Small Molecules

Tranylcypromine

Epigenetic modifier; Inhibits lysine-specific demethylase 1 (LSD1)

Catalog #	72272	10 mg
	72274	50 mg

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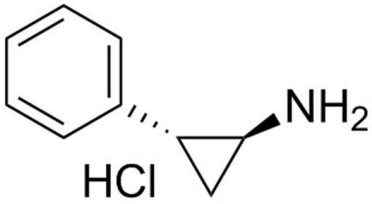
Product Description

Tranylcypromine is an epigenetic modifier that is an irreversible inhibitor of lysine-specific demethylase 1 (LSD1; IC_{50} = 20.7 µM). The catalytic site of LSD1 shares similarity with monoamine oxidase (MAO) enzymes; Tranylcypromine also inhibits MAO A (IC_{50} = 2.3 µM) and MAO B (IC_{50} = 0.95 µM; Lee et al.; Schmidt & McCafferty). This product is supplied as the hydrochloride salt of the molecule, and is a racemic mixture of the (1R,2S) and the (2R,1S) enantiomers.

Molecular Name:	Tranylcypromine (Hydrochloride)
Alternative Names:	2-PCPA hydrochloride; Parnate; Trans-2-phenylcyclopropylamine hydrochloride
CAS Number:	1986-47-6
Chemical Formula:	$C_9H_{11}N \cdot HCl$
Molecular Weight:	169.7 g/mol
Purity:	≥ 98%
Chemical Name:	(1R,2S)-rel-2-phenyl-cyclopropanamine, monohydrochloride
Structure:	

Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect from prolonged exposure to light. Stable as supplied for 12 months from date of receipt.
Solubility:	· PBS (pH 7.2) ≤ 11 mM · DMSO ≤ 14 mM · Absolute ethanol ≤ 25 mM For example, to prepare a 5 mM stock solution in PBS, resuspend 10 mg in 11.8 mL of PBS (pH 7.2).

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.

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

MAINTENANCE AND SELF-RENEWAL
· Inhibits proliferation of mouse neural stem cells (Sun et al.).
· Blocks differentiation of mouse embryonic stem (ES) cells as well as the differentiation-induced demethylation of ES-specific enhancers (Whyte et al.).
REPROGRAMMING
· Enables chemical reprogramming (without genetic factors) of mouse embryonic fibroblasts to induced pluripotent stem (iPS) cells, in combination with CHIR99021 (Catalog #72052), Forskolin (Catalog #72112), Valproic Acid (Catalog #72292), 3-Deazaneplanocin A (Catalog #72322), and RepSox (Catalog #73792) (Hou et al.).
· Promotes reprogramming of human keratinocytes to iPS cells using only 2 factors (OCT4 and KLF4), in combination with CHIR99021 (Li et al.).
· Converts mouse epiblast-like stem cells to a more primitive ES-like state, in combination with several other small molecules (Zhou et al.).

References

Hou P et al. (2013) Pluripotent stem cells induced from mouse somatic cells by small-molecule compounds. Science 341(6146): 651–4.
Lee MG et al. (2006) Histone H3 lysine 4 demethylation is a target of nonselective antidepressive medications. Chem Biol 13(6): 563–7.
Li W et al. (2009) Generation of human-induced pluripotent stem cells in the absence of exogenous Sox2. Stem Cells 27(12): 2992–3000.
Schmidt DMZ & McCafferty DG. (2007) trans-2-Phenylcyclopropylamine is a mechanism-based inactivator of the histone demethylase LSD1. Biochemistry 46(14): 4408–16.
Sun G et al. (2010) Histone demethylase LSD1 regulates neural stem cell proliferation. Mol Cell Biol 30(8): 1997–2005.
Whyte WA et al. (2012) Enhancer decommissioning by LSD1 during embryonic stem cell differentiation. Nature 482(7384): 221–5.
Zhou H et al. (2010) Conversion of mouse epiblast stem cells to an earlier pluripotency state by small molecules. J Biol Chem 285(39): 29676–80.

Related Small Molecules

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