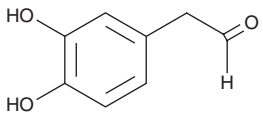
PRODUCT INFORMATION

DOPAL

Item No. 18448

CAS Registry No.: 5707-55-1
Formal Name: 3,4-dihydroxy-benzeneacetaldehyde
MF: $C_8H_8O_3$
FW: 152.1
Purity: ≥75%
Supplied as: A solution in acetonitrile
Storage: -20°C
Stability: ≥2 years



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

Laboratory Procedures

DOPAL is supplied as a solution in acetonitrile. To change the solvent, simply evaporate the acetonitrile 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 DOPAL in ethanol and DMF is approximately 15 mg/ml and approximately 10 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 DOPAL is needed, it can be prepared by evaporating the methanol and directly dissolving the neat oil in aqueous buffers. The solubility of DOPAL in PBS (pH 7.2) is approximately 2 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

DOPAL is an aldehyde product of the oxidative deamination of dopamine by monoamine oxidase.[1] It can be further oxidized to 3,4-dihydroxyphenylacetic acid (DOPAC) by aldehyde dehydrogenase (ALDH) and, to a lesser extent reduced to 3,4-dihydroxyphenyl ethanol (DOPET; Item No. 70604). DOPAL is toxic to neurons.[2,3] It can also oligomerize and precipitate α-synuclein, an event associated with Parkinson's disease.[2] Mice lacking cytosolic and mitochondrial forms of ALDH display increased levels of DOPAL as well as neurodegeneration and motor dysfunction characteristic of Parkinson's disease.[4]

References

1. Jinsmaa, Y., Florang, V.R., Rees, J.N., *et al.* Products of oxidative stress inhibit aldehyde oxidation and reduction pathways in dopamine catabolism yielding elevated levels of a reactive intermediate. *Chem. Res. Toxicol.* **22(5)**, 835-841 (2009).
2. Goldstein, D.S., Sullivan, P., Holmes, C., *et al.* Determinants of buildup of the toxic dopamine metabolite DOPAL in Parkinson's disease. *J. Neurochem.* **126(5)**, 591-603 (2013).
3. Panneton, W.M., Kumar, V.B., Gan, Q., *et al.* The neurotoxicity of DOPAL: Behavioral and stereological evidence for its role in Parkinson disease pathogenesis. *PLoS One* **5(12)**, e15251 (2010).
4. Wey, M.C.Y., Fernandez, E., Martinez, P.A., *et al.* Neurodegeneration and motor dysfunction in mice lacking cytosolic and mitochondrial aldehyde dehydrogenases: implications for Parkinson's disease. *PLoS One* **7(2)**, e31522 (2012).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.**CAYMANCHEM**.COM