MAYO CLINIC LABORATORIES

Test Definition: FLUC

5-Flucytosine, Serum

Overview

Useful For

Monitoring serum concentration during therapy

Evaluating potential toxicity

May aid in evaluating patient compliance

Method Name

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

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube:
Preferred: Red top
Acceptable: Serum gel
Submission Container/Tube: Plastic vial
Specimen Volume: 0.5 mL
Collection Instructions:
1. Serum for a peak level should be collected 1 to 2 hours after oral dose, 1 hour after intramuscular dose, or 30 minutes after intravenous infusion. Trough specimens should be collected immediately prior to next scheduled dose.
2. Within 2 hours of collection, centrifuge, and aliquot serum into a plastic vial.

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 & 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 (ie, 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 drug's short half-life (3-6 hours), therapeutic monitoring is typically performed at peak levels approximately 2 hours after an oral dose or 30 minutes after an intravenous administration.

Flucytosine is eliminated primarily as unmetabolized drug in urine. Patients with kidney 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 collection.

Clinical Reference

1. Milone MC, Shaw LM. Therapeutic drugs and their management. In: Rifai N, Chiu RWK, Young I, Burnham CAD, Wittwer CT, eds. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023:420-453
2. Goodwin ML, Drew RH. Antifungal serum concentration monitoring: an update. J Antimicrob Chemother. 2008;61(1):17-25. doi:10.1093/jac/dkm389
3. Andes D, Pascual A, Marchetti O. Antifungal therapeutic drug monitoring: established and emerging indications. Antimicrob Agents Chemother. 2009;53(1):24-34. doi:10.1128/AAC.00705-08

Performance

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The supernatant is removed and analyzed by an in-house developed liquid chromatography-tandem mass spectrometry method.(Unpublished Mayo method)

PDF Report
No

Day(s) Performed
Tuesday, Thursday

Report Available
3 to 8 days

Specimen Retention Time
14 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Superior Drive

Fees & 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 account representative. 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. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information
80299

LOINC® Information

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

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