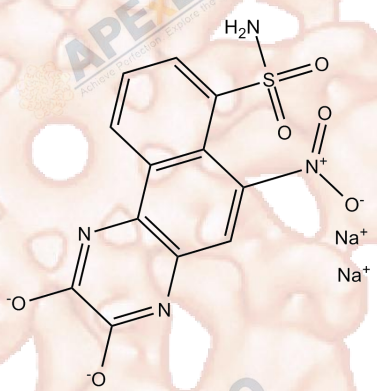
NBQX disodium salt



Cat. No.:	B6566
CAS No.:	479347-86-9
Formula:	C12H6N4O6SNa2
M.Wt:	380.24
Synonyms:	FG9202 disodium; 1,2,3,4-tetrahydro-6-nitro-2,3-dioxo-benzo[f]quinoxaline-7-sulfonamide, disodium salt
Target:	GluR
Pathway:	Neuroscience
Storage:	Store at -20° C

Solvent & Solubility

In Vitro

Soluble in H2O

Preparing Stock Solutions

Mass / Solvent / Concentration	1mg	5mg	10mg
1 mM	2.6299 mL	13.1496 mL	26.2992 mL
5 mM	0.5260 mL	2.6299 mL	5.2598 mL
10 mM	0.2630 mL	1.3150 mL	2.6299 mL

Please refer to the solubility information to select the appropriate solvent.

Biological Activity

Shortsummary

NBQX disodium salt (CAS 479347-86-9) is a water-soluble, competitive antagonist belonging to the class of quinoxalinedione derivatives. It functions as an AMPA receptor antagonist in central nervous system (CNS) neurons and exhibits potent antagonistic activity at kainate receptors in other neural tissues. Additionally, it suppresses glutamate-induced excitotoxicity by selectively inhibiting fast excitatory synaptic transmission mediated by AMPA/kainate receptors.

In various in vitro and in vivo experimental contexts, NBQX disodium salt demonstrates neuroprotective

effects with [key metric (IC50/EC50/other values)], tested against [neuronal cell lines/animal seizure models]. It can also reduce neuronal cell death and limit seizure activity induced by excessive glutamatergic stimulation or ischemic injury.

In neuroscientific research and pharmacological studies, NBQX disodium salt is widely used for the characterization of synaptic transmission involving AMPA and kainate receptors, as well as for investigating the pathophysiology of neurodegenerative disorders and epilepsy. Its highly selective antagonistic profile makes it a valuable tool for dissecting glutamatergic signaling pathways and for exploring potential therapeutic avenues against excitotoxic and seizure-related conditions.

IC_{50} & Target

In Vitro

Cell Viability Assay

Cell Line:	HIP-009 cells
Preparation method:	Compounds were diluted in the assay buffer and transferred to compound plates. The compositions of the assay buffers were as follows: 20 mM HEPES and Hank ' s balanced salt solution with calcium and magnesium without phenol red (Life Technologies) (pH adjusted to 7.4 with NaOH) for glutamate concentration - dependent assays; 137 mM NaCl, 4 mM KCl, 1.8 mM CaCl2, 10 mM HEPES, and 10 mM D-glucose (pH adjusted to 7.4 with NaOH) for NMDARs and co-treatment assays of MK-801 and NBQX. After the 1-h incubation, calcium rise was measured.
Reacting conditions:	1 h incubation
Applications:	NBQX inhibited both AMPA or kainic acid (KA) induced signals in a concentration-dependent manner, with IC50 values being 0.7 ± 0.1 and 0.7 ± 0.03 μM, respectively. The AMPA-evoked calcium rise was completely inhibited by NBQX, whereas 68.6% ± 1.3% inhibition of the KA-induced signal was observed with 30 μM of NBQX treatment.

In Vivo

Animal experiment

Animal models:	Animal models Male Wistar rats intraperitoneally injected with pentylenetetrazole
Dosage form:	20 mg/kg.Once daily by intraperitoneal injection for 3 days
Applications:	NBQX was sufficient to decrease pentylenetetrazole-induced seizures through increasing the latency to seizures, decrease the duration of seizure onset, and reduce the scores for the severity of seizures.
Preparation method:	NBQX was freshly dissolved in saline as sodium salt.
Other notes:	The technical data provided above is for reference only.

Product Citations

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References

1. Fukushima K, Tabata Y, Imaizumi Y, et al. Characterization of human hippocampal neural stem/progenitor cells and their application to physiologically relevant assays for multiple ionotropic glutamate receptors. Journal of Biomolecular Screening, 2014, 19(8): 1174-1184.

2. Chen W, Li YS, Gao J, et al. AMPA Receptor Antagonist NBQX Decreased Seizures by Normalization of Perineuronal Nets. PLoS One, 2016, 11(11): e0166672.

Caution

FOR RESEARCH PURPOSES ONLY.

NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

Specific storage and handling information for each product is indicated on the product datasheet. Most APExBIO products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Shortterm storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.

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