DOPAL
Item No. 18448

CAS Registry No.: 5707-55-1
Formal Name: 3,4-dihydroxy-benzeneacetaldehyde
MF: C₈H₈O₃
FW: 152.1
Purity: ≥95%
Stability: ≥2 years at -20°C
Supplied as: A solution in methanol

Laboratory Procedures

For long term storage, we suggest that DOPAL be stored as supplied at -20°C. It should be stable for at least two years.

DOPAL is supplied as a solution in methanol. To change the solvent, simply evaporate the methanol under a gentle stream of nitrogen and immediately add the solvent of choice. Solvents such as ethanol, DMSO, and dimethyl formamidem (DMF) purged with an inert gas can be used. The solubility of DOPAL in ethanol and DMF is approximately 16 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 3 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