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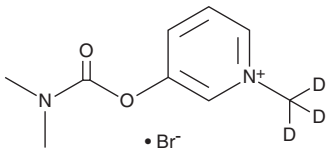
PRODUCT INFORMATION

Pyridostigmine-d_3 (bromide)

Item No. 35208

Formal Name:	3-[[(dimethylamino)carbonyl]oxy]-1-methyl-d_3-pyridinium, monobromide
MF:	$C_9H_{10}D_3N_2O_2 \bullet Br$
FW:	264.1
Chemical Purity:	≥98% (Pyridostigmine (bromide))
Deuterium Incorporation:	≥99% deuterated forms (d_1-d_3); ≤1% d_0
Supplied as:	A solid
Storage:	-20°C
Stability:	≥2 years



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

Laboratory Procedures

Pyridostigmine-d_3 (bromide) is intended for use as an internal standard for the quantification of pyridostigmine (Item No. 23831) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

Description

Pyridostigmine is an inhibitor of acetylcholinesterase (AChE) and butyrylcholinesterase (BChE; IC_{50}s = 0.35 and 1 µM, respectively, for the human enzymes).[1] Pyridostigmine (10 µM) reduces decreases in AChE activity induced by the organophosphate pesticides diisopropyl fluorophosphate, chlorpyrifos-oxon, diazinon-oxon, paraoxon, and malaoxon in isolated bovine red blood cells.[2] It also reduces soman-induced membrane depolarization and decreases in AChE activity in isolated human muscle bundles in a concentration-dependent manner.[3] Pyridostigmine (3 mg/kg per day for four weeks) prevents tachycardia and increases in sympathetic tone in mice following myocardial infarction induced by left coronary artery ligation.[4] Formulations containing pyridostigmine have been used in the treatment of myasthenia gravis and as neuromuscular protective agents against organophosphate poisoning.

References

1. Strelnik, A.D., Petukhov, A.S., Zueva, I.V., *et al.* Novel potent pyridoxine-based inhibitors of AChE and BChE, structural analogs of pyridostigmine, with improved *in vivo* safety profile. *Bioorg. Med. Chem. Lett.* **26(16)**, 4092-4094 (2016).
2. Henderson, J.D., Glucksman, G., Leong, B., *et al.* Pyridostigmine bromide protection against acetylcholinesterase inhibition by pesticides. *J. Biochem. Mol. Toxicol.* **26(1)**, 31-34 (2012).
3. Maselli, R.A., Henderson, J.D., Ng, J., *et al.* Protection of human muscle acetylcholinesterase from soman by pyridostigmine bromide. *Muscle Nerve* **43(4)**, 591-595 (2011).
4. Durand, M.T., Becari, C., de Oliveira, M., *et al.* Pyridostigmine restores cardiac autonomic balance after small myocardial infarction in mice. *PLoS One* **9(8)**, e104476 (2014).

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