

# How Ginkgo Biloba Can Help Cognitive Recovery After a Stroke

Analysis by [Dr. Joseph Mercola](#)

March 18, 2024

## STORY AT-A-GLANCE

- › Ginkgo has been used as a cardio- and cerebrovascular nutraceutical for centuries
- › Ginkgo shows promise for improving cognitive recovery when used in the early days following stroke
- › After 14 days, people treated with ginkgo diterpene lactone meglumine (GDLM) injections daily following ischemic stroke had greater signs of cognitive improvement
- › If the findings are confirmed, GDLM injections could become part of routine care for cognitive function following an ischemic stroke
- › GDLM also improves overall prognosis after ischemic stroke; those who received a combination of GDLM and aspirin for 14 days fared better than those given aspirin alone

Ginkgo biloba, which comes from one of the oldest known tree species, may hold secrets to boosting cognitive function, even after stroke. In the U.S., someone has a stroke every 40 seconds. In 87% of those cases, the stroke is ischemic, meaning blood flow to the brain is blocked.<sup>1</sup>

Cognitive impairment is a common consequence, with up to 60% of stroke survivors suffering from post-stroke cognitive impairment (PSCI) within one year. While about 20% of mild cases may resolve, up to one-third go on to develop dementia over the next five years.<sup>2</sup> Ginkgo shows promise for improving cognitive recovery when used in the early days following stroke.<sup>3</sup>

## **Ginkgo May Help Improve Cognition After Stroke**

Ginkgo has been used as a cardio- and cerebrovascular nutraceutical for centuries in Asian countries, and is a revered part of traditional Chinese medicine.<sup>4</sup> Studies are ongoing looking into the effect of the ginkgo compound ginkgolide B to prevent cerebrovascular diseases, including ischemia stroke,<sup>5</sup> but it also appears its components are useful for post-stroke recovery.

In 2023, researchers with the Beijing Tiantan Hospital of the Capital Medical University in Beijing revealed that people treated with ginkgo diterpene lactone meglumine (GDLM) injections daily following ischemic stroke had better overall recovery.<sup>6,7</sup> The scientists then conducted a preliminary study to analyze cognitive recovery, specifically.

The study involved 3,163 stroke survivors who were treated for mild to moderate ischemic stroke. Within 48 hours, about half of them began receiving daily injections of GDLM (25 milligrams (mg)) for 14 days, while the rest received placebo injections. At the start of the study, most of the stroke survivors had moderate cognitive impairment, with an average score of 17 out of 30.

But by day 14, those who received GDLM, a combination of biologically active compounds in ginkgo, were showing greater signs of improvement, with cognitive scores an average of 3.93 points higher, compared to 3.62 points in the placebo group. After 90 days, the improvements continued, with the ginkgo groups improving by an average of 5.51 points, compared to 5.04 points for the control group.<sup>8</sup>

"The proportion of patients who reached a clinically significant level of improvement was 20% higher in the GDLM group, indicating that GDLM injections may improve cognitive function in patients with acute ischemic stroke," study author Anxin Wang said in a news release. "Since the follow-up time in this study was only 90 days, the longer-term effect of GDLM injections requires longer-term research."<sup>9</sup>

If the research, which was presented at the American Stroke Association's International Stroke Conference 2024, is confirmed in future trials, GDLM injections could become

part of routine care for cognitive function following an ischemic stroke. As for how it works, Wang said:<sup>10</sup>

*"GDLM has shown a neuroprotective effect through multiple mechanisms, such as expanding brain blood vessels and improving brain cells' tolerance to hypoxia (inadequate oxygen) and increasing cerebral blood flow. GDLM also has neuroprotective antioxidation, anti-inflammation and anti-apoptosis (cell death) properties.*

*Additionally, laboratory studies have previously indicated that GDLM may promote secretion of chemicals associated with avoiding neurodegenerative diseases, such as Parkinson's disease and Alzheimer's disease."*

GDLM also improves overall prognosis after ischemic stroke. In a study of 70 acute ischemic stroke (AIS) patients, those who received a combination of GDLM and aspirin for 14 days fared better than those given aspirin alone. "In summary, GDLI [ginkgo diterpene lactone meglumine injection] has antiplatelet effect and can improve the prognosis of AIS patients," the researchers explained.<sup>11</sup>

## **Ginkgo Has Impressive Neuroprotective Effects**

The sole survivor of trees from 270 million years ago, ginkgo releases all its leaves in a golden explosion in just one day.<sup>12</sup> Ginkgetin is the first biflavonoid isolated, and it comes from ginkgo's yellow leaves.<sup>13</sup> Biflavonoids are known for valuable therapeutic properties against neurodegenerative diseases, and ginkgetin is no exception. A review of ginkgetin's neuroprotective potential, published in *Life (Basel)*, explains:<sup>14</sup>

