Test Definition: MPHNS

Methylphenidate and Metabolite, Serum

Overview

Useful For

Confirming drug exposure and monitoring serum concentrations of methylphenidate and ritalinic acid

Special Instructions

- Clinical Toxicology CPT Code Client Guidance

Method Name

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

NY State Available

Yes

Specimen

Specimen Type

Serum Red

Ordering Guidance

This test should only be ordered by healthcare professionals to monitor patients who have been prescribed methylphenidate or identify misuse/abuse.

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube: Red top (Serum gel/SST are **not acceptable**)
Submission Container/Tube: Plastic vial
Specimen Volume: 1 mL Serum
Collection Instructions: Within 2 hours of collection, centrifuge and aliquot serum into a plastic vial.

Specimen Minimum Volume

Serum: 0.5 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

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Specimen Type	Temperature	Time	Special Container
Serum Red	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Methylphenidate (MPH) is utilized for the treatment of attention deficit hyperactivity disorder and narcolepsy. MPH has two chiral centers and is marketed as a racemic mixture and as the active d-enantiomer of racemic methylphenidate. Although the exact mechanism of its action has not been fully defined, it blocks the reuptake of norepinephrine and dopamine into the presynaptic neuron thus increasing the concentrations of these monoamines in the extraneural space.

Reference Values

Methylphenidate:
4-25 ng/mL (Single-dose peak plasma concentration range in children given 10-15 mg dose)

Ritalinic acid:
80-250 ng/mL (Single-dose peak plasma concentration range in children given 10-15 mg dose)

Cutoff concentrations:
Methylphenidate: 1.0 ng/mL
Ritalinic acid: 1.0 ng/mL

Interpretation

This test will identify patients who have taken methylphenidate.

Cautions

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

Clinical Reference

1. Langman LJ, Bechtel LK, Holstege CP. Clinical toxicology. In: Rifai N, Chiu RWK, Young I, Burnham CAD, Wittwer CT, eds. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023:chap 43
2. Baselt RC. Disposition of Toxic Drugs and Chemical in Man. 12th ed. Biomedical Publications; 2020

Performance

Method Description

The sample is extracted through protein precipitation, diluted, and then analyzed by liquid chromatography tandem mass spectrometry for the presence of methylphenidate and/or ritalinic acid.(Unpublished Mayo method)

PDF Report

No

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Day(s) Performed
Thursday

Report Available
3 to 9 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
G0480

80360 (if appropriate for select payers)

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
MPHNS	Methylphenidate and Metabolite, S	In Process

Result ID	Test Result Name	Result LOINC® Value
624102	Methylphenidate	3807-5
624103	Ritalinic Acid	32153-9