Small Molecules

Clozapine N-Oxide

Activates DREADDs

Catalog #100-0881

5 mg

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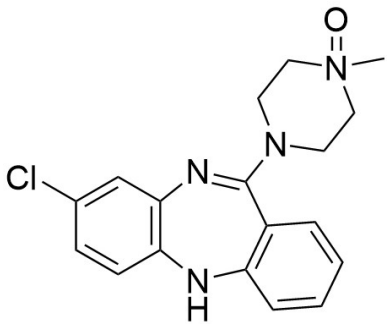
Product Description

Clozapine N-oxide is an inactive metabolite of clozapine and an activator of designer receptors exclusively activated by designer drugs (DREADDs; Manvich et al.). In mice, clozapine N-oxide is converted back to the parent compound clozapine (Manvich et al.). Clozapine N-oxide can activate G protein-coupled receptor activities that govern behavior, perceptions, and motor functions (Manvich et al.; Martinez et al.; Urban & Roth). Clozapine is administered as an antipsychotic and has shown efficacy in reducing cognitive and psychiatric symptoms in Parkinson's patients (Stinton et al.).

Alternative Names:	CNO
CAS Number:	34233-69-7
Chemical Formula:	$C_{18}H_{19}ClN_4O$
Molecular Weight:	342.8 g/mol
Purity:	≥ 98%
Chemical Name:	8-chloro-11-(4-methyl-4-oxido-1-piperazinyl)-5H-dibenzo[b,e][1,4]diazepine
Structure:	



Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect product 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 ≤ 40 mM · Absolute ethanol ≤ 8.7 mM For example, to prepare a 10 mM stock solution in DMSO, resuspend 1 mg in 292 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

DISEASE MODELING
· Lowers striatal glutamate level in rats (Bærentzen et al.).
· Elevates glutamate level in nucleus accumbens core in mice (Scofield et al.).

References

Bærentzen S et al. (2019) The chemogenetic receptor ligand clozapine n-oxide induces in vivo neuroreceptor occupancy and reduces striatal glutamate levels. Front Neurosci 13: 187.

Manvich DF et al. (2018) The DREADD agonist clozapine N-oxide (CNO) is reverse-metabolized to clozapine and produces clozapine-like interoceptive stimulus effects in rats and mice. Sci Rep 8(1): 3840.

Martinez VK et al. (2019) Off-target effects of clozapine-n-oxide on the chemosensory reflex are masked by high stress levels. Front Physiol 10: 521.

Scofield MD et al. (2015) Gq-DREADD selectively initiates glial glutamate release and inhibits cue-induced cocaine seeking. Biol Psychiatry 78(7): 441–51.

Stinton C et al. (2015) Pharmacological management of Lewy body dementia: A systematic review and meta-analysis. Am J Psychiatry 172(8): 731–42.

Urban DJ & Roth BL. (2015) DREADDs (designer receptors exclusively activated by designer drugs): chemogenetic tools with therapeutic utility. Annu Rev Pharmacol Toxicol 55: 399–417.

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