Datasheet

Product overview

Name | NBQX
Cat No | HB0442
Short description | Potent, selective, competitive AMPA receptor antagonist
Biological description | Potent, selective and competitive AMPA receptor antagonist. Also kainate receptor antagonist. Shows neuroprotective, antinociceptive and anticonvulsive actions. Water soluble, NBQX disodium salt also available.
Alternative names | NBQX
Biological action | Antagonist
Purity | >98%

Images

Fig 1: NBQX inhibition of evoked and spontaneous glutamate mediated EPSCs in mouse cortical neuron

The AMPA receptor antagonist NBQX inhibits the actions of glutamate acting at AMPARs and is commonly used at 10 μM. NBQX from HelloBio reduces spontaneous and evoked excitatory postsynaptic currents (EPSCs). Complete AMPA receptor blockade was achieved at 10 μM and NBQX was also effective at 1 μM. For assay protocol, see #Protocol 1 in Application Notes below.
Properties

Chemical name: 2,3-Dioxo-6-nitro-1,2,3,4-tetrahydrobenzo[f]quinoxaline-7-sulfonamide
Molecular Weight: 336.28

Chemical structure:

![Chemical Structure Image]

Molecular Formula: C₁₂H₈N₄O₆S
CAS Number: 118876-58-7
PubChem identifier: 3272524
SMILES: C1=CC=C3C(=C2C(=C1)S(=O)(=O)N)[N+](=O)[O-])NC(=O)C(=O)N3
Source: Synthetic
InChi: InChI=1S/C12H8N4O6S/c13-23(21,22)8-3-1-2-5-9(8)7(16(19)20)4-6-10(5)15-12(18)11(17)14-6/h1-4H,(H,14,17)(H,15,18)3H3
InChiKey: UQNAFPHVPTAL-UHFFFAOYSA-N
MDL number: MFCD11046016
Appearance: Yellow solid

Applications

Application notes

The AMPA receptor antagonist NBQX inhibits the actions of glutamate acting at AMPARs and is commonly used at 10 μM. NBQX from Hello Bio reduces spontaneous and evoked excitatory post synaptic currents (EPSCs) (see Fig 1 above). Complete AMPA receptor blockade was achieved at 10 μM and NBQX was also effective at 1 μM. NBQX was dissolved in DMSO.

#Protocol 1: Evoked and spontaneous 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 to -60 mV (the reversal potential of GABA currents). EPSCs were continuously stimulated and recorded in response to 5 min applications of varying concentrations of NBQX until complete receptor inhibition.
- Spontaneous EPSCs were recorded before and after addition of NBQX by holding the neuron at -70 mV and recording for 10 sec.
- Recordings for EPSCs were made in the absence of GABAₐ-R antagonists.

Storing and Using Your Product

Storage instructions: Room temperature
Solubility overview: Soluble in DMSO (100mM)
Important: This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not for human or veterinary use.

References for NBQX
It is AMPA receptor, not kainate receptor, that contributes to the NBQX-induced antinociception in the spinal cord of rats.


PubMedID: 16777075

Competitive inhibition by NBQX of kainate/AMPA receptor currents and excitatory synaptic potentials: importance of 6-nitro substitution.


PubMedID: 1382998

Both MK801 and NBQX reduce the neuronal damage after impact-acceleration brain injury.


PubMedID: 12490009

Antiepileptogenic and anticonvulsant effects of NBQX, a selective AMPA receptor antagonist, in the rat kindling model of epilepsy.


PubMedID: 8199874

Pharmacological characterization of glutamatergic agonists and antagonists at recombinant human homomeric and heteromeric kainate receptors in vitro.


PubMedID: 15033339