Small Molecules

Dihydrolipoic Acid

Antioxidant; Reducing agent

Catalog # 73622

50 mg

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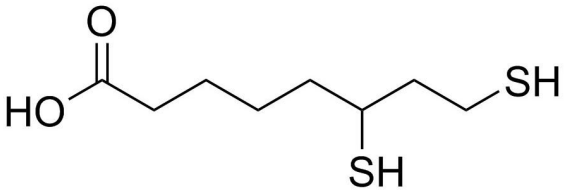
Product Description

Dihydrolipoic Acid (DHLA) is the reduced form of alpha-lipoic acid, and is a carboxylic acid containing two thiol groups (Moini et al.). It acts as a general antioxidant that is highly reactive against a variety of reactive oxygen species (ROS), including hydroxyl radicals, peroxynitrite, hydrogen peroxide, and hypochlorite, at concentrations ranging from 0.01 - 0.5 mM (Moini et al.). Dihydrolipoic Acid has also been shown to recycle ubiquinone to the antioxidant active divalently reduced form (Nohl & Gille). Conversely, at concentrations higher than 50 - 100 µM, Dihydrolipoic Acid directly increases the ROS content, along with a significant increase in cytoplasmic free calcium and nitric oxide (NO) levels, loss of mitochondrial membrane potential, activation of caspases-9 and -3, and cell death (Chan et al.; Houng et al.).

Molecular Name:	Dihydrolipoic Acid
Alternative Names:	Not applicable
CAS Number:	462-20-4
Chemical Formula:	$C_8H_{16}O_2S_2$
Molecular Weight:	208.3 g/mol
Purity:	≥ 95%
Chemical Name:	6,8-disulfanyloctanoic acid
Structure:	

Properties

Physical Appearance:	A neat oil
Storage:	Product stable at -20°C as supplied. Protect product from prolonged exposure to light. Stable as supplied for 12 months from date of receipt.
Solubility:	Not applicable.

Published Applications

MAINTENANCE & SELF-RENEWAL
· Induces apoptosis and suppresses proliferation in mouse embryonic stem cells (ESC-B5) at 50 - 100 µM and causes cell death at higher concentrations (Chan et al.; Houng et al.).
METABOLISM
· Reduces cytochrome b561, thereby decreasing ascorbate recycling and iron absorption (Bérczi et al.).

References

Bérczi A et al. (2013) Dihydrolipoic acid reduces cytochrome b561 proteins. Eur Biophys J 42(2-3): 159–68.
Chan W-H et al. (2013) Impact of dihydrolipoic acid on mouse embryonic stem cells and related regulatory mechanisms. Environ Toxicol 28(2): 87–97.
Houng W-L et al. (2012) Dihydrolipoic acid induces cytotoxicity in mouse blastocysts through apoptosis processes. Int J Mol Sci 13(3): 3988–4002.
Moini H et al. (2002) Antioxidant and prooxidant activities of alpha-lipoic acid and dihydrolipoic acid. Toxicol Appl Pharmacol 182(1): 84–90.
Nohl H & Gille L. (1998) Evaluation of the antioxidant capacity of ubiquinol and dihydrolipoic acid. Z Naturforsch C 53(3-4): 250–3.

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