# PRODUCT INFORMATION

## (S)-Mephenytoin

*Item No. 11913*

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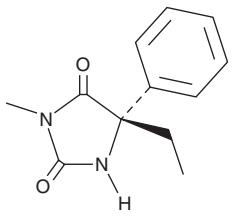
|---|---|
| **CAS Registry No.:** | 70989-04-7 |
| **Formal Name:** | (5S)-5-ethyl-3-methyl-5-phenyl-2,4-imidazolidinedione |
| **Synonyms:** | (+)-Mephenytoin, (S)-5-ethyl-3-methyl-5-Phenylhydantoin |
| **MF:** | $C_{12}H_{14}N_2O_2$ |
| **FW:** | 218.3 |
| **Purity:** | ≥98% |
| **Supplied as:** | 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

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

(S)-Mephenytoin is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, (S)-mephenytoin should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. (S)-Mephenytoin 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

(S)-Mephenytoin is a substrate of the cytochrome P450 (CYP) isoform CYP2C19, also known as mephenytoin 4-hydroxylase.[1] CYP2C19 metabolizes a variety of therapeutic agents, including omeprazole, proguanil, diazepam, propranolol, citalopram, imipramine, and certain barbiturates.[2] Genetic defects in CYP2C19 result in poor metabolism of these compounds, and (S)-mephenytoin can be used to screen for such mutations by assaying its metabolites in urine.[2-4] (S)-Mephenytoin has anticonvulsant activities.[5]

### References


1. Shimada, T., Misono, K.S., and Guengerich, F.P. Human liver microsomal cytochrome P-450 mephenytoin 4-hydroxylase, a prototype of genetic polymorphism in oxidative drug metabolism. *J. Biol. Chem.* **261(2)**, 909-921 (1986).
2. Ferguson, R.J., de Morais, S.M., Benhamou, S., *et al.* A new genetic defect in human CYP2C19: Mutation of the initiation codon is responsible for poor metabolism of S-mephenytoin. *J. Pharmacol. Exp. Ther.* **284(1)**, 356-361 (1998).
3. Ozawa, S., Soyama, A., Saeki, M., *et al.* Ethnic differences in genetic polymorphisms of CYP2D6, CYP2C19, CYP3As and MDR1/ABCB1. *Drug Metab. Pharmacokinet.* **19(2)**, 83-95 (2004).
4. Guttendorf, R.J., Britto, M., Blouin, R.A., *et al.* Rapid screening for polymorphisms in dextromethorphan and mephenytoin metabolism. *Br. J. Clin. Pharmacol.* **29(4)**, 373-380 (1990).
5. Wong, P.T.H., Tan, S.-F., and Lee, H.-S. N-demethylation of methyl and dimethyl derivatives of phenytoin and their anticonvulsant activities in mice. *Jpn. J. Pharmacol.* **48(4)**, 473-478 (1988).





**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