

Overview**Useful For**

Monitoring of mephobarbital and phenobarbital therapy

Profile Information

Test ID	Reporting Name	Available Separately	Always Performed
MBARS	Mephobarbital, S	No	Yes
PHBRS	Phenobarbital, S	No	Yes

Method Name

Gas Chromatography-Mass Spectrometry (GC-MS)

NY State Available

Yes

Specimen**Specimen Type**

Serum Red

Specimen Required

Collection Container/Tube: Red top (Serum gel/SST are **not acceptable**)

Submission Container/Tube: Plastic vial

Specimen Volume: 1.2 mL

Collection Instructions:

1. Draw blood immediately before next scheduled dose.
2. Centrifuge and aliquot serum in plastic vial within 2 hours of collection.

Forms

If not ordering electronically, complete, print, and send a [Therapeutics Test Request](#) (T831) with the specimen.

Specimen Minimum Volume

0.7 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum Red	Refrigerated (preferred)	14 days	
	Ambient	14 days	
	Frozen	14 days	

Clinical and Interpretive**Clinical Information**

Mephobarbital is an orally administered, methylated barbiturate used for the treatment of epilepsy.(1,2) It is demethylated by hepatic microsomal enzymes to generate its major metabolite, phenobarbital. During long-term use, most of the mephobarbital activity can be attributed to the accumulation of phenobarbital. Consequently, the pharmacological properties, toxicity, and clinical uses of mephobarbital are the same as phenobarbital.(1,2) The use of mephobarbital is uncommon as it offers no significant advantage over phenobarbital alone.(1,2)

Reference Values**MEPHOBARBITAL**

Therapeutic range: 1.0-7.0 mcg/mL

Toxic concentration: > or =15.0 mcg/mL

PHENOBARBITAL

Therapeutic range

Children: 15.0-30.0 mcg/mL

Adults: 20.0-40.0 mcg/mL

Toxic concentration: > or =60.0 mcg/mL

Interpretation

Mephobarbital concentrations above 15 mcg/mL have been associated with toxicity.

Phenobarbital concentrations between 35 and 80 mcg/mL have been associated with slowness, ataxia, and nystagmus, while concentrations above 100 mcg/mL have been associated with coma without reflexes.

Cautions

Concentration at which toxicity occurs varies and results should be interpreted in light of the clinical situation.

Specimens collected in serum gel tubes are not acceptable because the drug can absorb on the gel and lead to falsely decreased concentrations.

Clinical Reference

1. Baselt RC: Disposition of Toxic Drugs and Chemicals in Man. 10th ed. Biomedical Publications; 2014:2211
2. Milone MC, Shaw LM: Therapeutic drugs and their management. In: Rifai N, Horvath AR, Wittwer CT, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018:800-831
3. Langman LJ, Bechtel LK, Meier BM, Holstege C: Clinical toxicology. In: Rifai N, Horvath AR, Wittwer CT, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018:832-887
4. Mihic SJ, Mayfield J, Harris RA: Hypnotics and sedatives. In: Brunton LL, Hilal-Dandan R, Knollmann BC, eds. Goodman and Gilman's The Pharmacological Basis of Therapeutics. 13th ed. McGraw-Hill Education; 2017

Performance

Method Description

Barbiturates are extracted from serum using solid-phase extraction techniques. The serum is buffered and eluted with organic solvent. The organic phase is dried, reconstituted, and analysis performed by gas chromatography-mass spectrometry, using selected ion monitoring. The assay utilizes deuterated barbiturates as internal standards.(Unpublished Mayo method)

PDF Report

No

Day(s) and Time(s) Test Performed

Friday; Varies

Analytic Time

1 day

Maximum Laboratory Time

8 days

Specimen Retention Time

2 weeks

Performing Laboratory Location

Rochester

Fees and Codes

Fees

- Authorized users can sign in to [Test Prices](#) for detailed fee information.
- Clients without access to Test Prices can contact [Customer Service](#) 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact [Customer Service](#).

Test Classification

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information

80345

G0480 (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
MEPHS	Mephobarbital and Phenobarbital, S	In Process

Result ID	Test Result Name	Result LOINC Value
89706	Mephobarbital, S	3750-7
84582	Phenobarbital, S	3948-7