

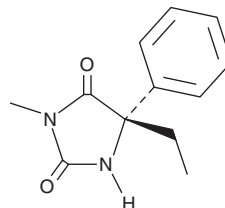
# PRODUCT INFORMATION



## (S)-Mephenytoin

Item No. 11913

**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<sub>12</sub>H<sub>14</sub>N<sub>2</sub>O<sub>2</sub>  
**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.<sup>1</sup> CYP2C19 metabolizes a variety of therapeutic agents, including omeprazole, proguanil, diazepam, propranolol, citalopram, imipramine, and certain barbiturates.<sup>2</sup> 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.<sup>2-4</sup> (S)-Mephenytoin has anticonvulsant activities.<sup>5</sup>

### 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).
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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).
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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).

#### 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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