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C15:0 Science Round-Up Series: Efficacy Studies

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Welcome to Issue 149 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

Let's Talk Efficacy

It's back to school time, so we thought, what better time to do a Round-Up Series on what makes C15:0, well, so science-backed? In this series, we are covering the following six key topics on C15:0:

- ☐ **Mechanisms of Action:** How C15:0 works
- ☐ **Optimal Effective Levels & Daily Intake:** C15:0 bioavailability and amounts needed to achieve active levels
- ☐ **Cell-Based Efficacy:** What C15:0 does at the cellular level
- ☐ **In Vivo Efficacy:** What C15:0 does at the whole-body level
- ☑ **Epidemiological Studies:** People who have higher levels of C15:0 have healthier __________ (we'll fill in the blanks)
- ☑ **Clinical Trials:** Randomized controlled clinical trials with C15:0

What makes the science behind C15:0 so robust is its consistency across all six topics above - including 100+ studies across numerous independent research teams throughout the world. We're also sharing how C15:0 study outcomes - from its mechanisms of action to clinical trials - are intricately interlinked.

Last week, we covered population-based studies showing how people with higher C15:0 have better long-term metabolic, heart, liver, and red blood cell health. This week, we summarize a slew of cell-based and in-body efficacy studies.

C15:0 calms pro-inflammatory cytokines and oxidative stress.

As we get older, our cells become more susceptible to oxidative stress. Which increases pro-inflammatory cytokines. Which increases oxidative stress. It's a bit of a vicious cycle. Here's the good news:

- Wei et al. and Aabis et al. showed that C15:0 supplementation in two different rodent models lowered oxidative stress.

- Wu et al., Bishop et al., Singh et al., and Venn-Watson et al. demonstrated that C15:0 supplementation lowered pro-inflammatory cytokines, including IL-6, TNFα, and MCP-1 in rodents, too.
- Aligned with these studies, Venn-Watson & Schork showed that C15:0 effectively lowered a whopping 18+ pro-inflammatory cytokines, including IL-6, TNFα, and MCP-1 in a dose-response fashion.

These studies support that C15:0 helps to break the oxidative-stress-to-pro-inflammatory-cytokine cycle. We'll talk about the mechanisms behind these effects next week.

C15:0 supports cardiovascular & metabolic health.

There are a growing number of studies showing how C15:0 works in the body and cells to support cardiovascular and liver health, including the following:

- In rodent models, C15:0 supplementation supported healthy cholesterol and glucose levels.
- Fu et al. showed that, at the cellular level, C15:0 increased healthy glucose uptake by muscle cells. C15:0 also improved insulin sensitivity and, surprisingly, even served as an insulin mimic.
- In human vascular cell systems, C15:0 protected vessels by lowering pro-inflammatory cytokines.

These studies align with clinical trials we shared a couple weeks back, which linked higher C15:0 intake with healthier LDL cholesterol and improved vascular health, as well as those population-based studies showing that people with higher C15:0 have better long-term cardiovascular and metabolic health.

C15:0 promotes gut & liver health.

Moving on, C15:0 also supports gut & liver health in rodent models:

- Aabis et al. and Wei et al. showed that C15:0 supplementation supported healthy liver function, including lowering the liver enzymes ALT and AST.
- Singh et al., Wei et al., and Wu et al. also demonstrated that C15:0 supplementation protected a healthy gut, including the integrity of the gut lining.

The liver-supporting benefits of C15:0 are backed by a clinical trial by Robinson et al., showing that when C15:0 levels are > 5 ug/ml, liver function improves (aka lower ALT and AST). Which parallels Zheng et al.'s population cohort study showing that people with higher C15:0 have better long-term liver health.

Let's not forget that C15:0 supports red blood cell health & healthy iron metabolism.

Last but not certainly not least, Aabis et al. showed that C15:0 supplementation in relevant models effectively strengthened and protected red blood cells, resulting in:

- Raised hemoglobin
- Raised red blood cells
- Lower red blood cell distribution width (RDW)
- Restored healthy iron balance

Which matches the Robinson et al. clinical trial in which people supplemented with C15:0 who had raised C15:0 levels had higher hemoglobin. This also lines up with Sobeleva et al.'s study, which showed that people with higher C15:0 have healthier, more stable red blood cells.

In Summary

To sum up, C15:0 has demonstrated efficacy in rodent and human cell-based models that supports:

- Immune health
- Heart health
- Metabolic health
- Gut health
- Liver health

- Red blood cell health
- Healthy iron metabolism

These efficacy studies are further backed by the clinical trials and population-based studies we covered in the last two issues. How about that?

Next week, we'll cover dose-dependent mechanisms of action that explain just how C15:0 does what it does at the cellular level. In the meantime, have a fantastic week, everyone!

Dive deeper into the science

READ THESE STUDIES AT
DISCOVERC15.COM/RESOURCES

CELL-BASED AND IN-BODY EFFICACY STUDIES

- Wei et al. (2023) Nature Microbiology 8, 1534-1548.
- Aabis et al. (2025) Nauyn Schmied Arch Pharmacol doi:10.1007/s00210-025-04143-6.
- Wu et al. (2024) Nature Comms 15, 9291.
- Bishop et al. (2023) Nutrients 15, 2052.
- Singh et al. (2024) Nutrients 17, 3031.
- Venn-Watson et al. (2020) Scientific Reports 10, 8161.
- Venn-Watson & Schork (2023) Nutrients 15, 4607.
- Fu et al. (2021) Food Nutr Res 65, 10.29219.

POPULATION STUDIES

- Li et al. (2022) Frontiers in Nutrition 9, 963471.
- Arghavani et al. (2025) Nutr Metab, Cardiovasc Dis 35,104112.
- Zheng et al. (2017) BMC Med 15, 203.
- Chen et al. (2025) Lipids Health Dis 24, 219.
- Huang et al. (2025) Clin Nutr 46, 30-36.
- Kratz et al. (2014) Am J Clin Nutr 99:1385-1396.
- Sawh et al. (2021) J Pediatr Gastroenterol Nutr 72:e90-e96.
- Soboleva et al. (1994) Bull Exp Biol Med 117, 600-602.
- Brydges et al. (2022) Brain Behav Immun 102, 42-52.
- Liu et al. (2023) Aging Cell 22, e13934.

CLINICAL TRIALS

- Stallings et al. (2013) Int J Clin Pharmacol Ther 51, 263-273.
- Mascarenhas et al. (2015) J Clin Pharmacol 55, 854-865.
- Robinson et al.(2024) J Nutr 154, 2763-2771.
- Chooi et al. (2024) Am J Clin Nutr 119, 788-799.
- Salamanca-Sanabria et al. (2025) Front Nutr 12, In Press.
- Arghavani et al. (2025) Nutr Metab, Cardiovasc Dis 35,104112.
- Kaneko et al. (2023) Med Cons New-Remed 60, 459-470.

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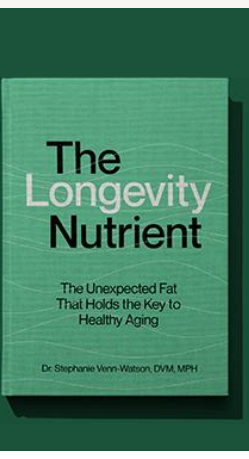

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