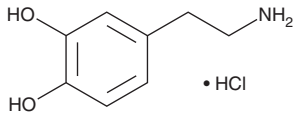
PRODUCT INFORMATION

Dopamine (hydrochloride)

Item No. 21992

CAS Registry No.: 62-31-7
Formal Name: 4-(2-aminoethyl)-1,2-benzenediol, monohydrochloride
Synonyms: DA, KW 3160, 3-hydroxy Tyramine
MF: $C_8H_{11}NO_2 \bullet HCl$
FW: 189.6
Purity: ≥98%
Supplied as: A crystalline solid
Storage: Room temperature
Stability: ≥4 years



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

Laboratory Procedures

Dopamine (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the dopamine (hydrochloride) in the solvent of choice, which should be purged with an inert gas. Dopamine (hydrochloride) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of dopamine (hydrochloride) in ethanol is approximately 1 mg/ml and approximately 30 mg/ml in DMSO and 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 dopamine (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of dopamine (hydrochloride) in PBS (pH 7.2) is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

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 substantia 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. Functional genomics of sleep and circadian rhythm invited review: 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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