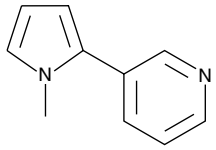
Product Information

β-Nicotyrine

Item No. 16333

CAS Registry No.: 487-19-4
Formal Name: 3-(1-methyl-1H-pyrrol-2-yl)-pyridine
Synonyms: α-Nicotyrine, NSC 127943, NSC 407276
MF: $C_{10}H_{10}N_2$
FW: 158.2
Purity: ≥98%
Stability: ≥2 years at -20°C
Supplied as: A solution in ethanol
UV/Vis.: λ_{max}: 288 nm



Laboratory Procedures

For long term storage, we suggest that β-nicotyrine be stored as supplied at -20°C. It should be stable for at least two years.

β-Nicotyrine is supplied as a solution in ethanol. To change the solvent, simply evaporate the ethanol 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 β-nicotyrine in ethanol and DMF is approximately 50 mg/ml and 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. If an organic solvent-free solution of β-nicotyrine is needed, it can be prepared by evaporating the ethanol and directly dissolving the neat oil in aqueous buffers. The solubility of β-nicotyrine in PBS, pH 7.2, is approximately 1 mg/ml. We do not recommend storing the aqueous solution for more than one day.

β-Nicotyrine is an alkaloid metabolite of nicotine as well as a major product of its pyrolysis.[1,2] It binds comparably to two cytochrome P450 (CYP) isoforms, CYP2A6 and CYP2A13 (K_is = 7.5 and 5.6 µM, respectively), which are prominently involved in the metabolism of xenobiotics in the airways.[3] However, β-nicotyrine appears to more effectively inactivate CYP2A6, leaving only 49% activity after a 10 minute exposure with 20 µM β-nicotyrine, as opposed to 87% remaining activity for CYP2A13 treated identically.[4] Presumably through this effect, β-nicotyrine inhibits DNA strand breaks induced by the genotoxic tobacco metabolite (4-(methylnitrosamino)-1-(2-pyridyl)-1-butanone), which is bioactivated by CYP2A isoforms.[5]

References

1. Swain, M.L., Eisner, A., Woodward, C.F., *et al.* Ultraviolet absorption spectra of nicotine, nornicotine and some of their derivatives. *J. Am. Chem. Soc.* **71(4)**, 1341-1345 (1949).
2. Clayton, P., Lu, A., and Bishop, L. The pyrolysis of (-)-(S)-nicotine: Racemization and decomposition. *Chirality* **22(4)**, 442-446 (2010).
3. Stephens, E.S., Walsh, A.A., and Scott, E.E. Evaluation of inhibition selectivity for human cytochrome P450 2A enzymes. *Drug Metab. Dispos.* **40(9)**, 1797-1802 (2012).
4. Kramlinger, V.M., von Weymarn, L.B., and Murphy, S.E. Inhibition and inactivation of cytochrome P450 2A6 and cytochrome P450 2A13 by menthofuran, β-nicotyrine and menthol. *Chem. Biol. Interact.* **197(2-3)**, 87-92 (2012).
5. Ordonez, P., Sierra, A.B., Camacho, O.M., *et al.* Nicotine, cotinine, and β-nicotyrine inhibit NNK-induced DNA-strand break in the hepatic cell line HepaRG. *Toxicol. In Vitro* **28(2014)**, 1329-1337 (2014).

Related Products

For a list of related products please visit: www.caymanchem.com/catalog/16333

Cayman Chemical

Mailing address
1180 E. Ellsworth Road
Ann Arbor, MI
48108 USA

Phone
(800) 364-9897
(734) 971-3335

Fax
(734) 971-3640

E-Mail
custserv@caymanchem.com

Web
www.caymanchem.com