
Lab Dept: Chemistry

Test Name: THIOPURINE METHYLTRANSFERASE (TPMT),
RBC

General Information

Lab Order Codes: TMT

Synonyms: TPMT (Thiopurine Methyltransferase); Myelotoxicity

CPT Codes: 82657 – Enzyme activity in blood cells, cultured cells, or tissue, not elsewhere specified; nonradioactive substrate, each specimen

Test Includes: Thiopurine Methyltransferase Activity in RBC's reported for 6-Methylmercaptopurine, 6-Methylmercaptopurine riboside and 6-Methylthioguanine riboside in nmol/ml/hr.

Logistics

Test Indications: Detection of individuals with low thiopurine methyltransferase (TPMT) activity who are at risk for excessive myelosuppression or severe hematopoietic toxicity when taking thiopurine drugs.

Detection of individuals with hyperactive TPMT activity who have therapeutic resistance to thiopurine drugs and may develop hepatotoxicity if treated with these drugs.

Lab Testing Sections: Chemistry - Sendouts

Referred to: Mayo Medical Laboratories (MML Test: TPMT3)

Phone Numbers: Minneapolis: 612-813-6280

Saint Paul: 651-220-6550

Test Availability: Daily, 24 hours

Turnaround Time: 4 – 6 days

Special Instructions: TPMT inhibitors may contribute to falsely low results; patients should abstain from these drugs for at least 48 hours prior to TPMT testing.

Specimen

Specimen Type: Whole blood

Container:	Lavender (EDTA) top tube Alternate tube: Green (Li Heparin or Na Heparin) top tube
Draw Volume:	5 mL (Minimum: 3 mL) blood
Processed Volume:	Same as Draw Volume
Collection:	Routine venipuncture
Special Processing:	Lab Staff: Do Not Centrifuge. Store specimen at refrigerated temps before shipping. Stable for 6 days at 2-8 degrees centigrade. Do Not Freeze. Forward promptly.
Patient Preparation:	TPMT inhibitors may contribute to falsely low results; patients should abstain from these drugs for at least 48 hours prior to TPMT testing.
Sample Rejection:	Mislabeled or unlabeled specimens

Interpretive

Reference Range:	6-Methylmercaptapurine (normal)	3.00 – 6.66 nmol/mL/hr
	6-Methylmercaptapurine riboside (normal)	5.04 – 9.57 nmol/mL/hr
	6-Methylguanine riboside (normal)	2.70 – 5.84 nmol/mL/hr

Critical Values: N/A

Limitations: Thiopurine methyltransferase (TPMT) activity is measured in RBCs. If a patient has had a recent blood transfusion, his true enzyme activity may not be accurately reflected.

TPMT enzyme activity can be inhibited by several drugs such as: naproxen (Aleve), ibuprofen (Advil, Motrin), ketoprofen (Orudis), furosemide (Lasix), suflasalazine (Azulfidine), mesalamine (Aslacol), olsalazine (Dipentum), mefenamic acid (Ponstel), trimethoprim (Proloprim), methotrexate, thiazide diuretics, and benzoic acid inhibitors. TPMT inhibitors may contribute to falsely low results; patients should abstain from these drugs for at least 48 hours prior to TPMT testing.

Patients with acute lymphoblastic leukemia (ALL) may have lower TPMT activities before treatment and higher activities following treatment.

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

References: [Mayo Medical Laboratories](#) February 2017

Updates:

2/21/17: Testing now performed at MML with updated test, note new reference ranges.