Test Definition: FLUC

5-Flucytosine, S

Overview

Useful For

Monitoring serum concentration during therapy

Evaluating potential toxicity

May be useful to evaluate patient compliance

Method Name

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

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Container/Tube:

Preferred: Red top

Acceptable: Serum gel

Specimen Volume: 0.5 mL

Collection Instructions:

1. Serum for a peak level should be drawn 1 to 2 hours after oral dose or 30 minutes after intravenous infusion. Trough specimens should be drawn immediately prior to next scheduled dose.

2. Spin down within 2 hours of draw.

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

Gross hemolysis	OK
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

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

Clinical and Interpretive

Clinical Information

Flucytosine is a broad-spectrum antifungal agent generally used in combined therapy (often with amphotericin B) for treatment of fungal infections such as cryptococcal meningitis. Concerns with toxicity (bone marrow suppression, hepatic dysfunction) and development of fungal resistance limit the use of flucytosine, particularly as a monotherapy. The drug is well-absorbed orally, but can also be administered intravenously (available outside of the United States).

There is good correlation between serum concentrations of flucytosine with both efficacy and risk for toxicity. Because of the drugs short half-life (3-6 hours), therapeutic monitoring is typically performed at peak levels, 1 to 2 hours after an oral dose or 30 minutes after an intravenous administration.

Flucytosine is eliminated primarily as unmetabolized drug in urine. Patients with renal dysfunction may require dose adjustments or more frequent monitoring to ensure that serum concentrations do not accumulate to excessive levels. Nephrotoxicity associated with use of amphotericin B can affect elimination of flucytosine when the drugs are coadministered.

Reference Values

Therapeutic concentration:

Peak >25.0 mcg/mL (difficult infections may require higher concentrations)

Toxic concentration:

Peak >100.0 mcg/mL

Interpretation

Most individuals display optimal response to flucytosine when peak serum levels (1-2 hours after oral dosing) are greater than 25.0 mcg/mL. Some infections may require higher concentrations for efficacy. Toxicity is more likely when peak serum concentrations are greater than 100.0 mcg/mL

Cautions

This test cannot be performed on whole blood. Serum must be separated from cells within 2 hours of draw.

Clinical Reference

1. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics Sixth edition. Edited by Nader Rifai, Andrea Rita Horvath, Carl T. Wittwer. Elsevier, St. Louis, MO, 2018

2. Goodwin ML, Drew RH: Antifungal serum concentration monitoring: an update. J Antimicrob Chemother 2008;61:17-25Â

3. Andes D, Pascual A, Marchetti O: Antifungal therapeutic drug monitoring: established and emerging indications. Antimicrob Agents Chemother 2009;53(1):24-34

Performance

Method Description

5-Flucytosine is extracted by mixing serum samples with acetonitrile and methanol mixture to precipitate proteins. The supernatant is removed and analyzed by an in-house developed liquid chromatography-tandem mass spectrometry (LC-MS/MS) method.(Unpublished Mayo method)

PDF Report

No

Day(s) and Time(s) Test Performed

Tuesday, Thursday, 9 a.m.

Analytic Time

2 days

Maximum Laboratory Time

8 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

80299

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
FLUC	5-Flucytosine, S	3639-2

Test Definition: FLUC

5-Flucytosine, S

Result ID	Test Result Name	Result LOINC Value
82741	5-Flucytosine, S	3639-2