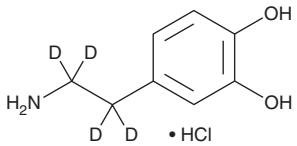
PRODUCT INFORMATION

Dopamine-d_4 (hydrochloride)

Item No. 36309

CAS Registry No.:	203633-19-6
Formal Name:	4-(2-aminoethyl-1,1,2,2-d_4)-1,2-benzenediol, monohydrochloride
Synonyms:	DA-d_4, 3-hydroxy Tyramine-d_4
MF:	$C_8H_7D_4NO_2$ • HCl
FW:	193.7
Chemical Purity:	≥98% (Dopamine)
Deuterium Incorporation:	≥99% deuterated forms (d_1-d_4); ≤1% d_0
Supplied as:	A 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

Dopamine-d_4 (hydrochloride) is intended for use as an internal standard for the quantification of dopamine (Item No. 21992) 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).

Dopamine-d_4 (hydrochloride) is supplied as a solid. A stock solution may be made by dissolving the dopamine-d_4 (hydrochloride) in the solvent of choice, which should be purged with an inert gas. Dopamine-d_4 (hydrochloride) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of dopamine-d_4 (hydrochloride) in ethanol is approximately 1 mg/ml and approximately 30 mg/ml in DMSO and DMF.

Description

Dopamine is an endogenous catecholamine neurotransmitter synthesized from the amino acid L-tyrosine that acts as an agonist at dopamine receptors ($D_{1\text{-}5}$).[1] Dopamine is mainly synthesized in the substantia nigra and ventral tegmental area, and is a precursor in norepinephrine and epinephrine biosynthesis. Dopamine-containing neurons in the brain are involved in reward-motivated behavior, motor control, and hormone release. Dopamine is also synthesized in the adrenal glands where it exerts peripheral paracrine functions including control of vasodilation, sodium excretion, insulin production, gastrointestinal motility, and the activity of lymphocytes.[2,3] Loss or damage of dopaminergic neurons in the substancia nigra is associated with Parkinson's disease.[4]

References

1. Missale, C., Nash, S.R., Robinson, S.W., *et al.* Dopamine receptors: From structure to function. *Physiol. Rev.* **78(1)**, 190-225 (1998).
2. Hayaishi, O. Molecular genetic studies on sleep-wake regulation, with special emphases on the prostaglandin D_2 system. *J. Appl. Physiol.* **92(2)**, 863-868 (2015).
3. Garza, J.H.H. and Carr, D.J.J. Neuroendocrine peptide receptors on cells of the immune system. *Chem. Immunol.* **69**, 132-154 (1997).
4. Angeles, D.C., Ho, P., Dymock, B.W., *et al.* Antioxidants inhibit neuronal toxicity in Parkinson's disease-linked LRRK2. *Ann. Clin. Transl. Neurol.* **3(4)**, 288-294 (2016).

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