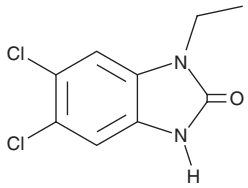
PRODUCT INFORMATION

DCEBIO

Item No. 29426

CAS Registry No.: 60563-36-2
Formal Name: 5,6-dichloro-1-ethyl-1,3-dihydro-2H-benzimidazol-2-one
MF: $C_9H_8Cl_2N_2O$
FW: 231.1
Purity: ≥98%
Supplied as: A solid
Storage: -20°C
Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

DCEBIO is supplied as a solid. A stock solution may be made by dissolving the DCEBIO in the solvent of choice, which should be purged with an inert gas. DCEBIO is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of DCEBIO in these solvents is approximately 5, 15, and 20 mg/ml, respectively.

DCEBIO is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, DCEBIO should first be dissolved in DMF and then diluted with the aqueous buffer of choice. DCEBIO has a solubility of approximately 0.25 mg/ml in a 1:3 solution of DMF:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

DCEBIO is an activator of intermediate conductance calcium-activated potassium ($IK_{Ca}1/K_{Ca}3.1$) channels and a dichlorinated derivative of the K_{Ca} channel activator 1-EBIO (Item No. 14575).[1] It activates $IK_{Ca}1/K_{Ca}3.1$ and induces chloride secretion in T84 monolayers in a concentration-dependent manner, an effect that can be blocked by the $IK_{Ca}1$ inhibitor charybdotoxin (Item No. 24115). DCEBIO potentiates the activity of small conductance calcium-activated potassium (SK) channels with an EC_{50} value of 27 µM in HEK293 cells expressing recombinant human SK2 channels by increasing the apparent calcium sensitivity of the channel.[2] It also potentiates SK channel-mediated apamin-sensitive after-hyperpolarizing currents (I_{AHP}) in CA1 pyramidal neurons, increasing the amplitude and duration of I_{AHP} when used at a concentration of 100 µM. DCEBIO induces chloride secretion in isolated mouse jejunum (EC_{50} = 41 µM), an effect that is reduced by the cystic fibrosis transmembrane conductance regulator (CFTR) inhibitors glibenclamide and NPPB.[3]

References

1. Singh, S., Syme, C.A., Singh, A.K., *et al.* Benzimidazolone activators of chloride secretion: Potential therapeutics for cystic fibrosis and chronic obstructive pulmonary disease. *J. Pharmacol. Exp. Ther.* **296(2)**, 600-611 (2001).
2. Pedarzani, P., McCutcheon, J.E., Rogge, G., *et al.* Specific enhancement of SK channel activity selectively potentiates the afterhyperpolarizing current IAHP and modulates the firing properties of hippocampal pyramidal neurons. *J. Biol. Chem.* **280(50)**, 41404-41411 (2005).
3. Hamilton, K.L. and Kiessling, M. DCEBIO stimulates Cl^- secretion in the mouse jejunum. *Am. J. Physiol. Cell Physiol.* **290(1)**, C152-C164 (2006).

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