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ProductInformation

Tris(2-carboxyethyl)phosphine hydrochloride

Product Number **C 4706**
Storage Temperature 2-8 °C

Product Description

Molecular Formula: $C_9H_{15}O_6P \bullet HCl$
Molecular Weight: 286.7
CAS Number: 51805-45-9
Synonym: TCEP[1]

Tris(carboxyethyl)phosphine (TCEP) has been reported to be a very effective reagent for cleaving disulfide bonds in aqueous solution.[1] TCEP is water-soluble and stable in both acidic and alkaline solutions.[2] TCEP has been applied to the cleavage of disulfide linkage patterns in peptides with tightly clustered cystines.[3,4] Both TCEP and 2-mercaptoethanol are used in the reduction of protein disulfide linkages, but TCEP is considerably less toxic than 2-mercaptoethanol. TCEP is also used as an alternative to tributylphosphine for the reduction of disulfide linkages in proteins.[5]

A procedure for the quantitative analysis of TCEP by reaction with 5,5'-dithiobis(2-nitrobenzoic acid) to form 2-nitro-5-thiobenzoate has been published.[2]

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

TCEP is soluble in water (50 mg/ml), yielding a clear, colorless solution.

References

1. Burns, J. A., et al., Selective reduction of disulfides by tris(2-carboxyethyl)phosphine. J. Org. Chem., **56**, 2648-2650 (1991).
2. Han, J. C., and Han, G. Y., A procedure for quantitative determination of tris (2-carboxyethyl)phosphine, an odorless reducing agent more stable and effective than dithiothreitol. Anal. Biochem., **220**, 5-10 (1994).
3. Gray, W. R., Disulfide structures of highly bridged peptides: A new strategy for analysis. Protein Sci., **2**, 1732-1748 (1993).
4. Gray, W. R., Echistatin disulfide bridges: selective reduction and linkage assignment. Protein Sci., **2**, 1749-1755 (1993).
5. Krijt, J., et al., Measurement of homocysteine and other aminothiols in plasma: advantages of using tris(2-carboxyethyl)phosphine as reductant compared with tri-n-butylphosphine. Clin. Chem., **47**, 1821-1828 (2001).

GCY/AJH 12/02