Overview

Useful For
Optimizing dosage
Monitoring compliance
Assessing toxicity

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

NY State Available
Yes

Specimen

Specimen Type
Serum Red

Specimen Required

Container/Tube: Red top

Specimen Volume: 1 mL

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

Specimen Minimum Volume
0.3 mL

Reject Due To

<table>
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<tr>
<th>Condition</th>
<th>Status</th>
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<tbody>
<tr>
<td>Gross hemolysis</td>
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</tr>
<tr>
<td>Gross lipemia</td>
<td>OK</td>
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<tr>
<td>Gross icterus</td>
<td>OK</td>
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</table>

Specimen Stability Information

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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<tr>
<td></td>
<td>Ambient</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
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Clinical and Interpretive
**Clinical Information**

Haloperidol (Haldol) is a member of the butyrophenone class of neuroleptic drugs used to treat psychotic disorders (eg, schizophrenia). It is also used to control the tics and verbal utterances associated with Tourette's syndrome and in the management of intensely hyperexcitable children who fail to respond to other treatment modalities.

The daily recommended oral dose for patients with moderate symptoms is 0.5 to 2.0 mg; for patients with severe symptoms, 3 to 5 mg may be used. However, some patients will respond only at significantly higher doses.

Haloperidol is metabolized in the liver to reduced haloperidol, its major metabolite.(1,2)

Use of haloperidol is associated with significant toxic side effects, the most serious of which include tardive dyskinesia which can be irreversible, extrapyramidal reactions with Parkinson-like symptoms, and neuroleptic malignant syndrome. Less serious side effects can include hypotension, anticholinergic effects (blurred vision, dry mouth, constipation, urinary retention), and sedation. The risk of developing serious, irreversible side effects seems to increase with increasing cumulative doses over time.(1,3)

**Reference Values**

HALOPERIDOL

5-16 ng/mL

REDUCED HALOPERIDOL

10-80 ng/mL

**Interpretation**

Studies show a strong relationship between dose and serum concentration (4); however, there is a modest relationship of clinical response or risk of developing long-term side effects to either dose or serum concentration.

A therapeutic window exists for haloperidol; patients who respond at serum concentrations between 5 to 16 ng/mL show no additional improvement at concentrations >16 to 20 ng/mL.(3,5) Some patients may respond at concentrations <5 ng/mL, and others may require concentrations significantly >20 ng/mL before an adequate response is attained.

Because of such inter-individual variation, the serum concentration should only be used as 1 factor in determining the appropriate dose and must be interpreted in conjunction with the clinical status.

Although the metabolite, reduced haloperidol, has minimal pharmacologic activity, evidence has been presented suggesting that an elevated ratio of reduced haloperidol-to-haloperidol (ie, >5) is predictive of a poor clinical response.(3,6) A reduced haloperidol-to-haloperidol ratio <0.5 indicates noncompliance; the metabolite does not accumulate except during steady-state conditions.

**Cautions**

Potentially interfering drugs include hydroxyzine (interferes with haloperidol), tiagabine (interferes with reduced haloperidol), and quetiapine (interferes with internal standard resulting in artificially low haloperidol).

**Clinical Reference**


**Performance**

**Method Description**
Liquid-liquid extraction with liquid chromatography-tandem mass spectrometry (LC-MS/MS) detection.(Unpublished Mayo method)

**PDF Report**
No

**Day(s) and Time(s) Test Performed**
Tuesday; 4 p.m.

**Analytic Time**
2 days

**Maximum Laboratory Time**
5 days

**Specimen Retention Time**
14 days

**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**
80173
## LOINC® Information

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