



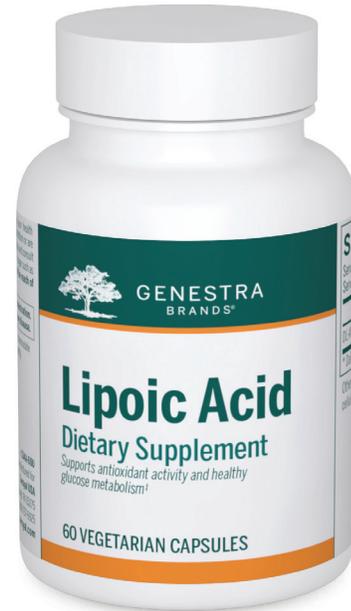
GENESTRA
BRANDS®

Lipoic Acid

Unique water- and lipid-soluble antioxidant

- Promotes healthy glucose metabolism[‡]
- Supports antioxidant activity[‡]
- Provides 400 mg of lipoic acid per daily dose
- Ideal for vegans
- **Improved formula**
 - Offers a higher amount of lipoic acid per capsule (400 mg compared to 100 mg)
 - Free from magnesium stearate

Lipoic Acid supports healthy glucose metabolism and antioxidant defense by providing 400 mg of lipoic acid per capsule. As an antioxidant in both its oxidized and reduced forms, lipoic acid can scavenge free radicals, regenerate endogenous antioxidants (such as glutathione and vitamins C and E), and bind metal ions to reduce metal-induced oxidative damage. This unique water- and fat-soluble antioxidant may also protect pancreatic β -cells from damage due to oxidative stress. Because it supports antioxidant defense using a variety of actions in nearly every part of the cell, it is known as the “universal antioxidant.” Furthermore, lipoic acid helps to stimulate glucose uptake by increasing the number of GLUT4 glucose transporters on cell membranes, which provides support for healthy glucose metabolism. In a randomized, placebo-controlled trial, daily supplementation with 300 mg of lipoic acid promoted healthy glucose metabolism.[‡]



SUPPLEMENT FACTS

Serving Size 1 Capsule
Servings per Container 60

	AMOUNT PER SERVING	% DV
DL-Alpha-Lipoic Acid	400 mg	*

* Daily value (DV) not established

Other ingredients: Hypromellose, ascorbyl palmitate, cellulose

Recommended Dose

Take 1 capsule daily or as recommended by your health professional.

Size

60 Vegetarian Capsules

Product Code

10534A



Non
GMO



Gluten
Free



Vegan

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Lipoic Acid

Scientific Rationale:

Lipoic acid, also known as thioctic acid, is a naturally occurring short-chain fatty acid.^{1,2} It is present in the mitochondria of cells, where it functions as a cofactor for enzymes involved in energy metabolism, such as pyruvate dehydrogenase and alpha-ketoglutarate dehydrogenase.^{3,4} In addition to this role, lipoic acid is primarily recognized for its effective antioxidant activities.^{3†}

Lipoic acid is unique among antioxidants as it is both water- and fat-soluble.³ As it easily crosses biological membranes, it is able to exert its actions in nearly every part of the cell, including the cytosol and plasma membrane.³ Lipoic acid has also been reported to cross the blood-brain barrier.¹ In contrast, vitamins C and E are typically either water- or lipid-soluble, respectively.^{3†}

Research has reported that lipoic acid functions as an antioxidant in a number of ways.³ In both its oxidized and reduced form (known as dihydro-lipoic acid or DHLA), lipoic acid can directly scavenge reactive oxygen species, including hydroxyl radicals, hypochlorous acid and singlet oxygen.³ By recycling other antioxidants, including glutathione and vitamins C and E, lipoic acid helps to maintain their activity.³ Additionally, preclinical research has reported that lipoic acid binds metal ions, such as copper, zinc and lead, to reduce their involvement in the generation of free radicals.^{3,4} Due to its ability to support antioxidant defense in many ways throughout the body, lipoic acid has been termed the “universal antioxidant”.^{2†}

In addition to free radical production in the mitochondria, oxidative stress can result from high glucose levels.³ In turn, this oxidative stress can impair pancreatic β -cell health.⁵ Research has found that lipoic acid promotes healthy glucose metabolism by activating the expression of AMPK, a cellular

energy sensor, in the hypothalamus and peripheral tissues.⁶ This complex has been shown to decrease glucose production in the liver and stimulate glucose uptake by increasing the number of GLUT4 glucose transporters on cell membranes.⁶ By scavenging free radicals, lipoic acid also supports pancreatic β -cell health.^{6†}

Lipoic acid has been studied in clinical trials for promoting healthy glucose metabolism.^{7,8} One randomized, double-blind, placebo-controlled trial evaluated the effects of daily supplementation with 300 mg of lipoic acid for two months.⁷ Another randomized, placebo-controlled trial found that lipoic acid supplementation (600 mg once, twice, and thrice daily for 28 days) supported glucose uptake when compared to a placebo.^{8†}

Reactive oxygen species can also result from the formation of advanced glycation end-products (AGE).⁹ While these compounds can be derived from the diet (such as foods high in fat and protein), their production is also associated with high blood glucose levels.⁹ Preclinical research has shown that lipoic acid may help regulate AGE formation to further support good health.^{10,11†}

Although it can be endogenously produced from a reaction involving fatty acids and cysteine, humans produce low levels of lipoic acid; therefore, it must be obtained from dietary sources.³ Lipoic acid is primarily found in animal products, such as muscle, heart, liver and kidney, but is also present in lower amounts in fruits and vegetables, including spinach, broccoli, Brussels sprouts and tomatoes.^{3,4} Still, as research suggests that Western diets do not typically provide significant levels of lipoic acid, supplements may be an effective way of increasing the intake of this valuable antioxidant.^{3†}

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† These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.