C15:0 Science for Mom

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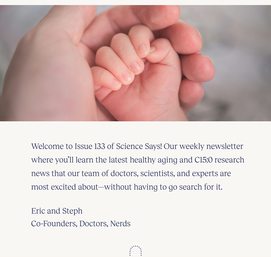

Welcome to Issue 133 of Science Says! Our weekly newsletter where you'll learn the latest healthy aging and C15:0 research news that our team of doctors, scientists, and experts are most excited about—without having to go search for it.

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 Has a Special Love for Mothers

In celebration of Mother's Day, this week we cover the fascinating science on how C15:0 is helping moms. When she is trying to be a mom, when she is becoming a mom, and when she is being a mom. Which helps *all* of us.

C15:0 love, from oocyte to embryo.

One of the most reliable biological and chronological clocks in women? Our number of oocytes. When we're born, females have millions of oocytes. That decreases to 300,000 in our teens. And 72,000 when we hit 30.

As the name implies, women who have diminished ovarian reserve have accelerated loss of oocytes. To find out why, Zhao et al. assessed various fatty acids and found that women with ***lower*** C15:0 in their ovaries induced lower mitochondrial energy, down-regulated DNA repair genes, and apoptosis (self-destruction) of granulosa cells. Because granulosa cells are supportive ovarian cells that make progesterone and estrogen, the authors concluded that ***lower*** C15:0, among a handful of other fatty acids, may contribute to faster loss of oocytes. They also found that the higher a woman's C15:0, the healthier her ovarian reserve and oocytes. In a separate study, Zarezadeh et al. showed that oocytes bathing in C15:0-rich follicular fluid were more likely to result in healthier-dividing embryos, which improves the outcome of in vitro fertilization. That's a lot of C15:0 ovarian & oocyte love.

More than gestating science: C15:0 & pregnancy.

A study by Kaiser Permanente followed 321 women throughout their pregnancy and showed that those who had higher C15:0 had healthier glucose handling, immune response, and triglyceride levels. In another study, Li et al. demonstrated that pregnant women with the highest C15:0 levels had better fetal weight and size. They concluded that these findings "could inspire future interventions using an alternative... diet rich in odd-chain [saturated fatty acids] for optimal fetal growth." All of this is encouraging science for our soon-to-be moms.

Supporting moms & healthy babies.

A team in Australia followed mother-baby pairs and found that the more C15:0 mom had in her milk, the more C15:0 baby had... which was linked to better, healthier infant growth. This included both body weight and head circumference. In a separate study in France, up to 1,200 mom-baby pairs were followed to evaluate associations between mom's C15:0 levels during pregnancy and breastfeeding and her child's cognitive development up to 6 years old. Yuan et al. found that the higher mom's C15:0 levels in: 1) her blood cell membranes, and 2) her colostrum, the better her child's overall cognitive development at ages 3 and 5-6 years old, including the child's language abilities.

Given that our last two *Science Says!* issues focused on how C15:0 helps support cognitive health as we age, it is wonderful to see how C15:0 may help our brain health from the womb and beyond. All thanks to mom.

So, does mom have control over her C15:0 levels - during all the life stages above... as well as when she gets older?

How mom can optimize her C15:0 levels

Importantly, it is well understood that moms can readily increase their C15:0 levels, which, in turn, increases her baby's C15:0 levels - both in the womb and from her milk. Studies have shown that pregnant women who do the following have higher C15:0 levels:

- ☑ **Eat cheese.** Pregnant women who eat whole fat dairy products, especially cheese, have higher C15:0 levels.
- ☑ **Choose organic foods.** We don't quite know why, but Simone-Wust et al. showed that pregnant women who ate organic foods also had higher C15:0 levels.
- ☑ **Exercise.** Meanwhile, Liu et al. demonstrated that pregnant women who exercised regularly had higher C15:0, too. This was attributed to exercise's help releasing C15:0 stored in tissues.

Of course, C15:0 supplementation has now been added to this list of how to raise C15:0 levels.❤️

Beyond the early and mid-age years, we have extensively covered the science behind how C15:0 helps mom as she gets older, including how C15:0 targets key receptors that support her long-term:

- **Metabolic health** by enabling better glucose control.
- **Cognitive health** by promoting healthy dopamine and endocannabinoid levels.
- **Red blood cell health** by strengthening cell membranes.
- **Liver health** by protecting against lipid peroxidation and optimizing iron handling.
- **Immune health** by lowering 18+ proinflammatory cytokines.

All this science (available at DiscoverC15.com) helps explain how C15:0 slows and reverses aging at the cellular level. Can you think of a better gift for mom? We can't.

Happy Mother's Day to all (including you, Mom), and have a great week, everyone!

Dive deeper into the science

READ THESE STUDIES

- Zhao et al. Decreased fatty acids induced granulosa cell apoptosis.
- Zarezadeh et al. Fatty acids of follicular fluid phospholipids and triglycerides display distinct association with IVF outcomes.
- Yeyi Zhu et al. A prospective and longitudinal study of plasma phospholipid saturated fatty acid profile in relation to cardiometabolic biomarkers.
- Li et al. Early Pregnancy Maternal Plasma Phospholipid Saturated Fatty Acids and Fetal Growth: Findings from a Multi-Racial/Ethnic Birth Cohort in US.
- George et al., The Fatty Acid Species and Quantity Consumed by the Breastfed Infant Are Important for Growth and Development.
- George et al., The Importance of Human Milk Fatty Acids in Infant Growth and Development – Concentration vs. Relative Abundance vs. Intake.
- Yuan et al, Associations between perinatal biomarkers of dairy fat intake and child cognitive development: results from the EDEN mother–child cohort study.
- Yuan et al., Associations of Maternal Consumption of Dairy Products during Pregnancy with Perinatal Fatty Acids Profile in the EDEN Cohort Study.
- Simone-Wust et al, Organic Food Consumption During Pregnancy and Its Association with Health-Related Characteristics: The KOALA Birth Cohort Study.
- Liu et al, Physical Activity and Individual Plasma Phospholipid SFAs in Pregnancy: a Longitudinal Study in a Multiracial/Multiethnic Cohort in the United States.
- Venn-Watson S, Jensen ED Aging-associated amyloid-β plaques and neuroinflammation in bottlenose dolphins (Tursiops truncatus) and novel cognitive health-supporting roles of pentadecanoic acid (C15:0).
- Venn-Watson S. The Cellular Stability Hypothesis: Evidence of Ferroptosis and Accelerated Aging-Associated Diseases as Newly Identified Nutritional Pentadecanoic Acid (C15:0) Deficiency Syndrome.
- Venn-Watson et al. Pentadecanoic Acid (C15:0), an Essential Fatty Acid, Shares Clinically Relevant Cell-Based Activities with Leading Longevity-Enhancing Compounds.
- Venn-Watson et al. Efficacy of dietary odd-chain saturated fatty acid pentadecanoic acid parallels broad associated health benefits in humans: could it be essential?
- Nerd out on all the C15:0 science at DiscoverC15.com