

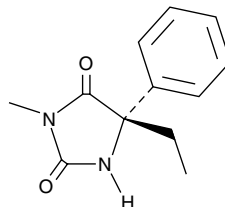
# Product Information



## (S)-Mephenytoin

Item No. 11913

**CAS Registry No.:** 70989-04-7  
**Formal Name:** (5S)-5-ethyl-3-methyl-5-phenyl-2,4-imidazolidinedione  
**Synonym:** (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%  
**Stability:** ≥2 years at -20°C  
**Supplied as:** A crystalline solid



### Laboratory Procedures

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

(S)-Mephenytoin is supplied as a crystalline solid. A stock solution may be made by dissolving the (S)-mephenytoin in the solvent of choice. (S)-Mephenytoin is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of (S)-mephenytoin in ethanol is approximately 16 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.

(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).
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, CYP3A5 and MDR1/ABCB1. *Drug Metab. Pharmacokinet.* **19**(2), 83-95 (2004).
4. Guttendorf, R.J., Brito, 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).

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**WARNING: THIS PRODUCT IS FOR LABORATORY RESEARCH ONLY: NOT FOR ADMINISTRATION TO HUMANS. NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.**

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