Controlling glucose, and aging too?

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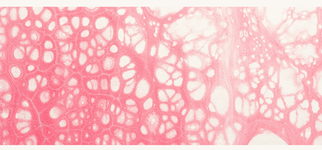

Welcome to Issue 17 of Science Says! Our weekly newsletter where you'll learn the latest healthy aging and C15:0 research news that our team of doctors, scientists, and experts are most excited about—without having to go search for it.

Eric and Steph
Co-Founders, Doctors, Nerds

What Dr. Eric Venn-Watson, our co-founder and Navy physician, is reading.

HEALTHY AGING

Healthy glucose

The American Heart Association recently published eight updated and enhanced health tips, called Life's Essential 8, in the journal, *Circulation*. We are dedicating our latest round of newsletters to Life's Essential 8.

Darn the sugars

Instead of defining whether or not you have heart *disease*, Life's Essential 8 is used to define whether or not you have heart *health*. Meeting all of these essential 8 goals is expected to help us not only have healthier hearts, they can enable us to live longer, healthier lives.

This week, let's talk about:

- ☑ Healthy glucose

What are healthy glucose levels?

The American Heart Association uses fasting blood glucose (FBG) or casual HbAIc as its primary measurements to define "healthy", "prediabetes" and "diabetes".

- Healthy: FBG < 100 mg/dl (or HbAIC < 5.7)
- Prediabetes: FBG 100-125 mg/dl (or HbAIc 5.7-6.4)
- Diabetes: HbAIc > 6.4

Prediabetes increases our risk of developing type 2 diabetes, heart disease, and stroke. When we have type 2 diabetes, chronically elevated glucose levels can directly damage our tissues including our eyes, hearts, and kidneys. Given the importance of maintaining healthy glucose levels, let's take a look at how these levels can change with age.

Does aging really impact our glucose levels?

Yes, it does. Pazos-Couselo et al. studied changes in glucose levels among a group of healthy people as they aged from their mid-40s to their 50s. They showed that, as we age, we are more likely to move from the healthy glucose category to the prediabetes category.

Why aging leads to higher glucose.

Chances are, you ate *way* more sugary foods when you were younger than you do now. In fact, it has probably been a few decades since your last gobstopper. So, why do glucose levels go up with age, when our sugar intake has most likely gone down at the same time? It's all about control.

As we age, we increasingly lose our ability to maintain whole-body balance. This leads to imbalanced immune responses (aka inflammation), imbalanced metabolism, and impaired glucose control. Here's the good news: interventions that keep our glucose levels in check may also help to slow aging.

Improving glucose control to "treat" aging.

While aging is not considered a disease, the FDA has recently approved numerous clinical trials that are evaluating how well therapeutics may help to slow the process of aging-related breakdown. Why is this a big deal? Well, once components of aging are acknowledged as treatable, the tried-and-true process of finding new ways to effectively "treat" aging can go to work. This includes peer-reviewed research, clinical trials, and physician-monitored interventions.

This is where glucose control comes in. Metformin is the most common first-line treatment for high blood glucose and one of the most commonly used drugs globally. It has also been shown to target multiple hallmarks of aging, including mitochondrial dysfunction, genomic instability and cellular senescence, as recently summarized by Chen et al. Because of these mechanisms, metformin was the first drug to be approved by the FDA to be used in a clinical trial focused on aging, called the Targeting Aging with Metformin (TAME) trial. This trial is in the works and is an exciting advancement for aging-related interventions, including glucose control with aging.

C15:0 for healthy glucose control - and healthy aging*

Similar to metformin, C15:0 has multiple mechanisms that support healthy glucose and healthy aging. This includes C15:0's demonstrated role by Fu et al. as an AMPK activator that promotes healthy glucose metabolism.

Beyond direct glucose-balancing mechanisms, C15:0 also goes after multiple hallmarks of aging by helping to restore mitochondrial function, improve cellular resilience against early breakdown, and repair DNA. This explains why higher circulating concentrations of C15:0 have been linked to healthy glucose control, eye health, and longevity in people. Next up, gobstoppers with a C15:0 center. We're kidding, of course. Let's just go with C15:0.

Dive deeper into the science

READ THESE STUDIES

- Life's Essential 8: Updated tips from the American Heart Association
- Changing glucose profiles with age
- Metformin in aging and aging-related diseases
- TAME trial - metformin for aging
- C15:0 as an AMPK activator
- C15:0 supports healthy glucose and targets hallmarks of aging
- C15:0 associated with eye health
- C15:0 and healthy glucose: a systematic review and meta-analysis