*"Ginkgetin is a compound found in ginkgo whose standardized extract (EGb 761) has been used for many years as a supportive therapy and to prevent cognitive impairment. Ginkgo extract can slow the progression of memory loss in AD [Alzheimer's disease], usually at a high dose of 240 mg or more per day, and may have supportive and/or protective effects in the treatment of PD [Parkinson's disease]."*

In animal studies, ginkgetin also protected against neuronal injury caused by ischemic stroke and likely helps neurodegenerative diseases, in part, by buffering oxidative stress.<sup>15</sup> It may also help protect your brain against aluminum toxicity, which plays a role in neurodegenerative diseases.

In one animal study, published in the journal *Nutrition*, ginkgo biloba was shown to alleviate oxidative stress and some of the neurotransmitter changes induced by aluminum chloride.<sup>16</sup> Rats given aluminum chloride had significant increase in thiobarbituric acid reactive substance (TBARS), which signals damage produced by oxidative stress.

In contrast, rats administered both ginkgo biloba and aluminum chloride had lower TBARS and more of the antioxidants catalase, glutathione and superoxide dismutase in brain and testis tissue. Overall, the research demonstrates that ginkgo biloba plays a positive role in protecting the brain neurons of rats from oxidative stress caused by the intake of aluminum chloride, likely due to its antioxidant properties:<sup>17</sup>

*"The leaf extract of Ginkgo biloba (EGb 761) has antioxidant and free radical scavenger properties that work by increasing the endogenous antioxidants and inhibiting free radical formation. Ginkgo biloba extract (GbE) is also used in treating cerebral disorders that result from aging and hypoxia [low oxygen].*

*In addition, the psychological and physiological benefits of Ginkgo biloba are based on its primary action of regulating neurotransmitters and exerting neuroprotective effects."*

Additional benefits of ginkgo include:

- **Initiates synaptosomal uptake of dopamine** — These actions improve cognitive function<sup>18</sup> and 5-hydroxytryptamine (serotonin),<sup>19</sup> a neurotransmitter known for mobilizing your brain and body for action, linked to positive effects on cognition and attention.
- **Inhibition of platelet-activating factor** — This factor prevents blood coagulation and keeps plaque from forming inside the arterial walls.<sup>20</sup>

- **Enhances nitric oxide (NO) production in vessels** – This promotes healthy endothelial function and subsequent positive effects on peripheral and cerebral blood.<sup>21</sup>

## **Quercetin – Another Natural Compound With Stroke Benefits**

Nature is full of powerful compounds with health potential – ginkgo is just one of them. Another to keep on your radar is quercetin, one of more than 4,000 known flavonoids,<sup>22</sup> compounds that contribute to the bitterness, astringency, flavor, aroma and oxidative stability of many fruits, berries and vegetables.

I recommend keeping quercetin in your medicine chest for times when you feel you're coming down with something, such as a cold or influenza. Another benefit to quercetin, however, is its potential to lower uric acid levels,<sup>23</sup> elevated levels of which are linked to an increased risk of heart disease and stroke,<sup>24</sup> not to mention gout insulin resistance and Type 2 diabetes. Dr. David Perlmutter told Yahoo:<sup>25</sup>

*"While we've known for decades about how uric acid increases the risk of gout, this new understanding about the role it plays in stroke is really encouraging, since there's so much we can do to bring our uric acid levels under control. In fact, there's great research showing how the nutrient quercetin can substantially lower uric acid levels."*

Quercetin also improves metabolic syndrome, a cluster of conditions (including high blood pressure, high blood sugar, high triglyceride levels and fat accumulation around the waist) that raise your risk for Type 2 diabetes, heart disease and stroke.<sup>26</sup>

Epidemiological studies also link quercetin with a reduced risk of coronary heart disease and stroke.<sup>27</sup>

## **What Increases Your Stroke Risk?**

Prevention is better than treatment, which is why looking at some of the underlying triggers of stroke is important. High blood pressure is the greatest one, increasing risk

of stroke by two- to fourfold.<sup>28</sup> This is where quercetin is also helpful, as it may help significantly decrease blood pressure.<sup>29</sup>

Stress also increases your risk of heart attack and stroke by causing overactivity in your amygdala.<sup>30</sup> Known as your brain's fear center, this almond-shaped brain region, located in your temporal lobe, is activated in response to both real and perceived threats.

