Small Molecules

Perhexiline Maleate

Carnitine palmitoyltransferase 1 (CPT1) and CPT2 inhibitor

Catalog #100-0267	1 mg
100-0268	5 mg

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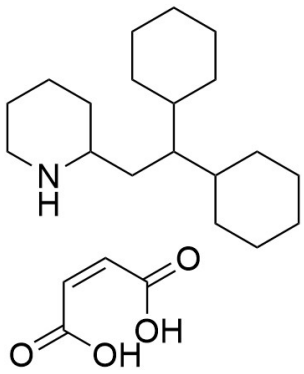
Product Description

Perhexiline Maleate is an inhibitor of the mitochondrial enzymes carnitine palmitoyltransferase 1 (CPT1; IC_{50} = 0.077 mM in rat heart; IC_{50} = 0.148 mM in rat liver) and CPT2 (IC_{50} = 0.079 mM in rat heart; Kennedy et al. 1996; Kennedy et al. 2000). Perhexiline Maleate also modulates autophagy via mammalian target of rapamycin complex 1 (mTORC1) signaling (Balgi et al.).

Molecular Name:	Perhexiline Maleate
Alternative Names:	Not applicable
CAS Number:	6724-53-4
Chemical Formula:	$C_{19}H_{35}N \bullet C_4H_4O_4$
Molecular Weight:	393.6 g/mol
Purity:	≥ 95%
Chemical Name:	2-(2,2-dicyclohexylethyl)-piperidine, 2Z-butenedioate
Structure:	



Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect from prolonged exposure to light. For long-term storage store with a desiccant. Stable as supplied for 12 months from date of receipt.
Solubility:	· DMSO ≤ 75 mM · Absolute ethanol ≤ 10 mM For example, to prepare a 10 mM stock solution in DMSO, resuspend 1 mg in 254 µL of DMSO. Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in DMSO at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application. Compound has low solubility in aqueous media. For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. Avoid final DMSO concentration above 0.1% due to potential cell toxicity.

Published Applications

METABOLISM

· Alters myocardial metabolism from fatty acid to glucose utilization, resulting in higher ATP production and oxygen consumption (Ashrafian et al.; Jeffrey et al.).

CANCER RESEARCH

· Inhibits mTORC1 signaling and induces autophagy in MCF-7 cells (Balgi et al.).

References

Ashrafian H et al. (2007) Perhexiline. Cardiovasc Drug Rev 25(1): 76–97.

Balgi AD et al. (2009) Screen for chemical modulators of autophagy reveals novel therapeutic inhibitors of mTORC1 signaling. PLoS One 4(9): e7124.

Jeffrey FM et al. (1995) Direct evidence that perhexiline modifies myocardial substrate utilization from fatty acids to lactate. J Cardiovasc Pharmacol 25(3): 469–72.

Kennedy JA et al. (1996) Inhibition of carnitine palmitoyltransferase-1 in rat heart and liver by perhexiline and amiodarone. Biochem Pharmacol 52(2): 273–80.

Kennedy JA et al. (2000) Effect of perhexiline and oxfenicine on myocardial function and metabolism during low-flow ischemia/reperfusion in the isolated rat heart. J Cardiovasc Pharmacol 36(6): 794–801.

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