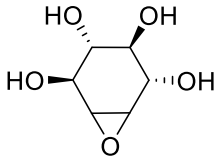
PRODUCT DATA SHEET

Conduritol B Epoxide

Catalog number: 1889
Synonyms: Inhibits *beta*-glucosidase activity; Inhibits *alpha*-glucosidase activity; specific inhibitor of glucocerebrosidase in cultured cells; 1,2-Anhydro-*myo*-inositol; CBE
Source: synthetic

Solubility: water, DMSO, methanol (slightly)
CAS number: 6090-95-5
Molecular Formula: $C_6H_{10}O_5$
Molecular Weight: 162
Storage: -20ºC
Purity: TLC: >98%; identity confirmed by MS
TLC System: chloroform/methanol (70:30 by vol.)
Appearance: solid



Application Notes:

Conduritol B epoxide (CBE) is a derivative of the naturally occurring conduritol B and is a catalytic, site-directed, covalent inhibitor of acid *beta*-glucosidase[1] and of *alpha*-glucosidase.[2] Conduritol B epoxide binds covalently and irreversibly to the catalytic site of acid *beta*-glucosidase, which is the enzyme responsible for the conversion of glucosylceramide to ceramide.[3] Gaucher disease, the most prevalent lysosomal storage disease, is caused by mutations in the gene encoding acid *beta*-glucosidase resulting in a defect in the enzyme *beta*-glucosidase activity and a subsequent accumulation of glucosylceramide. Conduritol B epoxide can be used to rapidly reproduce the effects of Gaucher disease making it ideal for studies of this condition.[4] Treatment with CBE results in glucocerebrosides accumulating in neurons, causing changes in axonal morphology, although CBE has no effect on dendrite development. Co-incubation with CBE and inhibitors of sphingolipid synthesis such as fumonisin B1, an inhibitor of acylation of sphingoid long-chain bases, antagonizes the effects of CBE.[5]

Selected References:

1. G. Grabowski et al. "Gaucher disease types 1, 2, and 3: differential mutations of the acid *beta*-glucosidase active site identified with conduritol B epoxide derivatives and sphingosine" *Am J Hum Genet*., Vol. 37 pp. 499-510, *1985*
2. S. Yang et al. "Inactivation of *alpha*-glucosidase by the active-site-directed inhibitor, conduritol B epoxide" *Biochim Biophys Acta*, Vol. 828(3) pp. 236-240, *1985*
3. L. Premkumar et al. "X-ray Structure of Human Acid-*beta*-Glucosidase Covalently Bound to Conduritol-B-Epoxide Implications for Gaucher Disease" *The Journal of Biological Chemistry*, Vol. 280(25) pp. 23815-23819, *2005*
4. G. Grabowski et al. "Human acid *beta*-glucosidase. Use of conduritol B epoxide derivatives to investigate the catalytically active normal and Gaucher disease enzymes" *The Journal of Biological Chemistry*, Vol. 261(18) pp. 8263-8269, *1986*
5. E. Korkotian et al. "Elevation of Intracellular Glucosylceramide Levels Results in an Increase in Endoplasmic Reticulum Density and in Functional Calcium Stores in Cultured Neurons" *The Journal of Biological Chemistry*, Vol. 274(31) pp. 21673-21678, *1999*

2178 High Tech Road, State College, PA 16803
www.matreya.com · Phone (814) 355-1030 · Fax (814) 355-1031