MAYO CLINIC LABORATORIES

Test Definition: MCRPL

Macroprolactin, Serum

Overview

Useful For

Determining biologically active levels of prolactin, in asymptomatic patients with elevated prolactin levels

Ruling out the presence of macroprolactin

Profile Information

Test Id	Reporting Name	Available Separately	Always Performed
TOPRL	Prolactin,Total,S	Yes, (order PRL)	Yes
PEGPR	Prolactin,Unprecipitated,S	No	Yes

Method Name

TOPRL: Electrochemiluminescent Immunoassay
PEGPR: Polyethylene Glycol (PEG) Precipitation Followed by Electrochemiluminescent Immunoassay

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Patient Preparation: For 12 hours before specimen collection do not take multivitamins or dietary supplements containing biotin (vitamin B7), which is commonly found in hair, skin, and nail supplements and multivitamins.
Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 1 mL
Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Forms

If not ordering electronically, complete, print, and send an Oncology Test Request (T729) with the specimen.

Specimen Minimum Volume

0.6 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	7 days	
	Ambient	24 hours	
	Frozen	90 days	

Clinical & Interpretive

Clinical Information

Prolactin is secreted by the anterior pituitary gland under negative control by dopamine, which is secreted by the hypothalamus. The only physiological function of prolactin is the stimulation of milk production. In normal individuals, the prolactin concentration in blood rises in response to physiologic stimuli such as nipple stimulation, sleep, exercise, sexual intercourse, and hypoglycemia. Certain medications, (eg, phenothiazines, metoclopramide, risperidone, selective serotonin reuptake inhibitors, estrogens, verapamil) may also cause hyperprolactinemia. Pathologic causes of hyperprolactinemia include prolactin-secreting pituitary adenoma (prolactinoma), diseases of the hypothalamus, primary hypothyroidism, section compression of the pituitary stalk, chest wall lesions, renal failure, and ectopic tumors.

Hyperprolactinemia may also be caused by the presence of a high-molecular-mass complex of prolactin called macroprolactin (typically due to prolactin bound to immunoglobulin). In this situation, the patient is asymptomatic. Hyperprolactinemia attributable to macroprolactin is a frequent cause of misdiagnosis and mismanagement of patients. Macroprolactin should be considered if, in the presence of elevated prolactin levels, signs and symptoms of hyperprolactinemia are absent, or pituitary imaging studies are not informative.

Reference Values

PROLACTIN, TOTAL
Males
<18 years: not established
> or =18 years: 4.0-15.2 ng/mL
Females
<18 years: not established
> or =18 years: 4.8-23.3 ng/mL

PROLACTIN, UNPRECIPITATED
Males
<18 years: not established
> or =18 years: 2.7-13.1 ng/mL
Females

<18 years: not established
> or =18 years: 3.4-18.5 ng/mL

When the percent of the precipitated (complexed) prolactin fraction of the total prolactin is 60% or less, the result is considered negative for macroprolactin.

Interpretation

When the fraction (percentage) of polyethylene glycol (PEG)-precipitated (complexed) prolactin is 60% or less of total prolactin, the specimen is considered negative for macroprolactin. When total prolactin exceeds the upper reference limit and macroprolactin is negative, other causes for hyperprolactinemia should be explored.

When the fraction (percentage) of polyethylene glycol (PEG)-precipitated (complexed) prolactin is above 60%, the specimen is considered positive for the presence of macroprolactin.

Following polyethylene glycol (PEG)-precipitation, a patient whose unprecipitated prolactin concentration is greater than the upper limit of the unprecipitated prolactin reference interval may have hyperprolactinemia.

See PRL / Prolactin, Serum for interpretation of prolactin levels.

Cautions

Demonstration of the presence of macroprolactin does not exclude the possibility of concomitant presence of pituitary adenoma. Results should be interpreted in conjunction with clinical findings.

Clinical Reference

1. Fahie-Wilson M: In Hyperprolactinemia, Testing for Macroprolactin is Essential. Clin Chem 2003;49(9):1434-1436
2. Gibney J, Smith TP, McKenna TJ: Clinical relevance of macro-prolactin. Clin Endocrinol 2005 Jun;62:633-643

Performance

Method Description

TOPRL:
The Roche cobas e immunoassay Prolactin II method employs 2 monoclonal antibodies specifically directed against prolactin. A biotinylated monoclonal antibody and a second monoclonal antibody labeled with a ruthenium complex react with prolactin in the sample to form a sandwich complex. After the addition of streptavidin-coated microparticles, the complex becomes bound to the solid phase via interaction of biotin and streptavidin. Application of a voltage to the electrode then induces chemiluminescent emission, which is measured.(Package insert: Elecsys Prolactin II, V 8.0, Roche 2017)

PEGPR:
Macroprolactin and oligomers can be precipitated by using a 25 % aqueous PEG solution (ratio 1+1). After centrifugation, the supernatant containing monomeric prolactin is used in the Elecsys Prolactin II assay in the same way as a native sample. The dilution effect which occurs during sample pretreatment and the coprecipitation of monomeric prolactin must be taken into consideration. Precipitated prolactin is calculated by subtracting the unprecipitated prolactin value from the total prolactin. The percentage of precipitated prolactin to total prolactin indicates the

presence or absence of macroprolactin.(Package insert: Elecsys Prolactin II, V 8.0, Roche 2017)

PDF Report
No

Day(s) Performed
Monday through Sunday

Report Available
Same day/1 to 3 days

Specimen Retention Time
7 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Main Campus

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 has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information
84146 x 2

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
MCRPL	Macroprolactin, S	78993-3

Result ID	Test Result Name	Result LOINC® Value
PROU	Prolactin,Unprecipitated,S	38926-2
RATIO	Prolactin, Percent PEG-precipitated	51441-4
CMT42	Interpretive Comment	48767-8
T_PRL	Prolactin,Total,S	20568-2