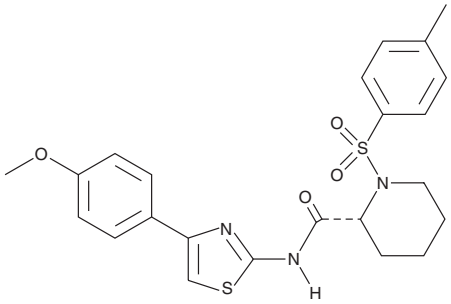
PRODUCT INFORMATION

ML-277

Item No. 15193

CAS Registry No.: 1401242-74-7
Formal Name: (2R)-N-[4-(4-methoxyphenyl)-2-thiazolyl]-1-[(4-methylphenyl)sulfonyl]-2-piperidinecarboxamide
Synonym: CID-53347902
MF: $C_{23}H_{25}N_3O_4S_2$
FW: 471.6
Purity: ≥95%
UV/Vis.: λ_{max}: 242, 270 nm
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

ML-277 is supplied as a crystalline solid. A stock solution may be made by dissolving the ML-277 in the solvent of choice, which should be purged with an inert gas. ML-277 is soluble in DMSO at a concentration of approximately 5 mg/ml.

Description

Potassium (K^+) channels are categorized by their mode of activation and the number of transmembrane segments.[1] The voltage-gated six-transmembrane K^+ channels include KCNQ1, first recognized for its role in cardiac function and subsequently in hearing, gastrointestinal chloride secretion, and other processes.[1,2] ML-277 is a potent activator of KCNQ1 channels (EC_{50} = 260 nM).[3] The EC_{50} value of this compound at the related channels KCNQ2, KCNQ4, and hERG exceeds 30 µM.[3] ML-277 potentiates both homomultimeric KCNQ1 channels and unsaturated heteromultimeric (KCNQ1/KCNE1) channels in model cardiomyocytes and augments delayed rectifier K^+ current in cultured human cardiomyocytes.[4]

References

1. Wulff, H., Castle, N.A., and Pardo, L.A. Voltage-gated potassium channels as therapeutic targets. *Nat. Rev. Drug Discov.* **8(12)**, 982-1001 (2009).
2. Robbins, J. KCNQ potassium channels: Physiology, pathophysiology, and pharmacology. *Pharmacol. Ther.* **90(1)**, 1-19 (2001).
3. Mattmann, M.E., Yu, H., Lin, Z., *et al.* Identification of (R)-N-(4-(4-methoxyphenyl)thiazol-2-yl)-1-tosylpiperidine-2-carboxamide, ML277, as a novel, potent and selective K_V7.1 (KCNQ1) potassium channel activator. *Bioorg. Med. Chem. Lett.* **22(18)**, 5936-5941 (2012).
4. Yu, H., Lin, Z., Mattmann, M.E., *et al.* Dynamic subunit stoichiometry confers a progressive continuum of pharmacological sensitivity by KCNQ potassium channels. *Proc. Natl. Acad. Sci. USA* **110(21)**, 8732-8737 (2013).

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