

APOE4 Carriers at Risk: Can Plasmalogens Protect Against Alzheimer's?

Plasmalogen Levels and the APOE4 Gene: Connecting the Dots in Alzheimer's Risk

When it comes to Alzheimer's disease, one genetic factor stands out more than any other: the **APOE ε4 allele** (commonly called APOE4). Carrying one—or especially two—copies of this gene variant significantly increases the risk of cognitive decline and late-onset Alzheimer's disease.

But why? The answer isn't one single problem. Instead, it's a cascade of challenges in the brain, many of which tie directly to **plasmalogens**—a special type of lipid that protects cells, supports brain function, and regulates inflammation.

APOE4 and Lipid Imbalance

In a healthy brain, cholesterol and lipids are carefully managed. This balance supports:

- **Strong cell membranes**
- **Synaptic plasticity** (the ability of neurons to adapt and form new connections)
- **Neuronal repair**
- **Clearance of harmful proteins like β-amyloid**

APOE3, the more common version of the gene, does this job efficiently. APOE4, however, mismanages cholesterol recycling. This leads to:

- Impaired cholesterol transport
- Oxidative stress in neurons
- Weakened brain repair systems
- Increased β-amyloid buildup (a hallmark of Alzheimer's disease)

The result? A brain that's more vulnerable to neurodegeneration.

How Plasmalogens Protect APOE4 Carriers

Plasmalogens provide critical support in exactly the areas where APOE4 causes damage.

Cholesterol Transport

They help recycle cholesterol efficiently, countering ApoE4's lipid trafficking problems.

β-Amyloid Clearance

They contribute to clearing toxic plaques before they accumulate.

Synaptic Nourishment

They supply DHA (docosahexaenoic), a vital building block of grey matter that strengthens synapses and supports memory.

Neuroprotection

As antioxidants, they reduce oxidative stress and protect fragile brain cells.

When plasmalogen levels drop, APOE4's damaging effects are magnified -accelerating cognitive decline and the onset of Alzheimer's.

The Link Between APOE4 and Plasmalogen Levels

Recent research adds another layer to this story: **lower plasmalogen levels in APOE4 carriers.**

Dr. Dayan Goodenowe's study, *Relation of Serum Plasmalogens and APOE Genotype to Cognition and Dementia in Older Persons*, found that:

- People with lower plasmalogen levels were more likely to show cognitive decline and dementia.
- APOE4 carriers, in particular, had reduced plasmalogen levels.

This suggests that APOE4 may not just affect cholesterol—it may also disrupt plasmalogen metabolism, creating a double-hit to brain resilience.

Why This Matters

For APOE4 carriers, supporting plasmalogen levels may be one of the most important ways to protect long-term brain health. Plasmalogens appear to:

- Defend against APOE4-related vulnerabilities
- Support memory and cognition
- Reduce harmful inflammation and oxidative stress
- Promote resilience against Alzheimer's disease

This connection makes plasmalogens both a potential **biomarker** (to help detect risk early) and a promising **therapeutic target** for prevention.

Protecting Brain Health with Total Body Health

At **Total Body Health**, led by **Dr. Kevin Greene**, we take a **precision approach** to protecting the brain, especially for individuals at higher genetic risk like APOE4 carriers.

By incorporating advanced tools such as **plasmalogen restoration therapies** (including **ProdromeNeuro™** and **ProdromeGlia™**), our team helps:

- Support cholesterol balance and lipid metabolism
- Strengthen synapses and memory function
- Reduce oxidative stress and chronic inflammation
- Protect long-term cognitive resilience

👉 If you know you carry the APOE4 gene—or if you want to protect your brain health as you age—contact **Total Body Health today**. Dr. Kevin Greene and our team can help you take a proactive, science-driven approach to preserving cognition, slowing decline, and building a foundation for lifelong brain health.

Total Body Health

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