

# Alpha-lipoic acid

Alpha-lipoic acid (ALA) is a naturally occurring compound that functions as a coenzyme involved in energy metabolism. It is sometimes referred to as the “universal antioxidant” due to its ability to work in both water-soluble and fat-soluble environments. Here are some key aspects of alpha-lipoic acid:

## Antioxidant Properties:

ALA is known for its potent antioxidant properties, helping to neutralize free radicals in the body. Free radicals are unstable molecules that can cause cellular damage and contribute to various health issues, including aging and chronic diseases.

ALA plays a crucial role in mitochondrial function and energy production. It is involved in the conversion of glucose into energy, working as a cofactor for several enzymes in the Krebs cycle.

ALA can be found in certain foods, such as spinach, broccoli, yeast, potatoes, and organ meats. However, the amounts obtained through diet are often small, and supplementation may be considered for therapeutic purposes.

Alpha-lipoic acid is available in supplement form and is commonly used for various health purposes. It can be taken orally, and it is both water- and fat-soluble, allowing it to penetrate various tissues in the body.

ALA has been studied for its potential benefits in various conditions, including diabetes, neuropathy, cardiovascular diseases, and neurodegenerative disorders. It may have a role in improving insulin sensitivity, reducing oxidative stress, and supporting nerve health.

Some studies suggest that ALA supplementation may be beneficial for individuals with diabetic neuropathy, a condition characterized by nerve damage due to diabetes. ALA's antioxidant properties and its role in glucose metabolism may contribute to these potential benefits.

Generally, alpha-lipoic acid is considered safe when taken at recommended doses. However, high doses may lead to side effects such as gastrointestinal issues. People with certain medical conditions or those taking specific medications should consult their healthcare providers before starting supplementation.

Dosages of alpha-lipoic acid can vary based on the health condition being addressed. Common dosages for general antioxidant support range from 100 to 600 milligrams per day. It's important to note that while ALA shows promise in various areas of health, more research is needed to fully understand its efficacy and optimal use in different medical conditions.

## In Neurosurgery

- [Genome sequencing enables diagnosis and treatment of SLC5A6 neuropathy](#)
- [Alpha-lipoic acid \(ALA\) ameliorates early brain injury after subarachnoid hemorrhage in Sprague-Dawley \(SD\) rats via inhibiting STING-NLRP3 inflammatory signaling](#)
- [Efficacy of intravenous alpha lipoic acid in the treatment of neuropathic pain due to carpal tunnel](#)

## syndrome

- [Alteration and clinical potential in gut microbiota in patients with cerebral small vessel disease](#)
- [Alterations of the Gut Microbiota in Patients with Diabetic Nephropathy](#)
- [Alpha-lipoic acid improved motor function in MPTP-induced Parkinsonian mice by reducing neuroinflammation in the nigral and spinal cord](#)
- [alpha-Lipoic Acid-Plus Ameliorates Endothelial Injury by Inhibiting the Apoptosis Pathway Mediated by Intralysosomal Cathepsins in an In Vivo and In Vitro Endothelial Injury Model](#)
- [Minocycline-Loaded Poly\(alpha-Lipoic Acid\)-Methylprednisolone Prodrug Nanoparticles for the Combined Anti-Inflammatory Treatment of Spinal Cord Injury](#)

Alpha-lipoic acid (ALA), has been shown to be neuroprotective in an [in vivo](#) model of neurological injury; however, the role of ALA in SAH has never been evaluated. In a study, the [Sprague Dawley rats](#) SAH model was induced by endovascular perforation method. ALA was transplanted intravenously into rats, and SR-717, a stimulator of interferon genes (STING) agonist, was injected intraperitoneally. The effects of ALA on early brain injury were assayed by neurological score, hematoxylin and eosin staining and Nissl staining. Immunohistochemistry staining and Western blotting were used to analyze various proteins. ALA significantly reduced STING- NLRP3 protein expression and decreased cell death, which in turn mitigated the neurobehavioral dysfunction following SAH. Furthermore, coadministration of ALA and SR-717 promoted [STING-NLRP3 signaling pathway](#) activation following SAH, which reversed the inhibitory effect of ALA on STING-NLRP3 protein activation and increased the neurological deficits. In conclusion, ALA may be a promising therapeutic strategy for alleviating early brain injury after SAH <sup>1)</sup>.

Gülsah et al. think that iv. ALA is effective in the treatment of symptoms associated with [carpal tunnel syndrome](#) <sup>2)</sup>

1)

Lin C, He C, Li L, Liu Y, Tang L, Ni Z, Zhang N, Lai T, Chen X, Wang X. Alpha-lipoic acid (ALA) ameliorates early [brain injury](#) after [subarachnoid hemorrhage](#) in Sprague-Dawley (SD) [rats](#) via inhibiting STING-NLRP3 inflammatory signaling. *Neuroreport*. 2024 Jan 15. doi: 10.1097/WNR.0000000000001998. Epub ahead of print. PMID: 38305103.

2)

Gülsah Ö, Bekir DE. Efficacy of intravenous alpha lipoic acid in the treatment of neuropathic pain due to [carpal tunnel syndrome](#). *Ideggyogy Sz*. 2023 Sep 30;76(9-10):319-326. English. doi: 10.18071/isz.76.0319. PMID: 37782062.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

[https://neurosurgerywiki.com/wiki/doku.php?id=alpha-lipoic\\_acid](https://neurosurgerywiki.com/wiki/doku.php?id=alpha-lipoic_acid)

Last update: **2024/06/07 02:54**

