MAYO CLINIC LABORATORIES

Test Definition: SFZ

Sulfamethoxazole, Serum

Overview

Useful For
Monitoring sulfamethoxazole therapy to ensure drug absorption, clearance, or compliance

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

NY State Available
Yes

Specimen

Specimen Type
Serum Red

Specimen Required
Collection Container/Tube: Red top (gel tubes/SST are **not** acceptable)
Submission Container/Tube: Plastic vial
Specimen Volume: 1 mL
Collection Instructions:
1. Serum for a peak level should be collected 60 minutes after dose.
2. Centrifuge and aliquot serum into a plastic vail within 2 hours of collection.

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

Specimen Minimum Volume
0.2 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

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

	Ambient	28 days	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Sulfamethoxazole is a sulfonamide antibiotic that is administered in conjunction with another antibacterial, trimethoprim. These agents are used to treat a variety of infections, including methicillin-resistant *Staphylococcus aureus*, and for prophylaxis in immunosuppressed patients, such as individuals who are HIV-positive.

Therapeutic drug monitoring is not commonly performed unless there are concerns about adequate absorption, clearance, or compliance. Monitoring of sulfamethoxazole is indicated only when prolonged (>3 months) therapy is required.

Sulfamethoxazole is absorbed readily after oral administration, with peak serum concentration occurring 2 to 3 hours after an oral dose. Its average elimination half-life is 6 to 10 hours. Toxicity includes crystalluria with resultant calculi and kidney disease. Toxicity is due to a high concentration of acetylated, relatively insoluble forms of the drug. Excess fluid should be taken with sulfamethoxazole to avoid formation of urine sulfonamide crystals.

Reference Values

>50 mcg/mL (Peak)

Interpretation

Peak concentrations of sulfamethoxazole should be obtained 1 hour after the end of an IV dose or 2 to 3 hours after an oral dose, while peak concentrations of trimethoprim can be collected at least 1 hour after an oral dose. Serum drug concentrations should be interpreted with respect to the minimal inhibitory concentration of targeted organisms. Most patients will display peak steady-state serum concentrations greater than 50 mcg/mL when collected at least 1 hour after an oral dose. Target concentrations may be higher, depending on the intent of therapy.

For Pneumocystis carinii pneumonia (PCP pneumonia), peak concentrations: 100-150 mcg/mL
Toxicity: >200 mcg/mL
Toxicity (formation of urinary crystals) associated with sulfamethoxazole occurs with prolonged exposure to serum concentrations greater than 125 mcg/mL.

Trimethoprim: Most patients will display peak steady-state serum concentrations of more than 2.0 mcg/mL when the specimen is collected at least 1 hour after an oral dose. Target concentrations may be higher depending on the intent of therapy.

Cautions

Specimens collected in serum gel tubes are not acceptable, as the drug can absorb on the gel and lead to falsely decreased concentrations.

Clinical Reference

1. Hughes WT, Feldman S, Chaudhary SC, Ossi MJ, Cox F, Sanyal SK: Comparison of pentamidine isethionate and trimethoprim-sulfamethoxazole in the treatment of Pneumocystis carinii pneumonia. J Pediatr. 1978 Feb;92(2):285-291.

doi: 10.1016/s0022-3476(78)80028-6
2. Dao BD, Barreto JN, Wolf RC, Dierkhising RA, Plevak MF, Tosh PK: Serum peak sulfamethoxazole concentrations demonstrate difficulty in achieving a target range: a retrospective cohort study. Curr Ther Res Clin Exp. 2014 Nov 11;76:104-9. doi: 10.1016/j.curtheres.2014.08.003
3. Young T, Oliphant C, Araoyinbo I, Volmink J: Co-trimoxazole prophylaxis in HIV: the evidence. S Afr Med J. 2008 Apr;98(4):258-259
4. Avdic E, Cosgrove SE: Management and control strategies for community-associated methicillin-resistant *Staphylococcus aureus*. Expert Opin Pharmacother. 2008 Jun;9(9):1463-79. doi: 10.1517/14656566.9.9.14635. Kamme C, Melander A, Nilsson N: Serum and saliva concentrations of sulfamethoxazole and trimethoprim in adults in children: relation between saliva concentrations and in vitro activity against nasopharyngeal pathogens. Scand J Infect Dis. 1983;15(1):107-13. doi: 10.3109/inf.1983.15.issue-1.18
6. Brunton LL, Hilal-Dandan R, Knollmann BC eds. Goodman, Gilman's: The Pharmacological Basis of Therapeutics. 13th edition.. McGraw-Hill Publishing; 2018

Performance

Method Description
Samples are extracted with analyte detection by tandem mass spectrometry.(Unpublished Mayo method)

PDF Report
No

Day(s) Performed
Monday, Thursday

Report Available
2 to 5 days

Specimen Retention Time
14 days

Performing Laboratory Location
Rochester

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

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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
SFZ	Sulfamethoxazole, S	10342-4

Result ID	Test Result Name	Result LOINC® Value
8238	Sulfamethoxazole, S	10342-4