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How much C15:0 is in that milk?

A question worth ruminating.

July 24, 2022

Welcome to Issue 9 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

What cows eat influences your milk's C15:0 content

C15:0 has been newly discovered as an essential fatty acid that our bodies need to support long-term health, especially as we get older. Our primary natural dietary sources of C15:0 are whole fat dairy products.

A recent paper in the peer-reviewed scientific journal, *Animals*, summarized the existing literature on how cows make C15:0 - and how their diets have a significant impact on how much C15:0 is actually in that milk you may be pouring into your coffee or cereal.

Bacteria in cows' rumens are C15:0-making machines

Cows have multiple stomachs, including the rumen, that help them break down and digest what would otherwise be tough-to-eat plants. The rumen is full of specialized bacteria, including bacteria that make C15:0. Once made, C15:0 becomes incorporated into cows' milk. Numerous studies have evaluated the impact that different cows' diets have on the fatty acid composition of their milk.

Omega-3 enriched diets result in milk with low C15:0

Along with consumers' demand for omega-3 rich products, farms started enriching cows' diets with omega-3s and other polyunsaturated fatty acids. These diets often add linseed or flaxseed oil to their diets to raise omega-3 levels in milk. In their paper, Abul-Aziz et al. share dozens of studies showing that omega-3 enriching diets actually turn down rumen bacterial production of fatty acids, resulting in lower C15:0 levels in milk.

Grass-fed cows have more C15:0 in their milk

In the *Journal of Dairy Science*, Patel & Bertilsson showed the higher the quality of grass fed to cows, the more C15:0 they had in their milk. This effect, however, varied greatly depending on other forage in the cows' diets, including corn versus wheat, red clover, and extruded plant seeds.

What's in your milk?

Previously, we knew that non-fat milk has no detectable C15:0, low-fat milk has some C15:0, and whole-fat milk has more C15:0. The bottom line from these latest studies is that, unless you know exactly what cows were fed before making the milk you're drinking, you don't really know how much C15:0 you are getting. This may be one reason why hundreds of studies on the health benefits and risks of drinking cows' milk are consistently, well, inconsistent.

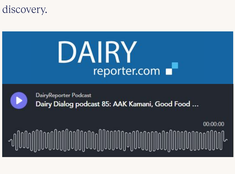
For fellow plant-based milk drinkers, it is important to note that these milks - including oat, soy, almond, potato, and others - are completely deficient in C15:0.

Why we made a pure C15:0 ingredient.

The healthy and essential nutrient, C15:0, is naturally present in trace amounts in our diet, especially whole fat dairy products. These foods, however, contain much higher levels of even-chain saturated fats (like C16:0), which continue to be associated with poorer health. As the above studies show, the nutritional quality of our foods vary greatly. Additionally, food-based C15:0 is tied up in triglycerides, which require our digestive enzymes to break down C15:0 into free fatty acids before it can be absorbed.

Given C15:0's role in protecting our long-term health and wellness, we wanted to provide a pure, sustainable, bioavailable, stable, science-backed, vegan-friendly, 1-calorie, free fatty acid C15:0 ingredient that removed all of the complicating factors of C15:0 in foods, and left just the goodness of C15:0 packed into one tiny pill. Years (and years) of research and development later, the result is fatty15. Without the cows or calories!.

Want to learn more about C15:0 and milk? Check out our discussion on the Dairy Dialog Podcast from 2020 (go to the 43:19 minute mark), where we chat about the early days of our C15:0 discovery.



Dive deeper into the science

READ THESE STUDIES

- Review paper on the impact of cows' diets on milk C15:0 levels
- Omega-3 fortified milk has lower C15:0
- Grass-fed cows have higher C15:0 in their milk