

Product Information

Benzamil hydrochloride hydrate

Catalog Number **B2417**

Storage Temperature 2–8 °C

Synonym: N-(benzylamidino)-3,5-diamino-6-chloropyrazinecarboxamide hydrochloride hydrate

Product Description

Benzamil, the N ω -benzyl derivative of amiloride, is a compound that is used in ion channel research. It is a selective and potent blocker of Na⁺/H⁺ and Na⁺/Ca²⁺ channels.^{1,2} The blockage of the mechanosensitive cation selective channel in *Xenopus laevis* oocytes has been studied.³

Benzamil has been used at 1–100 μ M in a study of cultured cortical rat astrocytes to probe the role of arginine vasopressin cell volume regulation.⁴ Benzamil has been shown to diminish the basal short circuit current in a study of Cl[–] channel activation, both in freshly isolated and in monolayer cultured alveolar epithelial cells.⁵ A scintillation proximity assay to study Na⁺/Cl[–]-dependent neurotransmitter transporter activity has been developed and used to probe benzamil-disrupted glycine accumulation in human placental choriocarcinoma cells.⁶

An HPLC method for analysis of benzamil, amiloride, and related compounds from plasma has been published.⁷

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

This product is soluble in methanol (10 mg/ml), with heat and sonication as needed, yielding a clear to slightly hazy, faint yellow solution. It is also soluble in ethanol (6 mg/ml) and water (2 mg/ml).

References

1. Pierce, G.N., et al., Modulation of cardiac performance by amiloride and several selected derivatives of amiloride. *J. Pharmacol. Exp. Ther.*, **265**(3), 1280-1291 (1993).
2. Lingueglia, E., et al., Molecular biology of the amiloride-sensitive epithelial Na⁺ channel. *Exp. Physiol.*, **81**(3), 483-492 (1996).
3. Lane, J.W., et al., Structure-activity relations of amiloride and its analogues in blocking the mechanosensitive channel in *Xenopus* oocytes. *Br. J. Pharmacol.*, **106**(2), 283-286 (1992).
4. Sarfaraz, D., and Fraser, C.L., Effects of arginine vasopressin on cell volume regulation in brain astrocyte in culture. *Am. J. Physiol.*, **276**(3 Pt 1), E596-601 (1999).
5. Jiang, X., et al., Adrenergic regulation of ion transport across adult alveolar epithelial cells: effects on Cl[–] channel activation and transport function in cultures with an apical air interface. *J. Membr. Biol.*, **181**(3), 195-204 (2001).
6. Williams, J.B., et al., Development of a scintillation proximity assay for analysis of Na⁺/Cl[–]-dependent neurotransmitter transporter activity. *Anal. Biochem.*, **321**(1), 31-37 (2003).
7. Alliegro, M.A., et al., High-performance liquid chromatographic method for quantitating plasma levels of amiloride and its analogues. *J. Chromatogr.*, **582**(1-2), 217-223 (1992).

SC,GCY,JRC,MAM 09/08-1

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.