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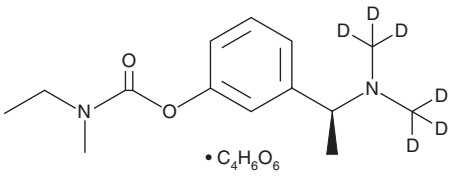
PRODUCT INFORMATION

Rivastigmine-d_6 (tartrate)

Item No. 25633

CAS Registry No.: 194930-00-2
Formal Name: (S)-ethylmethyl-carbamic acid, 3-[1-[di(methyl-d_3)amino]ethyl]phenyl ester, 2R,3R-dihydroxybutanedioate
MF: $C_{14}H_{16}D_6N_2O_2 \bullet C_4H_6O_6$
FW: 406.5
Chemical Purity: ≥98% (Rivastigmine)
Deuterium Incorporation: ≥99% deuterated forms (d_1-d_6); ≤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

Rivastigmine-d_6 (tartrate) is intended for use as an internal standard for the quantification of rivastigmine (Item No. 14270) 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).

Rivastigmine-d_6 (tartrate) is supplied as solid. A stock solution may be made by dissolving the rivastigmine-d_6 (tartrate) in the solvent of choice. Rivastigmine-d_6 (tartrate) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of rivastigmine-d_6 (tartrate) in ethanol and DMSO is approximately 16 mg/ml and approximately 25 mg/ml in DMF.

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 rivastigmine-d_6 (tartrate) can be prepared by directly dissolving the solid in aqueous buffers. The solubility of rivastigmine-d_6 (tartrate) in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Rivastigmine is a cholinesterase (ChE) inhibitor that inhibits butyrl ChE (BChE) and acetyl ChE (AChE; IC_{50}s = 0.037 and 4.15 µM, respectively).[1] It increases levels of secreted amyloid precursor protein (sAPP) and decreases levels of soluble amyloid-β (1-40) and various N-terminal cleavage products in primary embryonic rat neurons undergoing degeneration when used at concentrations of 5 and 10 µM.[2] In a rat model of Alzheimer's disease induced by aluminum chloride ($AlCl_3$), rivastigmine (1 mg/kg per day) inhibits formation of amyloid plaques in brain sections and increases in AChE, IL-1β, and β-secretase 1 (BACE1) mRNA expression in the cerebral cortex.[3] It inhibits $AlCl_3$-induced increases in escape latency time in the Morris water maze in a rat model of Alzheimer's disease when administered at a dose of 1 mg/kg. Rivastigmine (2 mg/kg) also reverses decreases in time spent in the open arms of an elevated plus maze, exploration time of a novel object in a novel object recognition test, and sucrose intake in a rat model of chronic mild stress.[4] Formulations containing rivastigmine have been used in the treatment of dementia associated with Alzheimer's disease and Parkinson's disease.

References

1. Yu, Q.S., Zhu, X., Holloway, H.W., *et al. J. Med. Chem.* **45(17)**, 3684-3691 (2002).
2. Bailey, J.A., Ray, B., Greig, N.H., *et al. PLoS One* **6(7)**, e21954 (2011).
3. Ismail, M.F., Elmeshad, A.N., and Salem, N.A. *Int. J. Nanomedicine* **8**, 393-406 (2013).
4. Papp, M., Gruca, P., Lason-Tyburkiewicz, M., *et al. Psychopharmacology (Berl)* **233(7)**, 1235-1243 (2016).

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