

# GLYCATION



## Glycation

Skin glycation is a behind-the-scenes process that plays a big role in how the skin ages, even though most people have never heard of it. In simple terms, glycation happens when excess sugar in the body attaches to proteins like collagen and elastin. These proteins are responsible for keeping your skin firm, smooth, and able to bounce back. When sugar binds to them, it changes their structure and makes them weaker, stiffer, and less functional.



Think of collagen and elastin like soft, flexible fibers that keep your skin supported and resilient. Glycation essentially “hardens” these fibers. Instead of being strong and flexible, they become rigid and more prone to breaking down. This process forms compounds called advanced glycation end products (AGEs), which accumulate in the skin over time and contribute to visible signs of aging.

As glycation progresses, it can lead to skin that looks dull, less elastic, and more prone to fine lines and sagging. One of the more noticeable effects is a loss of that natural “bounce” in the skin. When you press on it, it doesn’t spring back as easily. Glycation can also contribute to a yellowish or sallow tone in the complexion over time, which is something many people don’t immediately connect to sugar intake or internal processes.

This process happens naturally as part of aging, but it is significantly accelerated by lifestyle factors, especially high sugar diets. Frequent spikes in blood sugar increase the likelihood of glycation occurring, which means the more often the body is exposed to excess sugar, the more opportunity there is for these damaging reactions to take place. It’s not just obvious sugar sources like desserts either. Refined carbohydrates, processed foods, and sugary drinks can all contribute to this cycle. Other factors like smoking, chronic stress, and UV exposure can also increase oxidative stress in the body, which worsens glycation-related damage.

## What you can do

***One important thing to understand is that glycation damage is not easily reversible. Once collagen has been glycated and stiffened, it does not return to its original healthy state.*** This is why prevention and slowing the process down is key when it comes to maintaining healthy, youthful skin over time.

From a priority standpoint, the most impactful ways to manage glycation are:

1. Lifestyle and diet
2. Topicals
3. Treatments
4. Dietary supplements

### Lifestyle and diet

This is the foundation and has the biggest influence on glycation. Glycation is primarily driven by blood sugar levels, so how you eat and live directly determines how much glycation is happening in the body. If this piece isn't addressed, nothing else will make a meaningful difference.

### Topicals

This is your next most impactful layer, specifically:

- SPF (to prevent UV-driven glycation and damage)
- Antioxidants (to reduce oxidative stress)
- Retinoids (to support collagen and skin repair)

Topicals help protect and improve how the skin functions, even if they don't stop glycation at its source.

### Treatments

These help repair and rebuild damage that has already occurred. Things like microneedling or other collagen-stimulating treatments can improve skin structure and quality over time, including damage influenced by glycation, but they don't prevent glycation from happening internally.

### Dietary Supplements

While some supplements may offer antioxidant or mild anti-glycation support, their impact is small compared to diet, sun protection, and skincare. They're best viewed as an add-on, not a primary strategy.

# Supplements

## 1. Carnosine

- A naturally occurring dipeptide that can interfere with glycation reactions and AGE formation
- It also acts as an antioxidant and helps protect proteins from damage
- Levels decline with age, which is part of why it's marketed for "anti-aging"
- Strong in theory and lab data
- Human evidence is still limited

## 2. Alpha-lipoic acid

- Not a direct glycation blocker but still relevant.
- Helps improve blood sugar regulation and insulin sensitivity
- Reduces oxidative stress (a major driver of glycation)
- More metabolic support than skin-targeted
- Evidence is mixed overall

## 3. Rosemary Extract

- Contains rosmarinic acid which has been studied for anti-glycation effects
- Works mainly through antioxidant + anti-inflammatory pathways
- Mostly lab-based evidence