

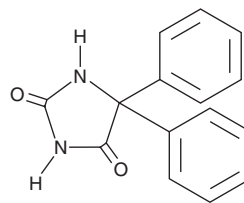
PRODUCT INFORMATION



Phenytoin

Item No. 24037

CAS Registry No.: 57-41-0
Formal Name: 5,5-diphenyl-2,4-imidazolidinedione
Synonyms: 5,5-Diphenylhydantoin, NSC 8722
MF: C₁₅H₁₂N₂O₂
FW: 252.3
Purity: ≥98%
Supplied as: A crystalline solid
Storage: 4°C
Stability: ≥4 years



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

Laboratory Procedures

Phenytoin is supplied as a crystalline solid. A stock solution may be made by dissolving the phenytoin in the solvent of choice, which should be purged with an inert gas. Phenytoin is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of phenytoin in ethanol is approximately 15 mg/ml and approximately 25 mg/ml in DMSO and DMF.

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

Phenytoin is an anticonvulsant agent and active metabolite of fosphenytoin (Item No. 23889). Phenytoin is formed from fosphenytoin by tissue phosphatases.¹ It inhibits neuronal voltage-gated sodium channels in a voltage-dependent manner.² Phenytoin reduces the neuronal firing frequency and decreases the amplitude of excitatory post-synaptic potentials (EPSPs) in electrically stimulated rat corticostriatal slices (EC₅₀s = 42.8 and 33.5 μM, respectively).³ It protects against seizures induced by maximal electroshock (MES) in mice (ED₅₀ = 10 mg/kg).⁴ Formulations containing phenytoin have been used in the treatment of tonic-clonic seizures and status epilepticus.

References

1. Boucher, B.A. Fosphenytoin: A novel phenytoin prodrug. *Pharmacotherapy* **16(5)**, 777-791 (1996).
2. Yaari, Y., Selzer, M.E., and Pincus, J.H. Phenytoin: Mechanisms of its anticonvulsant action. *Ann. Neurol.* **20(2)**, 171-184 (1986).
3. Calabresi, P., Centonze, D., Marfia, G.A., et al. An *in vitro* electrophysiological study on the effects of phenytoin, lamotrigine and gabapentin on striatal neurons. *Br. J. Pharmacol.* **126(3)**, 689-696 (1999).
4. Brouillette, W.J., Jestkov, V.P., Akhtar, M.S., et al. Bicyclic hydantoins with a bridgehead nitrogen. Comparison of anticonvulsant activities with binding to the neuronal voltage-dependent sodium channel. *J. Med. Chem.* **37(20)**, 3289-3293 (1994).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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CAYMAN CHEMICAL

1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA

PHONE: [800] 364-9897
[734] 971-3335

FAX: [734] 971-3640

CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM