# PRODUCT INFORMATION

## 1-EBIO

*Item No. 14575*

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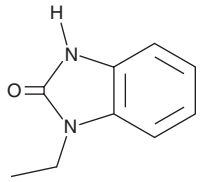
|---|---|
| **CAS Registry No.:** | 10045-45-1 |
| **Formal Name:** | 1-ethyl-1,3-dihydro-2H-benzimidazol-2-one |
| **Synonym:** | 1-Ethylbenzimidazolinone |
| **MF:** | $C_9H_{10}N_2O$ |
| **FW:** | 162.2 |
| **Purity:** | ≥98% |
| **UV/Vis.:** | $\lambda_{max}$: 229, 285 nm |
| **Supplied as:** | A crystalline 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

1-EBIO is supplied as a crystalline solid. A stock solution may be made by dissolving the 1-EBIO in the solvent of choice, which should be purged with an inert gas. 1-EBIO is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of 1-EBIO in ethanol is approximately 30 mg/ml and approximately 100 mg/ml in DMSO and DMF.

1-EBIO is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, 1-EBIO should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. 1-EBIO has a solubility of approximately 0.5 mg/ml in a 1:1 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

### Description

1-EBIO is an activator of $Ca^{2+}$-sensitive $K^+$ channels ($EC_{50}$ = 490 µM in T84 human carcinoma cells).[1] This action is sensitive to the neurotoxin charybdotoxin ($K_i$ = 3.5 nM). In mouse colonic epithelia, 1-EBIO also activates cAMP-sensitive $K^+$ channels, a response this is inhibited by 293B.[2] In this type of epithelium, but not mouse nasal epithelia, 1-EBIO activates both types of channels, resulting in large Cl- secretory currents.[3] It also activates the human intermediate conductance $Ca^{2+}$-activated $K^+$ channel ($EC_{50}$ = 74 µM).[4] 1-EBIO is currently used to study the role of these types of $K^+$ channels in diverse physiological functions.[5,6]

### References


1. Devor, D.C., Singh, A.K., Frizzell, R.A., *et al.* Modulation of Cl- secretion by benzimidazolones. I. Direct activation of a Ca(2+)-dependent K+ channel. *Am. J. Physiol.* **271(5 Pt 1)**, L775-L784 (1996).
2. Cuthbert, A.W., Hickman, M.E., Thorn, P., *et al.* Activation of $Ca^{2+}$- and cAMP-sensitive $K^+$ channels in murine colonic epithelia by 1-ethyl-2-benzimidazolone. *Am. J. Physiol.* **277(1)**, C111-C120 (1999).
3. MacVinish, L.J., Hickman, M.E., Mufti, D.A., *et al.* Importance of basolateral $K^+$ conductance in maintaining $Cl^-$ secretion in murine nasal and colonic epithelia. *J. Physiol.* **510(1)**, 237-247 (1998).
4. Jensen, B.S., Strobæk, D., Christophersen, P., *et al.* Characterization of the cloned human intermediate-conductance $Ca^{2+}$-activated $K^+$ channel. *Am. J. Physiol.* **275(3)**, C848-C856 (1998).
5. Gao, Z., Todorov, B., Barrett, C.F., *et al.* Cerebellar ataxia by enhanced $Ca_V2.1$ currents is alleviated by $Ca^{2+}$-dependent $K^+$-channel activators in Cacna1aS218L mutant mice. *J. Neurosci.* **32(44)**, 15533-15546 (2012).
6. Maiz, J., Karakossian, M.H., Pakaprot, N., *et al.* Prolonging the postcomplex spike pause speeds eyeblink conditioning. *Proc. Natl. Acad. Sci. USA* **109(41)**, 16726-16730 (2012).





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