

Small Molecules

Dihydrolipoic Acid

Antioxidant; Reducing agent

Catalog # 73622

50 mg



Scientists Helping Scientists™ | WWW.STEMCELL.COM

TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713

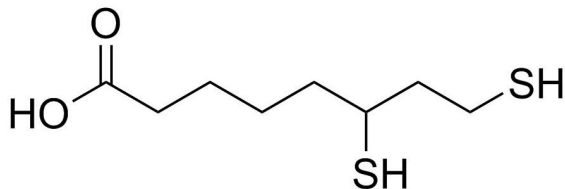
INFO@STEMCELL.COM • TECHSUPPORT@STEMCELL.COM

FOR GLOBAL CONTACT DETAILS VISIT OUR WEBSITE

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 μ M, 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.; Hough 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:	$\geq 95\%$
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 μ M and causes cell death at higher concentrations (Chan et al.; Houg 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.

Houg 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.

Related Small Molecules

For a complete list of small molecules available from STEMCELL Technologies, visit www.stemcell.com/smallmolecules or contact us at techsupport@stemcell.com.

This product is hazardous. Please refer to the Safety Data Sheet (SDS).

STEMCELL TECHNOLOGIES INC.'S QUALITY MANAGEMENT SYSTEM IS CERTIFIED TO ISO 13485. PRODUCTS ARE FOR RESEARCH USE ONLY AND NOT INTENDED FOR HUMAN OR ANIMAL DIAGNOSTIC OR THERAPEUTIC USES UNLESS OTHERWISE STATED.

Copyright © 2017 by STEMCELL Technologies Inc. All rights reserved including graphics and images. STEMCELL Technologies & Design, STEMCELL Shield Design, and Scientists Helping Scientists are trademarks of STEMCELL Technologies Canada Inc. All other trademarks are the property of their respective holders. While STEMCELL has made all reasonable efforts to ensure that the information provided by STEMCELL and its suppliers is correct, it makes no warranties or representations as to the accuracy or completeness of such information.