

Product Data Sheet

Product Name: Alpha-Lipoic Acid Choline Ester

Cat. No.: GB62240

Chemical Properties

Cas. No. 1808266-58-1

SMILES C[N+](C)(C)CCOC(CCCC[C@H]1SSCC1)=O.[Cl-]

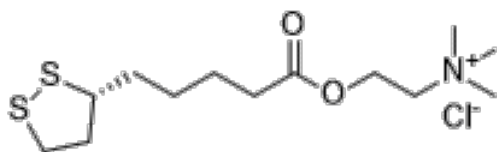
Formula $C_{13}H_{26}ClNO_2S_2$ M.Wt 327.93

Solubility Soluble in DMSO Storage Store at -20°C

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

Cell lines MCF-7 cells

Preparation Method MCF-7 cells were treated for 24, 48 and 72h with increasing doses of Alpha-Lipoic Acid Choline Ester (0.25–2.5mM).

Reaction Conditions 0.25–2.5mM; 24-72h

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

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Applications Alpha-Lipoic Acid Choline Ester can scavenge reactive oxygen species in MCF-7 cells, subsequently causing cell growth arrest in the G1 phase of the cell cycle, and at the same time leading to cell apoptosis by changing the ratio of apoptosis-related proteins Bax/Bcl-2.

Animal experiment [2]:

Animal models Cisplatin-induced renal injury model

Preparation Method C57BL/6 mice were given cisplatin (20mg/kg) with or without Alpha-Lipoic Acid Choline Ester treatment (100 mg/kg for 3 days). Renal function, histological changes, adhesion molecule expression and inflammatory cell infiltration were examined.

Dosage form 100mg/kg; ip; 3d

Applications Alpha-Lipoic Acid Choline Ester treatment ameliorates cisplatin-induced acute kidney injury by reducing inflammatory adhesion molecule expression and NF-κB activity.

References:

- [1]. Dozio E, Ruscica M, Passafaro L, et al. The natural antioxidant alpha-lipoic acid induces p27Kip1-dependent cell cycle arrest and apoptosis in MCF-7 human breast cancer cells[J]. European journal of pharmacology, 2010, 641(1): 29-34.
- [2]. Kang K P, Kim D H, Jung Y J, et al. Alpha-lipoic acid attenuates cisplatin-induced acute kidney injury in mice by suppressing renal inflammation[J]. Nephrology Dialysis Transplantation, 2009, 24(10): 3012-3020.

Background

Alpha-Lipoic Acid Choline Ester is a powerful antioxidant compound that combines lipoic acid and choline. Alpha-Lipoic Acid Choline Ester has neuroprotective and anti-inflammatory properties and is often used to study metabolic disorders, neurodegenerative diseases and aging. Alpha-Lipoic Acid Choline Ester can be used clinically to study presbyopia^[1] [2].

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Alpha-Lipoic Acid Choline Ester (0.25-2.5mM) can scavenge reactive oxygen species in MCF-7 cells, subsequently causing cell growth arrest in the G1 phase of the cell cycle, and at the same time leading to cell apoptosis by changing the ratio of apoptosis-related proteins Bax/Bcl-2^[2]. DHLA generated by low concentrations of Alpha-Lipoic Acid Choline Ester (0.5mM; 24h) enhances the ability of EA.hy926 cells to reduce extracellular ferricyanide and intracellular dehydroascorbic acid, protects cell against oxidant stress due to intracellular recycling of menadione, and enhances their ability to generate nitric oxide^[3]. Alpha-Lipoic Acid Choline Ester (0-1000μM; 12-48h) exerts an inhibitory effect on cell proliferation via EGFRs and Akt signal transduction and induces cancer cell apoptosis in MDA-MB-231 human breast cancer cells^[4].

In the HFD-induced mouse non-alcoholic fatty liver disease (NAFLD) model, Alpha-Lipoic Acid Choline Ester (100 and 200mg/kg; 24 weeks) significantly reduced HFD-induced hyperglycemia and insulin resistance in HFD-fed mice. Alpha-Lipoic Acid Choline Ester upregulated the glycolytic enzymes GCK, HK-1 and PK and glycogen synthase GS, and downregulated the gluconeogenic enzymes PEPCK and G6Pase, thereby reducing glucose production and promoting hepatic glycogen synthesis and glucose utilization^[5]. In a cisplatin-induced mouse renal injury model, Alpha-Lipoic Acid Choline Ester (100mg/kg) treatment ameliorates cisplatin-induced acute kidney injury by reducing inflammatory adhesion molecule expression and NF-κB activity^[6]. In the mouse collagen-induced arthritis (CIA) model, Alpha-Lipoic Acid Choline Ester (10-100mg/kg) improved joint disease by inhibiting NF-κB DNA binding activity, thereby reducing oxidative stress and inflammatory cytokine activation^[7].

References: References:

- [1]. Dozio E, Ruscica M, Passafaro L, et al. The natural antioxidant alpha-lipoic acid induces p27Kip1-dependent cell cycle arrest and apoptosis in MCF-7 human breast cancer cells[J]. European journal of pharmacology, 2010, 641(1): 29-34.
- [2]. Korenfeld M S, Robertson S M, Stein J M, et al. Topical lipoic acid choline ester eye drop for improvement of near visual acuity in subjects with presbyopia: a safety and preliminary efficacy trial[J]. Eye, 2021, 35(12): 3292-3301.
- [3]. Jones W, Li X, Qu Z, et al. Uptake, recycling, and antioxidant actions of α-lipoic acid in endothelial cells[J]. Free Radical Biology and Medicine, 2002, 33(1): 83-93.
- [4]. Na M H, Seo E Y, Kim W K. Effects of α-lipoic acid on cell proliferation and apoptosis in MDA-

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- MB-231 human breast cells[J]. Nutrition research and practice, 2009, 3(4): 265-271.
- [5]. Yang Y, Li W, Liu Y, et al. Alpha-lipoic acid attenuates insulin resistance and improves glucose metabolism in high fat diet-fed mice[J]. Acta Pharmacologica Sinica, 2014, 35(10): 1285-1292.
- [6]. Kang K P, Kim D H, Jung Y J, et al. Alpha-lipoic acid attenuates cisplatin-induced acute kidney injury in mice by suppressing renal inflammation[J]. Nephrology Dialysis Transplantation, 2009, 24(10): 3012-3020.
- [7]. Lee E Y, Lee C K, Lee K U, et al. Alpha-lipoic acid suppresses the development of collagen-induced arthritis and protects against bone destruction in mice[J]. Rheumatology international, 2007, 27: 225-233.

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