant to supporting physical and mental health.
- Venn-Watson et al. Novel cognitive health-supporting roles of pentadecanoic acid (C15:0).
- Nerd out on all the C15:0 science at DiscoverC15.com