Carbamazepine
Item No. 15422

CAS Registry No.: 298-46-4
Formal Name: 5H-dibenz[b,f]azepine-5-carboxamide
Synonyms: CBZ, NSC 169864
MF: C_{15}H_{12}N_{2}O
FW: 236.3
Purity: ≥98%
Stability: ≥2 years at -20°C
Supplied as: A crystalline solid
UV/Vis.: λ_{max} 214, 238, 285 nm

Laboratory Procedures
For long term storage, we suggest that carbamazepine (CBZ) be stored as supplied at -20°C. It should be stable for at least two years.

CBZ is supplied as a crystalline solid. A stock solution may be made by dissolving the CBZ in the solvent of choice. CBZ is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of CBZ in ethanol is approximately 3 mg/ml and approximately 25 mg/ml in DMSO and DMF.

CBZ is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, CBZ should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. CBZ 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.

CBZ is a first generation anticonvulsant and mood stabilizing compound that has been used as a therapeutic in the context of neuropathic pain, epilepsy, and affective disorders. It exerts its effects by blocking voltage-gated sodium channels (IC_{50} = 640 μM), making fewer of these channels available to subsequently open, which leads to decreased high-frequency repetitive firing of action potentials. The estimated IC_{50} values for inhibition of Na\textsubscript{v}1.7-, Na\textsubscript{v}1.3-, and Na\textsubscript{v}1.8-type channels by CBZ following prolonged inactivation have been reported as 406, 900, and 138 μM, respectively. CBZ can also inhibit L-type Ca\textsuperscript{2+} channels (IC_{50} = 974 μM) and has been shown to potentiate GABA\textsubscript{A} receptors (IC_{50} >3 mM).

References

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