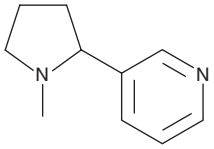
PRODUCT INFORMATION

(±)-Nicotine

Item No. 16535

CAS Registry No.: 22083-74-5
Formal Name: 3-(1-methyl-2-pyrrolidinyl)-pyridine
Synonym: DL-Nicotine
MF: $C_{10}H_{14}N_2$
FW: 162.2
Purity: ≥98%
UV/Vis.: λ_{max}: 262 nm
Supplied as: A neat oil
Storage: -20°C
Stability: As supplied, 2 years from the QC date provided on the Certificate of Analysis, when stored properly



Laboratory Procedures

(±)-Nicotine is supplied as a neat oil. To change the solvent, simply evaporate the (±)-nicotine under a gentle stream of nitrogen and immediately add the solvent of choice. Solvents such as ethanol, DMSO, and dimethyl formamide (DMF) purged with an inert gas can be used. The solubility of (±)-nicotine in ethanol and DMF is approximately 50 mg/ml and is approximately 30 mg/ml in DMSO.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of (±)-nicotine can be prepared by directly dissolving the neat oil in aqueous buffers. The solubility of (±)-nicotine in PBS, pH 7.2, is approximately 1 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

(±)-Nicotine is the racemic mixture of the dominant alkaloid found in tobacco plants. It acts as an agonist at neuronal nicotinic acetylcholine receptors (nAChRs; K_is = 481 and 11.1 nM for α3β4 and α4β2 subtypes, respectively) and possesses addictive and teratogenic properties.[1] (−)-(S)-Nicotine is significantly more active at binding nAChRs compared to the (+)-(R) antipode, thus nicotine is typically synthesized as (−)-(S)-nicotine with only 0.2-1% of the (+)-(R) isomer present.[2]

References

1. Zaveri, N., Jiang, F., Olsen, C., *et al*. Novel α3β4 nicotinic acetylcholine receptor-selective ligands. Discovery, structure-activity studies, and pharmacological evaluation. *J. Med. Chem.* **53**, 8187-8191 (2010).
2. Clayton, P., Lu, A., and Bishop, L. The pyrolysis of (-)-(S)-nicotine: Racemization and decomposition. *Chirality* **22(4)**, 442-446 (2010).

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