

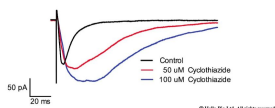
DATASHEET

Cyclothiazide

Product overview

Name	Cyclothiazide
Cat No	HB0221
Alternative names	CTZ
Biological action	PAM
Purity	>98%
Description	AMPA receptor positive allosteric modulator. Inhibits AMPAR desensitization.

Images



Biological Data

Biological description

Cyclothiazide (CTZ) is an AMPA receptor positive allosteric modulator (PAM) which produces a fast inhibition of AMPAR desensitization and a slow potentiation of the AMPA current.

Cyclothiazide also inhibits GABA_A mediated currents and shows diuretic and convulsive actions.

Application notes

Cyclothiazide is active *in vivo*.

The AMPAR positive allosteric modulator Cyclothiazide increases the open time of the AMPAR by inhibiting AMPAR desensitization. It is often used at a concentration of 100 μM. Cyclothiazide from Hello Bio potentiates AMPAR mediated evoked EPSCs in cortical neurons at 50 μM and above (see Fig 1 above)

#Protocol 1: Evoked and spontaneous evoked excitatory post synaptic currents (EPSCs)

- Whole cell voltage clamp recordings were obtained from layer V neurons of the mouse prelimbic cortex brain slice.
- EPSCs were evoked via a stimulating electrode placed in layers II/III delivering a single square (150 μs) pulse every 10 sec at an intensity that gave a reliable EPSC.
- Neurons were held at -70 mV (the reversal potential of GABA currents).
- EPSCs were then continuously stimulated and recorded in response to 5 min applications of 50 μM and then 100 μM Cyclothiazide.

Solubility & Handling

Storage instructions

Room temperature

Solubility overview

Soluble in DMSO (100mM) or ethanol (25mM)

Important

This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not for human or veterinary use.

Chemical Data

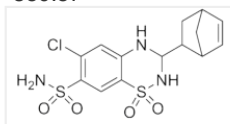
Chemical name

6-Chloro-3,4-dihydro-3-(5-norbornen-2-yl)-2H-1,2,4-benzothiazidiazine-7-sulfonamide-1,1-dioxide

Molecular Weight

389.87

Chemical structure



Molecular Formula

C₁₄H₁₆ClN₃O₄S₂

CAS Number

2259-96-3

PubChem identifier

2910

SMILES

C1C2CC(C1C=C2)C3NC4=CC(=C(C=C4S(=O)(=O)N3)S(=O)(=O)N)Cl

Source

Synthetic

InChi

InChI=1S/C14H16ClN3O4S2/c15-10-5-11-13(6-12(10)23(16,19)20)24(21,22)18-14(17-11)9-4-7-1-2-8(9)3-7/h1-2,5-9,14,17-18H,3-4H2,(H2,16,19,20)

InChiKey

BOCUKUHLCSYU-UHFFFAOYSA-N

MDL number

MFCD00210192

Appearance

White solid

References

Effects of cyclothiazide on GluR1/AMPA receptors.

Fucile S *et al* (2006) Proc Natl Acad Sci U S A 103(8)

PubMedID

[16473938](#)

Downregulated GABA and BDNF-TrkB pathway in chronic cyclothiazide seizure model.

Kong S *et al* (2014) Neural Plast 2014

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[24757570](#)

The norbornenyl moiety of cyclothiazide determines the preference for flip-flop variants of AMPA receptor subunits.

Kessler M *et al* (2000) Neurosci Lett 287(2)

PubMedID

[10854736](#)

Superactivation of AMPA receptors by auxiliary proteins.

Carbone and Plested (2016) Nat Commun 7

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[26744192](#)
