



Product Information

Muscimol

Product Number **M 1523**
Storage Temperature 2-8 °C

Product Description

Molecular Formula: C₄H₆N₂O₂
Molecular Weight: 114.1
CAS Number: 2763-96-4
Melting Point: 175 °C (with decomposition)¹
Synonyms: 5-aminomethyl-3-hydroxy-isoxazole;
5-aminomethyl-3-isoxazolol; 3-hydroxy-
5-aminomethyl-isoxazole

Muscimol is an isoxazole derivative that occurs naturally in the mushroom *Amanita muscaria*. It is a potent central nervous system (CNS) depressant and γ -aminobutyric acid (GABA) agonist, and thus has been used to investigate GABA receptors.¹ The structure of muscimol has served as a template for the design of compounds as GABA uptake inhibitors and GABA_A receptor agonists.² A review of GABA receptors that discusses the use of muscimol to probe echinoderm neuromuscular junction has been published.³

In cultured rat oligodendrocytes, muscimol has been shown to lead to a reduction in intracellular Cl⁻ content, cell shrinkage, and stimulated Na-K-2Cl cotransporter isoform 1 (NKCC1) activity.⁴ Muscimol (50 μ M) has been utilized to probe the role of the p42/44 mitogen-activated protein kinase (MAPK) cascade in the development of cultured rat hypothalamic neurons.⁵ The use of muscimol (5 μ M) to probe burst firing in rat brain slices has been described.⁶

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in 0.05 M HCl (20 mg/ml), yielding a clear, colorless to very faint yellow solution.

Storage/Stability

Solutions of this product should be stored in frozen aliquots at near-neutral pH and protected from light.

References

1. The Merck Index, 12th Ed., Entry# 6391.
2. Krogsgaard-Larsen, P., et al., GABA uptake inhibitors. Design, molecular pharmacology and therapeutic aspects. *Curr. Pharm. Des.*, **6(12)**, 1193-1209 (2000).
3. Devlin, C. L., The pharmacology of γ -aminobutyric acid and acetylcholine receptors at the echinoderm neuromuscular junction. *J. Exp. Biol.*, **204(Pt 5)**, 887-896 (2001).
4. Wang, H., et al., GABA-mediated trophic effect on oligodendrocytes requires Na-K-2Cl cotransport activity. *J. Neurophysiol.*, **90(2)**, 1257-1265 (2003).
5. Obrietan, K., et al., Excitatory actions of GABA increase BDNF expression via a MAPK-CREB-dependent mechanism - a positive feedback circuit in developing neurons. *J. Neurophysiol.*, **88(2)**, 1005-1015 (2002).
6. Baufreton, J., et al., Activation of GABA_A receptors in subthalamic neurons in vitro: properties of native receptors and inhibition mechanisms. *J. Neurophysiol.*, **86(1)**, 75-85 (2001).

GCY/CRF 12/03

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