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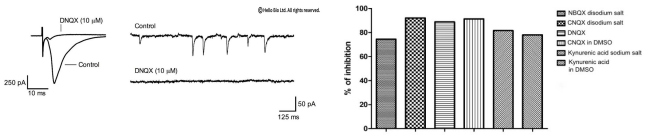
DATASHEET

DNQX

Product overview

Name	DNQX
Cat No	HB0261
Biological action	Antagonist
Purity	>98%
Description	Selective, competitive AMPA / kainate receptor antagonist

Images



Biological Data

Biological description

DNQX is a selective and competitive AMPA and kainate receptor antagonist. DNQX allso acts as partial AMPA agonist in the presence of γ2 transmembrane AMPA receptor regulatory proteins (TARP) subunit.

DNQX is also a neuroleptic agent that displays pro-oxidant activity.

Water soluble DNQX disodium is also available.

Application notes

DNQX antagonizes the actions of glutamate at AMPA receptors. It is commonly used to reduce excitatory post synaptic currents (EPSC) and is commonly used at 10 µM. DNQX disodium salt from Hello Bio completely blocks both spontaneous and evoked EPSCs at 10 µM, with concentrations of 1 µM also effective (see Fig 1 above).

#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 disodium salt until complete receptor inhibition.
- Spontaneous EPSCs were recorded before and after addition of NBQX disodium salt by holding the neuron at -70 mV and recording for 10 sec.

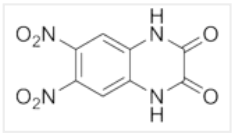
Biological description	DNQX is a selective and competitive AMPA and kainate receptor antagonist. DNQX allso acts as partial AMPA agonist in the presence of γ2 transmembrane AMPA receptor regulatory proteins (TARP) subunit. DNQX is also a neuroleptic agent that displays pro-oxidant activity. Water soluble DNQX disodium is also available.

- Recordings for EPSCs were made in the absence of $GABA_A$-R antagonists.

Solubility & Handling

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.

Chemical Data

Chemical name	6,7-Dinitroquinoxaline-2,3-dione
Molecular Weight	252.14
Chemical structure	
Molecular Formula	$C_8H_4N_4O_6$
CAS Number	2379-57-9
PubChem identifier	3899541
SMILES	C1=C2C(=CC(=C1[N+](=O)[O-])[N+](=O)[O-])NC(=O)C(=O)N2
Source	Synthetic
InChi	InChI=1S/C8H4N4O6/c13-7-8(14)10-4-2-6(12(17)18)5(11(15)16)1-3(4)9-7/h1-2H,(H,9,13)(H,10,14)
InChiKey	RWVIMCIPOAXUDG-UHFFFAOYSA-N
MDL number	MFCD00069257
Appearance	Pale yellow solid

References

Redox properties and prooxidant cytotoxicity of a neuroleptic agent 6,7-dinitrodihydroquinoxaline-2,3-dione (DNQX).

Šarlauskas J *et al* (2013) Acta Biochim Pol 60(2)
PubMedID 23757451

TARP auxiliary subunits switch AMPA receptor antagonists into partial agonists.

Menuz K *et al* (2007) Science 318(5851)
PubMedID 17975069

Selective excitatory actions of DNQX and CNQX in rat thalamic neurons.

Lee SH *et al* (2010) J Neurophysiol 103(4)
PubMedID 20107128

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

Alt et al (2004) Neuropharmacology 46(6)
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