

Small Molecules

Chlormethiazole (Hydrochloride)

GABAA agonist

Catalog #100-0893

50 mg



Scientists Helping Scientists™ | WWW.STEMCELL.COM

TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713

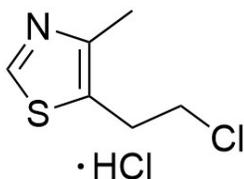
INFO@STEMCELL.COM • TECHSUPPORT@STEMCELL.COM

FOR GLOBAL CONTACT DETAILS VISIT OUR WEBSITE

Product Description

Chlormethiazole is a γ -aminobutyric acid type A (GABAA) agonist with neuroprotective and sedative properties (Cross et al.; Moody & Skolnick; Nelson et al.). The GABAA receptor consists of 5 protein subunits that span the neuronal membrane and represents the predominant inhibitory neurotransmitter in the central nervous system (Mele et al.; Nuss). Chlormethiazole also increases the chloride uptake in cortical synaptoneurosomes in a dose-dependent manner ($EC_{50} = 48 \mu\text{M}$; Moody & Skolnick). Chlormethiazole can restore synaptic function and correct memory defects in mouse models of neurodegeneration (Luo et al.).

| | |
|--------------------|--|
| Alternative Names: | Clomethiazole |
| CAS Number: | 6001-74-7 |
| Chemical Formula: | $\text{C}_6\text{H}_8\text{ClNS} \cdot \text{HCl}$ |
| Molecular Weight: | 198.1 g/mol |
| Purity: | $\geq 98\%$ |
| Chemical Name: | 5-(2-chloroethyl)-4-methyl-thiazole, monohydrochloride |
| Structure: | |



Properties

| | |
|----------------------|---|
| Physical Appearance: | A crystalline solid |
| Storage: | Product stable at -20°C as supplied. Protect product from prolonged exposure to light. For long-term storage, store with a desiccant. Stable as supplied for 12 months from date of receipt. |
| Solubility: | <ul style="list-style-type: none">· PBS (pH 7.2) $\leq 50 \text{ mM}$· DMSO $\leq 150 \text{ mM}$· Absolute ethanol $\leq 100 \text{ mM}$ <p>For example, to prepare a 10 mM stock solution in PBS, resuspend 10 mg in 5.1 mL of PBS.</p> <p>Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in DMSO at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.</p> <p>For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. Avoid final DMSO concentration above 0.1% due to potential cell toxicity.</p> |

Published Applications

DISEASE MODELING

- Protects against neuronal death in the hippocampus in gerbils (Cross et al.).

References

Cross AJ et al. (1995) The protective action of chlormethiazole against ischaemia-induced neurodegeneration in gerbils when infused at doses having little sedative or anticonvulsant activity. *Br J Pharmacol* 114(8): 1625–30.

Luo J et al. (2015) Re-engineering a neuroprotective, clinical drug as a procognitive agent with high in vivo potency and with GABAA potentiating activity for use in dementia. *BMC Neurosci* 16: 67.

Mele M et al. (2019) Alterations in GABAA-receptor trafficking and synaptic dysfunction in brain disorders. *Front Cell Neurosci* 13: 77.

Moody EJ & Skolnick P. (1989) Chlormethiazole: neurochemical actions at the gamma-aminobutyric acid receptor complex. *Eur J Pharmacol* 164(1): 153–8.

Nelson RM et al. (2002) Electrophysiological actions of gamma-aminobutyric acid and clomethiazole on recombinant GABA(A) receptors. *Eur J Pharmacol* 452(3): 255–62.

Nuss P. (2015) Anxiety disorders and GABA neurotransmission: a disturbance of modulation. *Neuropsychiatr Dis Treat* 11: 165–75.

Related Small Molecules

For a complete list of small molecules available from STEMCELL Technologies, visit www.stemcell.com/smallmolecules or contact us at techsupport@stemcell.com.

This product is hazardous. Please refer to the Safety Data Sheet (SDS).

PRODUCTS ARE FOR RESEARCH USE ONLY AND NOT INTENDED FOR HUMAN OR ANIMAL DIAGNOSTIC OR THERAPEUTIC USES UNLESS OTHERWISE STATED.

Copyright © 2021 by STEMCELL Technologies Inc. All rights reserved including graphics and images. STEMCELL Technologies & Design, STEMCELL Shield Design, and Scientists Helping Scientists are trademarks of STEMCELL Technologies Canada Inc. All other trademarks are the property of their respective holders. While STEMCELL has made all reasonable efforts to ensure that the information provided by STEMCELL and its suppliers is correct, it makes no warranties or representations as to the accuracy or completeness of such information.