Overview

Useful For
Monitoring serum concentration of fluoxetine during therapy
Evaluating potential toxicity
Evaluating patient compliance

Method Name
Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/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 mL

Collection Instructions:
1. Draw blood immediately before the next scheduled dose (trough).
2. Centrifuge and aliquot serum into plastic vial within 2 hours of collection.

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

Reject Due To
Gross hemolysis  OK
Gross lipemia  OK
Gross icterus  OK

Specimen Minimum Volume
0.5 mL

Specimen Stability Information

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum Red</td>
<td>Refrigerated (preferred)</td>
<td>28 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>28 days</td>
<td></td>
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<tr>
<td></td>
<td>Ambient</td>
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Clinical & Interpretive

Clinical Information
Fluoxetine is a selective serotonin reuptake inhibitor approved for treatment of bulimia, obsessive-compulsive behavior, panic disorders, premenstrual dysphoria, and major depressive disorder, with a variety of off-label uses. Both fluoxetine and its major metabolite, norfluoxetine, are pharmacologically active and are reported together in this assay. Most individuals respond optimally when combined serum concentrations for both parent and metabolite are in the therapeutic range (120-500 ng/mL) at steady state. Due to the long half-lives of parent and metabolite (1-6 days), it may take several weeks for patients to reach steady-state concentrations. Fluoxetine is a potent inhibitor of the metabolic enzyme cytochrome P450 (CYP) 2D6, with lesser inhibitory effects on CYP2C19 and CYP3A. Therapy with fluoxetine is, therefore, subject to numerous drug interactions, which is compounded by wide interindividual variability in fluoxetine pharmacokinetics. Measurement of the drug is useful for managing comedicated, dose or formulation changes, and in assessing compliance. Side effects are milder for fluoxetine than for older antidepressants such as the tricyclic antidepressants. The most common side effects of fluoxetine therapy include nausea, nervousness, anxiety, insomnia, and drowsiness. Anticholinergic and cardiovascular side effects are markedly reduced compared to tricyclic antidepressants. Fatalities from fluoxetine overdose are extremely rare.

Reference Values
Fluoxetine + Norfluoxetine: 120-500 ng/mL

Interpretation
Most individuals display optimal response to fluoxetine when combined serum levels of fluoxetine and norfluoxetine are between 120 and 500 ng/mL. Some individuals may respond well outside of this range or may display toxicity within the therapeutic range, therefore, interpretation should include clinical evaluation. A toxic range has not been well established.

Cautions
Specimens that are obtained from gel tubes or anticoagulate collections can cause assay interference.

Clinical Reference
Performance

Method Description
Serum samples containing fluoxetine and norfluoxetine are diluted in an aqueous solution containing deuterated internal standards and then injected onto a high turbulence liquid chromatography system for online extraction. Detection is by tandem mass spectrometry. (Unpublished Mayo method)

PDF Report
No

Specimen Retention Time
14 days

Performing Laboratory Location
Rochester

Fees & Codes

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 US Food and Drug Administration.

CPT Code Information
80299