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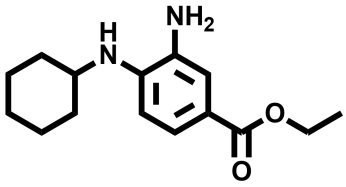
Ferroptosis Inhibitor Ferrostatin-1 (Fer-1)

Chemical Name: ethyl 3-amino-4-(cyclohexylamino)benzoate



Molecular Weight:	262.35
Formula:	$C_{15}H_{22}N_2O_2$
Purity:	≥98%
CAS#:	347174-05-4
Solubility:	DMSO up to 100mM
Storage	Powder: 4°C 1 year DMSO: 4°C 3 month -20°C 1 year

Biological Activity:

Ferrostatin-1 (Fer-1) is a potent inhibitor of ferroptosis with an EC_{50} ~60 nM, identified by a HTS using erastin-induced ferroptosis in HT-1080 cells. Ferroptosis is a unique iron-dependent form of nonapoptotic cell death triggered by the oncogenic RAS-selective lethal small molecule erastin. Ferroptosis is dependent upon intracellular iron, but not other metals, and is morphologically, biochemically, and genetically distinct from apoptosis, necrosis, and autophagy. Ferrostatin-1 was shown to inhibit ferroptosis in cancer cells, and also glutamate-induced cell death in organotypic rat brain slices. Studies revealed that erastin blocks cystine uptake via inhibition of the cystine/glutamate antiporter, resulting in a defect in the cell's antioxidative defenses and ultimately leading to an iron-dependent, oxidative cell death (i.e., ferroptosis). Ferrostatin-1 was characterized to prevent erastin-induced accumulation of cytosolic and lipid ROS. Ferrostatin-1 serves as a very useful tool to dissect ferroptosis in cancer and many other cell types, and may provide new opportunities to protect tissues and organs from damages resulted from ferroptosis under diseases (such as neurodegeneration).

How to Use:

In vitro: Ferrostatin-1 was used at 0.5-2 μM in vitro and cellular assays.

In vivo: n/a

Reference:

1. Dixon SJ, at al. Ferroptosis: an iron-dependent form of nonapoptotic cell death. (2012) Cell. 149(5):1060-72.