MAYO CLINIC LABORATORIES

Test Definition: 23BPR

2,3-dinor 11B-Prostaglandin F2a,RU

Overview

Useful For

Screening for mast cell activation disorders including systemic mastocytosis using random urine specimens

Highlights

2,3-Dinor-11beta-prostaglandin F2 alpha (2,3 BPG) is elevated in the urine of patients with systemic mastocytosis (SM). This test should be used as a screening test for SM.
When 2,3 BPG is used in combination with urinary leukotriene E4 and N-methyl histamine, the sensitivity for SM detection increases to 90%.

Profile Information

Test Id	Reporting Name	Available Separately	Always Performed
R23BP	2,3-dinor 11B-Prostaglandin F2a	No	Yes
CRETR	Creatinine, Random, U	No	Yes

Method Name

R23BP: Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS)
CRETR: Enzymatic Colorimetric Assay

NY State Available

Yes

Specimen

Specimen Type

Urine

Ordering Guidance

Although a random urine collection is acceptable, the preferred specimen for 2,3-dinor-11beta-prostaglandin F2 alpha analysis is a 24-hour urine collection; order 23BPT / 2,3-Dinor 11 Beta-Prostaglandin F2 Alpha, 24 Hour, Urine.
If ordering this test with NMHR / *N*-Methylhistamine, Random, Urine, **both tests must be ordered under different order numbers**. They cannot share an order number.

Specimen Required

Patient Preparation: Patients taking aspirin or nonsteroidal anti-inflammatory drugs (NSAID) may have decreased concentrations of prostaglandin F2 alpha. If possible, discontinue for 2 weeks or 72 hours, respectively, prior to collecting a specimen.
Supplies: Aliquot Tube, 5 mL (T465)
Container/Tube: Plastic, 5-mL tube
Specimen Volume: 5mL
Collection Instructions: Collect a random urine specimen.

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Minimum Volume

4 mL

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	14 days	
	Frozen	30 days	
	Ambient		

Clinical & Interpretive

Clinical Information

2,3-Dinor-11beta-prostaglandin F2 alpha (2,3 BPG) is the most abundant metabolic product of prostaglandins released by activated mast cells. Systemic mastocytosis (SM) is a disease in which clonally derived mast cells accumulate in peripheral tissues. Degranulation of these mast cells releases large amounts of histamines, prostaglandins, leukotrienes, and tryptase.

World Health Organization diagnostic criteria for SM require the presence of elevated mast cell counts on a bone marrow biopsy and 1 of the following minor criteria:

-Abnormal mast cell morphology

-*KIT* Asp816Val variant

-CD25-positive mast cells

-Serum tryptase greater than 20 ng/mL

Alternatively, SM diagnosis can be made with the presence of 3 minor criteria in the absence of abnormal bone marrow studies.

Measurement of mast cell mediators in blood or urine is less invasive and is advised for the initial evaluation of suspected cases. Elevated levels of serum tryptase, urinary N-methylhistamine, 2,3 BPG, or leukotriene E4 are consistent with the diagnosis of systemic mast cell disease.

Reference Values

<1802 pg/mg creatinine

Interpretation

Elevated urine 2,3-dinor-11beta-prostaglandin F2 alpha is consistent with systemic mastocytosis.

Cautions

Elevated levels of 2,3-dinor-11beta-prostaglandin F2 alpha (2,3 BPG) in urine are not specific for systemic mast cell disease and may be found in patients with angioedema, diffuse urticaria, or myeloproliferative diseases in the absence of diffuse mast cell proliferation.

Systemic mast cell disease is a heterogeneous disease, and some patients may not have elevated 2,3 BPG in urine.

Clinical Reference

1. Gotlib J, Pardanani A, Akin C, et al: International Working Group-Myeloproliferative Neoplasms Research and Treatment (IWG-MRT) and European Competence Network on Mastocytosis (ECNM) consensus response criteria in advanced systemic mastocytosis. Blood. 2013 Mar 28;121(13):2393-2401. doi: 10.1182/blood-2012-09-458521
2. Butterfield JH: Increased leukotriene E4 excretion in systemic mastocytosis. Prostaglandins Other Lipid Mediat. 2010 Jun;92(1-4):73-76. doi: 10.1016/j.prostaglandins.2010.03.003
3. Roberts LJ 2nd, Sweetman BJ, Lewis RA, Austen KF, Oates JA: Increased production of prostaglandin D2 in patients with systemic mastocytosis. N Engl J Med. 1980 Dec 11;303(24):1400-1404. doi: 10.1056/NEJM198012113032405
4. Metcalfe DD: Mastocytosis syndromes. In: Middleton E Jr, Reed CE, Ellis EF, et al. eds. Allergy Principles and Practice. Vol II. 4th ed. Mosby Yearbook Inc; 1993:1537-1551

Performance

Method Description

2,3-Dinor-11beta-prostaglandin F2 (2,3 BPG) alpha is quantified in urine by liquid chromatography-tandem mass spectrometry.(Unpublished Mayo method)
Creatinine:
All 2,3 BPG concentrations are normalized to urine creatinine levels measured using a Roche cobas enzymatic method. The enzymatic method is based on the determination of sarcosine from creatinine with the aid of creatininase, creatinase, and sarcosine oxidase. The liberated hydrogen peroxide is measured via a modified Trinder reaction using a colorimetric indicator. Optimization of the buffer system and the colorimetric indicator enables the creatinine concentration to be quantified both precisely and specifically.(Package insert: Creatinine plus ver 2. Roche Diagnostics; V15.0 03/2019)

PDF Report

No

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees & Codes

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 US Food and Drug Administration.

CPT Code Information

84150

82570