Test Definition: VALPA

Valproic Acid, Tot, S

Overview

Useful For

Monitoring total valproic acid in therapy

Assessing compliance

Evaluating potential toxicity

Method Name

Immunoassay

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Container/Tube:

Preferred: Serum gel

Acceptable: Red top

Specimen Volume: 0.5 mL

Collection Instructions:

1. Serum gel tubes should be centrifuged within 2 hours of collection.

2. Red-top tubes should be centrifuged and aliquoted within 2 hours of collection.

Forms

If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:

-Neurology Specialty Testing Client Test Request (T732)

-Therapeutics Test Request (T831)

Specimen Minimum Volume

0.25 mL

Reject Due To

Gross hemolysis	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	14 days	
	Frozen	28 days	
	Ambient	72 hours	

Clinical and Interpretive

Clinical Information

Valproic acid (valproate, Depakote, or Depakene) is used for treatment of simple and complex absence seizures and as combination therapy with other anticonvulsants for control of generalized seizures that include absence seizures.

Valproic acid is initially dosed at 15 mg/kg/day, with dosage increases over time to a maximum of 60 mg/kg/day. The volume of distribution of valproic acid is 0.2 L/kg and its half-life is 10 to 14 hours in adults, and shorter in children. It is approximately 90% protein bound.

Hepatic failure and a Reyes-like syndrome associated with administration of valproic acid at therapeutic levels have been reported. Careful monitoring of liver function during the first 6 months of therapy is required. Major side effects such as central nervous system depression, thrombocytopenia, and hepatic dysfunction are likely to be experienced if the peak level regularly is above 125 mcg/mL.

Analysis of free valproic acid levels may be useful in delineating the cause of toxicity when the total concentration is not excessive.

Valproic acid exhibits substantial effects on the pharmacology of phenytoin, whereas phenytoin exhibits only a limited effect on valproic acid. This is due to the relative abundance of the 2 drugs in the body. Valproic acid is present at a 2- to 3-fold mass excess and a 5- to 7-fold molar excess.

Reference Values

Therapeutic: 50 (trough)-125 (peak) mcg/mL

Critical value: > or =151 mcg/mL

Interpretation

Optimal response is usually observed when the trough level is above 50 mcg/mL.

Peak levels should not exceed 125 mcg/mL.

Cautions

No significant cautionary statements

Clinical Reference

1. Cotariu D, Zaidman JL: Valproic acid and the liver. Clin Chem 1988;34:890-897

2. Moyer TP: Therapeutic drug monitoring. In Tietz Textbook of Clinical Chemistry. Edited by CA Burtis, ER Ashwood. Fourth edition. WB Saunders Company. Philadelphia, 2005, pp 1237-1285

Performance

Method Description

The assay is based on a homogeneous enzyme immunoassay technique used for the quantitative analysis of valproic acid (free and protein-bound) in human serum or plasma. The assay is based on competition between drug in the sample and drug labeled with the enzyme glucose-6-phosphate dehydrogenase (G6PDH) for antibody binding sites. Enzyme activity decreases upon binding to the antibody, so the drug concentration in the sample can be measured in terms of enzyme activity. Active enzyme converts oxidized nicotinamide adenine dinucleotide (NAD) to NADH (the reduced form of NAD), resulting in an absorbance change that is measured spectrophotometrically. Endogenous serum G6PDH does not interfere because the coenzyme functions only with the bacterial (Leuconostocmesenteroides) enzyme employed in the assay.(Package insert: Roche Valproic reagent, Roche Diagnostic Corp, Indianapolis, IN)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Sunday; Continuously

Analytic Time

Same day/1 day

Maximum Laboratory Time

1 day

Specimen Retention Time

1 week

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 has been cleared, approved or is exempt by the U.S. Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

80164

LOINC® Information

Test Definition: VALPA

Valproic Acid, Tot, S

Test ID	Test Order Name	Order LOINC Value
VALPA	Valproic Acid, Tot, S	4086-5

Result ID	Test Result Name	Result LOINC Value
VALPA	Valproic Acid, Tot, S	4086-5