
Lab Dept: Chemistry

Test Name: METHOTREXATE LEVEL

General Information

Lab Order Codes: MTX, TREX (Backup to Allina)

Synonyms: Mexate, MTX

CPT Codes: 80299 – Quantitation of drug, not elsewhere specified
Backup to Allina:
83520 – Immunoassay for analyte other than infectious agent antibody or agent antigen, quantitative, not otherwise specified

Test Includes: Methotrexate concentration measured in umol/L.

Logistics

Test Indications: Useful for following therapy, serum concentration is used to judge whether the drug is being cleared appropriately and verify that a nontoxic level has been attained.

Methotrexate is an antineoplastic agent that inhibits the enzyme, dihydrofolate reductase. Such inhibition causes a stoppage of synthesis of tetrahydrofolate that, in turn, results in an inhibition of nucleotide and ultimately of DNA synthesis. Methotrexate is effective against malignancies with rapid cell proliferation such as acute lymphoblastic leukemia, choriocarcinoma, trophoblastic tumors in women, and carcinomas of the breast, tongue, pharynx, and testis.

Relative low doses of methotrexate (7.5 – 25 mg/week) have been used in the treatment of non-malignant diseases such as severe psoriasis, asthma, rheumatoid arthritis, sarcoidosis, and transplantation therapy.

Lab Testing Sections: Chemistry

Phone Numbers: MIN Lab: 612-813-6280

STP Lab: 651-220-6550

Test Availability: Daily, 24 hours

Turnaround Time: 4 hours, testing performed daily 7 AM to 10 PM.

Special Instructions: Wrap collected specimens in foil to protect from light during transport to the laboratory.

Specimen

Specimen Type:	Blood
Container:	Red NO GEL tube
Draw Volume:	4.5 mL blood
Processed Volume:	1.5 mL serum
Collection:	Routine venipuncture. Wrap the collected specimen in foil to protect from light during transport to the laboratory.
Special Processing:	Lab Staff: Centrifuge specimen, remove serum/plasma aliquot into amber plastic vial. Store at refrigerated temperatures. Alternately, wrap specimen in foil to protect from light.
Patient Preparation:	None
Sample Rejection:	Mislabeled or unlabeled specimen; specimens not protected from light; exposed to light for >2 hours

Interpretive

Reference Range:	Dependant on clinical status
Critical Values:	>1 umol/L (>5 umol/L at 24 hours after high dose therapy.) Backup to ANW (LAB939): >0.02 umol/L at 72 hours post infusion
Limitations:	Exposure to light degrades Methotrexate. Specimens from patients who may be sensitized to mouse monoclonal antibodies should be tested by a different method. 4-[[2,4 – diamino-6-(pteridiny)l methyl] – methylamino] – benzoic acid (DAMPA) cross reacts with this method. DAMPA is a metabolite in patients who have received carboxypeptidase (G2) as a high dose methotrexate rescue therapy.
Methodology:	Fluorescence Polarization Immunoassay (FPIA)
References:	Tietz Textbook of Clinical Chemistry (1999) 3rd Edition, W.B. Saunders Company, pp. 896-897 Methotrexate II package Insert (February 2006) E 7A12, Abbott Laboratories, Diagnostics Division, Abbott Park, IL 60064 Allina Medical Laboratories February 2012 (Backup) TDxFLx System Operations Manual Abbott Laboratories (9/1994) Diagnostics Division, P.O.152020, Irving, Texas, 75015-2020, R-109

Updates:

9/11/2006: Testing method previously listed as Enzyme Immunoassay.
Testing resumed in house.
9/18/2006: Turnaround time previously listed as 2 hours.
2/9/2016: Update alt tube types
5/5/2017: Updated tube type/volume