

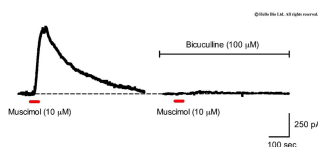
## DATASHEET

### Muscimol

#### Product overview

<b>Name</b>	Muscimol
<b>Cat No</b>	HB0887
<b>Biological action</b>	Agonist
<b>Purity</b>	>99%
<b>Description</b>	Potent, selective, competitive GABA <sub>A</sub> receptor agonist

#### Images



#### Biological Data

##### Biological description

Potent, selective and competitive GABA<sub>A</sub> receptor agonist and a potent partial GABA<sub>A</sub>- $\rho$  (GABAC) receptor agonist.

Muscimol is a GABA analog with comparable potency to GABA and is thought to act at the orthosteric site at GABA<sub>A</sub> receptors in varying active conformations.

Also acts as a weak inhibitor of GABA uptake but is not a substrate for GABA transaminase.

Application of muscimol evokes GABA<sub>A</sub>R currents and its actions are antagonized by the GABA<sub>A</sub>R antagonist **bicuculline** (bicuculline **methochloride**, **methiodide** and **methobromide** also available).

Muscimol enhances inhibitory neurotransmission and suppresses spontaneous activity. It is commonly used in reversible brain inactivation studies.

Active in vivo and blood brain barrier permeable.

##### Application notes

Shows psychoactive, memory impairing effects and anticonvulsant actions at high doses.

The GABA<sub>A</sub> receptor agonist muscimol is used at concentrations of 1-50 μM. Muscimol from Hello Bio used at 10 μM led to a large hyperpolarising whole-cell current in hippocampal CA1 neurons (see Fig 1 above). Action of muscimol was fully blocked by the GABA<sub>A</sub> receptor antagonist **bicuculline** (100 μM).

##### **#Protocol 1: Assay used for muscimol**

- Whole cell voltage clamp recordings of CA1 pyramidal neurons from the rat hippocampal brain slice.
- Neurons were held at 0 mV and GABA<sub>A</sub> receptor currents were evoked via applying muscimol

directly to the recording chamber during continuous perfusion.

- To test muscimol's selectivity to GABA<sub>A</sub> receptors the experiment was repeated within the same neuron in the presence of the GABA<sub>A</sub> receptor antagonist **bicuculline** (100 μM).
- Under these conditions muscimol failed to induce a hyperpolarising current.

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## Solubility & Handling

### Storage instructions Solubility overview Important

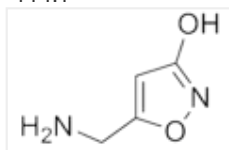
Room temperature  
Soluble in water (100mM)  
This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not for human or veterinary use.

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## Chemical Data

### Chemical name Molecular Weight Chemical structure

5-Aminomethyl-3-hydroxyisoxazole  
114.1



### Molecular Formula CAS Number PubChem identifier SMILES Source InChi InChiKey MDL number Appearance

C<sub>4</sub>H<sub>6</sub>N<sub>2</sub>O<sub>2</sub>  
2763-96-4  
4266  
C1=C(ONC1=O)CN  
Synthetic  
InChi=1S/C4H6N2O2/c5-2-3-1-4(7)6-8-3/h1H,2,5H2,(H,6,7)  
ZJQHPWUVQPJPQT-UHFFFAOYSA-N  
MFCD00057894  
White solid

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## References

### Anticonvulsant and behavioral effects of muscimol in immature rats.

Mareš P *et al* (2014) Brain Res 1582

**PubMedID** [25084038](#)

### Muscimol as an Ionotropic GABA Receptor Agonist.

Johnston GA (2014) Neurochem Res 39(10)

**PubMedID** [24473816](#)

### Hippocampal infusions of pyruvate reverse the memory-impairing effects of septal muscimol infusions.

Krebs DL *et al* (2005) Eur J Pharmacol 520(1-3)

**PubMedID** [16150437](#)

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