Based on brain scans, researchers were able to conclude that those with higher activity in the amygdala were at an elevated risk of a cardiac event, such as heart attack, stroke or angina (chest pain).<sup>31</sup> As it turns out, there appears to be a significant correlation between amygdala activity and arterial inflammation (which is a risk factor for heart attack and stroke).

Environmental factors, like exposure to radon, are another culprit. In a study of 158,910 women followed for an average of 13 years,<sup>32</sup> those in the highest radon exposure group had a 14% increased risk of stroke compared to those in the lowest. But even those in the middle exposure group had a 6% increased risk.<sup>33</sup>

Sleep is another contributing factor. Most strokes occur in the first hours of the day, a time during sleep when blood pressure patterns dip, then surge in the morning. "This morning blood pressure surge has been suggested to lead to increased cardiovascular and cerebrovascular events in the morning by disrupting vulnerable plaques, leading to rupture and thrombosis," researchers explained in the journal *Frontiers in Neurology*.<sup>34</sup>

Sleep duration is also associated with an increased risk of high blood pressure, a leading risk factor for stroke. One study revealed, for instance, that sleeping for less than seven or more than eight hours per night is associated with an increased risk of high blood pressure.<sup>35</sup>

Disrupted sleep, including that caused by sleep apnea or limb movements during sleep, can also raise stroke risk, as noted in the *Journal of Stroke*, perhaps because it puts extra stress on your cardiovascular system:<sup>36</sup>

*"Any causes of sleep curtailment or fragmentation such as sleep restriction, sleep apnea, insomnia, periodic limb movements during sleep, and shift work, not only impair cardiovascular restoration but also impose a stress on the cardiovascular system. Sleep disturbances have been reported to play a role in the development of stroke and other cardiovascular disorders."*

Ginkgo may be a useful herb to support cognitive function and stroke recovery, but to lower your stroke risk be sure to follow an [anti-stroke lifestyle](#), which includes regular exercise and daily movement, proper high-quality sleep, stress management and avoidance of contributing factors like artificial sweeteners, statins and hormone replacement therapy and birth control pills.

## Sources and References

---

- <sup>1</sup> U.S. CDC, Stroke Facts
- <sup>2</sup> Stroke May 1, 2023
- <sup>3, 7, 8, 9, 10</sup> Science Daily February 1, 2024
- <sup>4, 5</sup> Acta Pharm Sin B. 2024 Jan; 14(1): 1–19
- <sup>6</sup> JAMA Netw Open. 2023 Aug; 6(8): e2328828
- <sup>11</sup> Phytother Res. 2023 May;37(5):1986-1996. doi: 10.1002/ptr.7720. Epub 2023 Jan 6
- <sup>12</sup> X, Khai, photo by Han Fei
- <sup>13, 14</sup> Life (Basel). 2023 Feb; 13(2): 562
- <sup>15</sup> Life (Basel). 2023 Feb; 13(2): 562., 4. Ginkgetin for the Treatment of Neurodegenerative Diseases
- <sup>16, 17</sup> Nutrition March 2017; 35: 93-99
- <sup>18</sup> British Journal of Pharmacology 2010 Feb 1;159(3):659-68
- <sup>19</sup> Journal of Pharmacy and Pharmacology 1992 Nov;44(11):943-5
- <sup>20</sup> Phytomedicine. 2005 Jan;12(1-2):10-6
- <sup>21</sup> Cellular and Molecular Life Sciences 2007 Jul;64(13):1715-22
- <sup>22</sup> Nutrients. 2010 Dec; 2(12): 1231–1246., 2. Classification of Polyphenols
- <sup>23</sup> British Journal of Nutrition January 20, 2016
- <sup>24</sup> Cureus. 2021 Sep; 13(9): e18172
- <sup>25</sup> Yahoo September 22, 2023
- <sup>26</sup> Phytotherapy Research March 8, 2019; 33(5)
- <sup>27</sup> Journal of Nutrition 2007 Nov;137(11):2405-11
- <sup>28</sup> National Institute of Neurological Disorders and Stroke, Brain Basics: Preventing a Stroke, What are the treatable risk factors?
- <sup>29</sup> Nutrition Reviews January 6, 2020 DOI: 10.1093/nutrit/nuz071
- <sup>30, 31</sup> The Lancet, DOI: 10.1016/S0140-6736(16)31714-7

- <sup>32</sup> Neurology February 2024, 102(4)
- <sup>33</sup> Science Daily January 31, 2024
- <sup>34</sup> Front Neurol. 2017; 8: 392, Hypertension
- <sup>35</sup> Sleep. 2006 Aug;29(8):1009-14
- <sup>36</sup> J Stroke. 2018 Jan; 20(1): 12–32