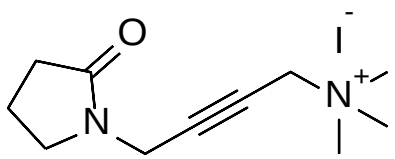
Product data sheet

MedKoo Cat#: 574382 Name: Oxotremorine M CAS: 3854-04-4 Chemical Formula: $C_{11}H_{19}IN_2O$ Exact Mass: 322.0542 Molecular Weight: 322.1905	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Oxotremorine M is a non-selective muscarinic (M) acetylcholine receptor agonist that induces phosphoinositide hydrolysis in the ileum and increases M4-induced inhibition of calcium currents in neuroblastoma cells.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	125.0	387.97
Water	20.28	62.93

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	3.10 mL	15.52 mL	31.04 mL
5 mM	0.62 mL	3.10 mL	6.21 mL
10 mM	0.31 mL	1.55 mL	3.10 mL
50 mM	0.06 mL	0.31 mL	0.62 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Zwart R, Reed H, Clarke S, Sher E. A novel muscarinic receptor-independent mechanism of KCNQ2/3 potassium channel blockade by Oxotremorine-M. Eur J Pharmacol. 2016 Nov 15;791:221-228. doi: 10.1016/j.ejphar.2016.08.037. Epub 2016 Aug 31. PMID: 27590358.

In vivo study

1. Tran JA, Matsui M, Ehlert FJ. Differential coupling of muscarinic M1, M2, and M3 receptors to phosphoinositide hydrolysis in urinary bladder and longitudinal muscle of the ileum of the mouse. J Pharmacol Exp Ther. 2006 Aug;318(2):649-56. doi: 10.1124/jpet.106.103093. Epub 2006 May 4. PMID: 16675640.
2. Ichikawa J, Chung YC, Li Z, Dai J, Meltzer HY. Cholinergic modulation of basal and amphetamine-induced dopamine release in rat medial prefrontal cortex and nucleus accumbens. Brain Res. 2002 Dec 20;958(1):176-84. doi: 10.1016/s0006-8993(02)03692-2. PMID: 12468043.

7. Bioactivity
Biological target:
Oxotremorine M is a non-selective muscarinic (M) acetylcholine receptor agonist.

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In vitro activity

This study found that KCNQ2/3 currents were inhibited when Oxo-M (oxotremorine M) was applied during an ongoing KCNQ2/3 response, an effect that was not blocked by atropine, suggesting that Oxo-M inhibits KCNQ2/3 channels directly. Indeed, also in oocytes that were transfected with only KCNQ2/3 channels, but not with muscarinic M1 receptors, Oxo-M inhibited the KCNQ2/3 response. These results show that besides the usual muscarinic acetylcholine receptor-mediated inhibition, Oxo-M also inhibits KCNQ2/3 channels by a direct mechanism.

Reference: Eur J Pharmacol. 2016 Nov 15;791:221-228. https://pubmed.ncbi.nlm.nih.gov/27590358/

In vivo activity

In urinary bladder from wild-type mice, the muscarinic agonist oxotremorine-M, elicited a robust phosphoinositide response characterized by an EC50 value of 0.22 microM and a maximal response (Emax) of 32.8% conversion of [3H]inositol-labeled phosphoinositides into [3H]inositol phosphates. In ilea from wild-type and M2 knockout mice, substantial phosphoinositide responses to oxotremorine-M were measured, characterized by EC50 values of 0.37 and 0.52 microM and Emax values of 35.8 and 34.7%, respectively. Oxotremorine-M also elicited phosphoinositide hydrolysis in ilea from M3 and M2/M3 knockout mice, although these responses were less sensitive (EC50 values of 1.6 and 1.4 microM; Emax values of 31.2 and 20.8%, respectively).

Reference: J Pharmacol Exp Ther. 2006 Aug;318(2):649-56. https://pubmed.ncbi.nlm.nih.gov/16675640/