Why C15:0 is The Longevity Nutrient

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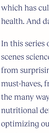
Welcome to Issue 119 of Science Says! Our weekly newsletter where you'll learn the latest healthy aging and C15:0 research news that our team of doctors, scientists, and experts are most excited about—without having to go search for it.

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

Yes, C15:0 Meets the 7 Criteria of Longevity Enhancers

The countdown is on until Simon & Schuster's March 25th release of *The Longevity Nutrient*. This book tracks our 20-year scientific journey - starting with an unexpected discovery of C15:0's health benefits while helping dolphins - which has culminated in a movement to improve global health. And dare we say, humanity?

In this series of *Science Says!*, we provide a behind-the-scenes science peek relevant to each of the book's chapters - from surprising dolphin discoveries to longevity molecule must-haves, from how essential fatty acids are discovered to the many ways C15:0 works, from how a newly found nutritional deficiency accelerates aging to how fixing and optimizing our C15:0 levels can slow aging to help us live healthier, longer.

This week, let's scratch the surface of how C15:0 meets the criteria of a longevity enhancer.

There are 7 criteria of longevity enhancers.

While we dive deep into the 7 criteria of longevity enhancers in the book, here are the crib notes. In order to effectively extend our healthspan (and therefore, our lifespan), a longevity enhancer needs to:

1. Tap into the human longevity regulating pathway.
2. Target key hallmarks of aging (aka how we age at the cellular level).
3. Have evidence of slowing biological aging rates.
4. Demonstrate clinically relevant benefits within months.
5. Have evidence of protecting against aging-related conditions.
6. Be reasonably accessible throughout our century-long lives.
7. Be safe to routinely take for a hundred years.

If an intervention can do all of these things, it meets the criteria of a bonafide geroprotector - a coveted molecule that can slow aging and enable us to live both healthier and longer.

Okay, how does C15:0 stack up to these longevity must-haves?

In addition to sharing how other leading longevity compounds meet these criteria, the book (of course!) provides the science behind how C15:0 meets all 7 must-haves.

For example,

- ☑ **C15:0 taps into the human longevity regulating pathway.** Studies from Fu. et al. and Ruan et al. show that C15:0 works at the heart of the human longevity pathway. Specifically, by activating AMPK and inhibiting mTOR.
- ☑ **C15:0 targets six hallmarks of aging.** As summarized in our peer-reviewed study published in *Nutrients*, C15:0 reverses multiple hallmarks of aging, such as mitochondrial dysfunction, cellular senescence, and poor cellular signaling.
- ☑ **C15:0 has evidence of slowing biological aging rates.** Clinical trials and other studies have shown that C15:0 increases hemoglobin and lowers red blood cell distribution width (RDW), both of which are indices of slower aging rates. Additionally, Liu et al. showed that people with higher C15:0 in their complex lipids have slower biological aging.
- ☑ **C15:0 demonstrates clinically relevant benefits within months.** As shown in controlled clinical trials from Robinson et al. and Chooi et al., C15:0 supplementation successfully raises C15:0 levels, resulting in healthier, higher hemoglobin, lower LDL-cholesterol, lower liver enzymes, and improved gut microbiome health within 12 weeks.
- ☑ **C15:0 has evidence of protecting against aging-related conditions.** Multiple meta-analyses (which include many prospective cohort studies) that follow thousands of people over a decade or more, have repeatedly shown that people with higher C15:0 have better long-term metabolic and heart health. Some good examples of these studies include those from Huang et al. and Trieu et al.
- ☑ **C15:0 is reasonably accessible throughout our century-long lives.** Our most common dietary source (by far) of C15:0 is in dairy fat. So yep, we all have reasonable access to C15:0 throughout our lives. Further, a decade of Navy-supported research led to the optimization of a pure, bioavailable, and vegan-friendly C15:0 ingredient that makes this must-have even more achievable for all.
- ☑ **C15:0 is safe to routinely take for a hundred years.** Yep, another check in C15:0's box. In fact, as a nutrient validated as an essential fatty acid by four independent teams globally, C15:0 is not only safe to take throughout our lives, but our bodies actually require C15:0 to stay healthy.

The Longevity nutrient that is also an essential nutrient.

In the upcoming book, *The Longevity Nutrient*, Chapter 3 dives deep into how C15:0 meets the 7 must-haves of a longevity molecule. All with our nerdy approach to explaining science!

Next week, we'll cover the science and logic behind which nutrients do (and don't) make the rare cut as an Essential Fatty Acid. Consider the EFAs the VIPs of the nutrition world.

In the meantime, have a wonderful week, everyone!

Dive deeper into the science

READ THESE STUDIES

- Fu et al. Pentadecanoic acid promotes basal and insulin-stimulated glucose uptake.
- To et al. C15:0 activates mTOR.
- Ruan et al. Free long-chain fatty acids suppress mTORC1.
- Venn-Watson & Schork. Pentadecanoic Acid (C15:0), an Essential Fatty Acid, Shares Clinically Relevant Cell-Based Activities with Leading Longevity-Enhancing Compounds.
- Venn-Watson et al. C15:0 raises hemoglobin and lowers RDW.
- Kim et al. Association between variation in red blood cell size (RDW) and multiple aging-related outcomes.
- Liu et al. The Lipidomic Correlates of Epigenetic Aging Across the Adult Lifespan: A Population-Based Study.
- Robinson et al. C15:0 Supplementation in Young Adults at Risk for Metabolic Syndrome: A Randomized Controlled Trial.
- Chooi et al. Effect of An Asian-Adapted Mediterranean Diet and Pentadecanoic Acid: The TANGO Randomized Controlled Trial.
- Huang, L. et al. Circulating saturated fatty acids and long-term metabolic health: A systematic review and meta-analysis.
- Trieu, K. et al. Biomarkers of dairy fat intake, incident cardiovascular disease, and all-cause mortality: A cohort study, systematic review, and meta-analysis.
- Venn-Watson et al. C15:0 as an essential fatty acid.
- Ciesielski et al. New insights on pentadecanoic acid with special focus on its controversial essentiality: A mini-review.
- Ciesielski et al. Dietary pentadecanoic acid supplementation at weaning in essential fatty acid-deficient rats.
- Dornan, K. et al. Odd chain fatty acids and odd chain phenolic lipids (alkylresorcinols) are essential for diet.
- Ruan et al. C15:0 solely triggers healthy development in C. elegans.

- Nerd out on all the C15:0 science at DiscoverC15.com