

## Decrease Your Risk of Alzheimer's With This

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✓ Fact Checked

December 29, 2022

### STORY AT-A-GLANCE

- › The erectile dysfunction drug Viagra (sildenafil) reduced the risk of Alzheimer's disease by 69% in one study
- › Viagra comes with a risk of serious side effects, including sudden vision loss and hearing loss, heart attack, stroke, irregular heartbeat, melanoma and death
- › Viagra works by boosting nitric oxide (NO) in your body; you can boost NO naturally by eating nitrate-rich foods, exercising and getting sensible sun exposure
- › High blood pressure may raise your risk of dementia; NO helps reduce blood pressure
- › Beets also provide powerful benefits for your brain, largely due to their high nitrate content, which your body transforms into NO

More than 6 million U.S. adults have Alzheimer's disease. By 2050, this number is expected to increase to nearly 13 million.<sup>1</sup> Despite its growing prevalence, there is no known cure for Alzheimer's disease and conventional treatments are lacking.

So, researchers with the Cleveland Clinic analyzed 1,600 approved drugs in the hopes that one of them could be repurposed as an Alzheimer's treatment.<sup>2</sup> The erectile dysfunction drug Viagra (sildenafil) turned out to be surprisingly effective. Usage reduced the risk of Alzheimer's disease by 69%, while increasing neurite growth and reducing levels of toxic tau proteins.<sup>3</sup>

## High Blood Pressure's Alzheimer's Link

It's clear to see the importance of NO in maintaining healthy brain function when you connect the dots between other Alzheimer's risk factors – high blood pressure among them. High blood pressure, specially elevated systolic pressure, may raise your risk of dementia.<sup>4</sup>

One study<sup>5</sup> found an elevated average systolic blood pressure puts you at greater risk for brain lesions and tangles associated with Alzheimer's disease. NO, meanwhile, is beneficial for high blood pressure, which is driven by oxidative stress. Decreased bioavailability of NO is involved in driving oxidative stress.<sup>6</sup>

## Molecular Hydrogen Is Neuroprotective, Won't Suppress NO

Another interesting component to brain health is **molecular hydrogen** (H<sub>2</sub> gas), a potent selective antioxidant. This is important, as many other antioxidants, such as vitamins C and E, are not selective, and when taken in excess can be counterproductive.

Hydrogen doesn't have that downside, which is one of the reasons why it's one of my favorites. Now, when we talk about molecular hydrogen, we are talking about the gas, the H<sub>2</sub> molecule, which is two hydrogen atoms bound together.

The H<sub>2</sub> molecule is the smallest in the universe, which allows it to diffuse through all cell membranes, including the blood-brain barrier and subcellular compartments, and into the mitochondria. It doesn't need any transporter protein – and it's being explored for its role in Alzheimer's disease. As noted in Medical Gas Research:<sup>7</sup>

*“As a recognized reducing gas, hydrogen has shown great antioxidative stress and anti-inflammatory effect in many cerebral disease models. It can ameliorate neuronal damage, maintain the number of neurons, prolong the lifespan of neurons, and ultimately inhibit disease progression.”*

A 2022 study published in the International Journal of Molecular Sciences also suggested molecular hydrogen was neuroprotective, with promise for Alzheimer's:<sup>8</sup>

*“One potential mechanism explaining some of the general health benefits of using hydrogen is that it may prevent aging-related changes in cellular proteins such as amyloid and tau protein. We also present evidence that, following ischemia, hydrogen improves cognitive and neurological deficits and prevents or delays the onset of neurodegenerative changes in the brain.*

*The available evidence suggests that molecular hydrogen has neuroprotective properties and may be a new therapeutic agent in the treatment of neurodegenerative diseases such as neurodegeneration following cerebral ischemia with progressive dementia.”*

Importantly, H<sub>2</sub> doesn't suppress beneficial free radicals like nitric oxide, which is why it appears to be one of the safest therapeutic options available. Further, as mentioned, NO is both a free radical and a signaling molecule. As such, it can have either positive or negative effects, depending on its levels and what else is going on in your body. H<sub>2</sub> helps regulate and maintain homeostasis, and can also lower excessive NO.

## **How to Boost Nitric Oxide Naturally**

Taking Viagra, which can have toxic side effects, to ramp up your body's NO production is counterproductive. Fortunately, natural options exist. Eating nitrate-rich foods like beets is one of them. Fermented beets contain even higher nitrate levels. Other vegetables high in nitrates include arugula, butter leaf lettuce and spring greens. NO production can be further magnified by combining these foods with probiotics.<sup>9</sup>

What's great about boosting NO is that it also offers other benefits beyond your brain and heart. For instance, NO has a direct antiviral effect on SARS-CoV-2, effectively blocking viral replication in vitro.<sup>10</sup>

High-intensity exercise will also trigger NO production in your body.<sup>11</sup> And, ideally, you'd both eat nitrate-rich veggies and exercise. While it's important to give your body the raw materials to create NO, after it's made it's stored inside vesicles lining your blood

vessels, and it won't work until you release it. High-intensity exercises are great at releasing it, and I recommend blood flow restriction training (BFR) for this purpose.

The local muscle hypoxia brought on by BFR exercise significantly increases **vascular endothelial growth factor (VEGF)**, which acts like “fertilizer” for your blood vessels. The medical term for this development of new blood vessels is angiogenesis. Angiogenesis, in turn, enhances NO bioavailability.

Getting sensible sun exposure on large portions of your body is also important, as NO is released into your bloodstream when sunlight hits your skin.<sup>12,13</sup> Ultraviolet A and the near-infrared light spectrum both increase NO, so you're getting that benefit from both ends of the light spectrum.

As explained in a 2009 paper in the journal *Circulation Research*,<sup>14</sup> when you expose your body to sunlight, photolabile NO derivatives such as nitrite and S-nitroso thiols decompose and form vasoactive NO. (Photolabile means the compounds are altered or undergo chemical changes in response to light).

Considering NO's important role in brain health and overall health, it makes sense to take steps to optimize your body's production. All of those mentioned – eating nitrate-rich foods, exercise such as blood flow restriction training and sensible sun exposure – impart a number of additional health benefits to your system, unlike Viagra, which may cause further harm.

## **A Full Alzheimer's Treatment Strategy**

Regarding Alzheimer's, keep in mind that a comprehensive prevention and treatment strategy should be used for this complex condition. One of the most comprehensive assessments of Alzheimer's risk is Dr. Dale Bredezen's ReCODE protocol, which evaluates 150 factors, including biochemistry, genetics and historical imaging, known to contribute to Alzheimer's disease.

In his book, "The End of Alzheimer's: The First Program to Prevent and Reverse Cognitive Decline,"<sup>15</sup> which describes the complete protocol, you will also find a list of

suggested screening tests and the recommended ranges for each test, along with some of Bredesen's treatment suggestions.

By leveraging 36 healthy lifestyle parameters, Bredesen was able to reverse Alzheimer's in 9 out of 10 patients. For more details, you can download Bredesen's full-text case paper online, which describes the full program.<sup>16</sup>

## Sources and References

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