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# **DATASHEET**

(-)-Bicuculline methobromide

### **Product overview**

Name (-)-Bicuculline methobromide

Cat No HB0894
Alternative names BIC
Biological action Antagonist
Purity >98%

**Description** Prototypic, competitive GABA<sub>A</sub> receptor antagonist

## **Images**







# **Biological Data**

#### **Biological description**

Methobromide salt form of (+)-bicuculline.

Prototypic, competitive  $GABA_A$  receptor antagonist which displaces GABA from the agonist binding site to prevent receptor activation.

Also acts as a negative allosteric inhibitor of channel opening to inhibit  $GABA_A$  receptor activation by anaesthetic agents.

Additionally shows activity at SK calcium-activated potassium channels, nicotinic acetylcholine receptors and acetylcholinesterase.

Reversibly and competitively blocks GABA<sub>A</sub> receptor mediated currents. Widely used to isolate glutamate receptor mediated EPSCs (excitatory postsynaptic potentials).

Shows convulsant action and induces epilepsy.

#### **Application notes**

Freebase, methiodide and methochloride salts also available.

The GABA<sub>A</sub> receptor antagonist bicuculline is commonly used to reduce levels of inhibition by blocking the actions of the neurotransmitter GABA. Bicuculline is commonly used at concentrations of 100  $\mu$ M and above. Bicuculline methobromide from Hello Bio reduces both spontaneous inhibitory post synaptic currents (IPSC) and evoked IPSCs (see Fig 1 above). It was effective at concentrations of 1 mM with complete receptor blockade at 100  $\mu$ M

#### #Protocol 1: Evoked and spontaneous inhibitory post synaptic currents (IPSCs)

- Whole cell voltage clamp recordings were obtained from layer V neurons of the mouse prelimbic cortex brain slice.
- A stimulating electrode was placed in layers II/III and IPSCs were evoked by a single square (150 µs) pulse every 10 sec at a stimulus intensity that gave a reliable IPSC.
- IPSCs were evoked at a range of neuron holding voltages to measure the reversal potential of the current to ensure it was GABAergic.
- Neurons were held at 0mV and IPSCs continuously stimulated and recorded in response to 5 min applications of varying concentrations of Gabazine until complete receptor inhibition.
- Spontaneous IPSCs were recorded before and after addition of Gabazine by holding the neuron at 0mV and recording for 10 sec.
- All recordings for IPSCs were made in the presence of AMPAR antagonists.

# **Solubility & Handling**

Solubility overview Storage instructions Storage of solutions Soluble in water (50mM) Room temperature

Prepare and use solutions on the same day if possible. Store solutions at -20  $^{\circ}$ C for up to one month if

storage is required. Equilibrate to RT and ensure the solution is precipitate free before use.

**Shipping Conditions Important** 

Stable for ambient temperature shipping. Follow storage instructions on receipt.

This product is for RESEARCH USE ONLY and is not intended for the rapeutic or diagnostic use. Not

for human or veterinary use.

## **Chemical Data**

**Chemical name**  $[R-(R^*,S^*)]-5-(6,8-Dihydro-8-oxofuro[3,4-e])$ 

462.3

]-1,3-benzodioxol-6-yl)-5,6,7,8-tetrahydro-6,6-dimethyl-1,3-dioxolo[4,5-g]isoquinolinium bromide

Molecular Weight Chemical structure

N Br

SMILES C[N+]1(CCC2=CC3=C(C=C2C1C4C5=C(C6=C(C=C5)OCO6)C(=O)O4)OCO3)C.[Br-]

InChi InChi InChi=1S/C21H20NO6.BrH/c1-22(2)6-5-11-7-15-16(26-9-25-15)8-13(11)18(22)19-12-3-4-14-20(27-

10-24-14)17(12)21(23)28-19;/h3-4,7-8,18-19H,5-6,9-10H2,1-2H3;1H/q+1;/p-1

InChiKey BWXCECYGGMGBHD-UHFFFAOYSA-M

MDL number MFCD00055149
Appearance White solid

## References

Advantages of an antagonist: bicuculline and other GABA antagonists.

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Differential effects of iontophoretic in vivo application of the GABA(A)-antagonists bicuculline and gabazine in sensory cortex.

Kurt S et al (2006) Hear Res 212(1-2)

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