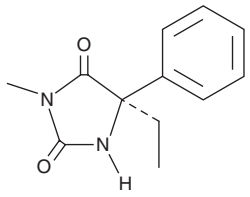
PRODUCT INFORMATION

(R)-Mephenytoin

Item No. 25891

CAS Registry No.:	71140-51-7
Formal Name:	(5R)-5-ethyl-3-methyl-5-phenyl-2,4-imidazolidinedione
Synonyms:	(–)-Mephenytoin, (R)-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:	≥2 years



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

Laboratory Procedures

(R)-Mephenytoin is supplied as a crystalline solid. A stock solution may be made by dissolving the (R)-mephenytoin in the solvent of choice. (R)-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 (R)-mephenytoin in ethanol is approximately 15 mg/ml and approximately 25 mg/ml in DMSO and DMF.

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

(R)-Mephenytoin is the (R) enantiomer of the anticonvulsant mephenytoin.[1] (R)-Mephenytoin can be demethylated by the cytochrome P450 (CYP) isoform CYP2C9 to form the active metabolite 5-ethyl-5-phenylhydantoin (nirvanol).[2,3] The ratio of (S)-mephenytoin (Item No. 11913) to (R)-mephenytoin in urine following administration of the racemic mixture has been used to detect polymorphisms in drug metabolism by CYP2C19, as only (S)-mephenytoin is a substrate of CYP2C19.[2,4,5]

References

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2. Lewis, D.F., Dickins, M., Weaver, R.J., *et al.* Molecular modelling of human CYP2C subfamily enzymes CYP2C9 and CYP2C19: Rationalization of substrate specificity and site-directed mutagenesis experiments in the CYP2C subfamily. *Xenobiotica* **28(3),** 235-268 (1998).
3. 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).
4. 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).
5. 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).

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