Test Definition: TRYPP

Tryptophan, P

Overview

Useful For

Investigating inadequate tryptophan intake and monitoring dietary treatment

Method Name

LiquidChromatography-TandemMassSpectrometry(LC-MS/MS)

NY State Available

Yes

Specimen

Specimen Type

Plasma

Necessary Information

1. Patient's age is required.

2. Include family history, clinical condition (asymptomatic or acute episode), diet, and drug therapy information.

Specimen Required

Patient Preparation: Fasting (overnight preferred, 4 hours minimum). Infants should be drawn just before next feeding (2-3 hours without total parenteral nutrition: TPN if possible).

Collection Container/Tube:

Preferred: Green top (sodium heparin)

Acceptable: Lavender top (EDTA)

Submission Container/Tube: Plastic vial

Specimen Volume: 0.5 mL

Collection Instructions:

1. Centrifuge within 4 hours, if specimen is stored at refrigerated temperature, and aliquot plasma.

2. Send plasma frozen.

Forms

If not ordering electronically, complete, print, and send an Inborn Errors of Metabolism Test Request (T798) with the specimen.

Specimen Minimum Volume

0.3 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma	Frozen	14 days	

Clinical and Interpretive

Clinical Information

Amino acids are the basic structural units that comprise proteins and are found throughout the body. Many inborn errors of amino acid metabolism have been identified, including glutaric acidemia type 1, which affect other metabolic activities. Amino acid disorders can manifest at any time in a person's life, but most become evident in infancy or early childhood. These disorders result in the accumulation or the deficiency of 1 or more amino acids in biological fluids, which leads to the clinical signs and symptoms of the particular amino acid disorder.

Tryptophan is an essential amino acid necessary for the synthesis of serotonin, melatonin, and niacin. Low plasma concentrations of tryptophan have been associated with clinical observations of insomnia, anxiety, and depression.

Glutaric acidemia type 1 is an autosomal recessive disorder of tryptophan and lysine metabolism caused by a deficiency of glutaryl-CoA dehydrogenase. Early diagnosis and treatment is essential to help prevent encephalopathic crises leading to brain degeneration. These can be provoked by infections, trauma, fever, and fasting. Treatment consists of preventing neurodegeneration through L-carnitine supplementation and strict adherence to an emergency protocol. Dietary protein, in particular, lysine and tryptophan, is restricted during the vulnerable period of brain development from 0 to 5 years of age. In addition to other indices of malnutrition, the measurement of plasma concentration of tryptophan is used as an indicator of appropriate dietary therapy.

Reference Values

< or =23 months: 17-75 nmol/mL

2 years-17 years: 23-80 nmol/mL

> or =18 years: 29-77 nmol/mL

Interpretation

If the result is within the respective age-matched reference range, no interpretation is provided. When an abnormal result is reported, an interpretation may be added including a correlation to available clinical information, elements of differential diagnosis, and recommendations for additional biochemical testing, if applicable.

Cautions

Abnormal plasma concentrations of tryptophan are not diagnostic for a specific disorder and must be interpreted in the context of a patient's clinical presentation and other laboratory results.

Clinical Reference

1. Hoffmann GF, Schulze A: Organic acidurias. In Pediatric Endocrinology and Inborn Errors of Metabolism. Edited

by K Sarafoglou, GF Hoffmann, KS Roth, New York, McGraw-Hill Medical Division, 2009, pp 108-112

2. Goodman SI, Frerman FE: Organic Acidemias Due to Defects in Lysine Oxidation: 2-Ketoadipic Acidemia and Glutaric Acidemia. In The Online Metabolic and Molecular Bases of Inherited Disease. Edited by D Valle, AL Beaudet, B Vogelstein, et al. New York, McGraw-Hill. 2014Accessed May 07, 2019 Available at http://ommbid.mhmedical.com/content.aspx?bookid=971&sectionid=62677296..

Performance

Method Description

Quantitative analysis of amino acids (AA) is performed by liquid chromatography-tandem mass spectrometry (LC-MS/MS) by labeling amino acids present in plasma, spinal fluid, and urine with aTRAQ Reagent 121. Samples are dried and reconstituted with aTRAQ Reagent 113-labeled Standard Mix. Amino acids are separated and detected by LC-MS/MS. The concentrations of AA are established by comparison of their ion intensity (121-labeled amino acids) to that of their respective internal standards (113-labeled amino acids).(Lacey JM, Casetta B, Daniels SB, et al: Quantitation in plasma, urine and CSF by iTRAQ reagent amino acid analysis kit and MS-MS. J Am Soc Mass Spectrom 2008;19[5]:S97)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Friday; 9 a.m. and 1 p.m.

Analytic Time

3 days (not reported on Saturday or Sunday)

Maximum Laboratory Time

5 days

Specimen Retention Time

2 weeks

Performing Laboratory Location

Rochester

Fees and 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 Regional Manager. 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. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information

82131

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
TRYPP	Tryptophan, P	20659-9

Result ID	Test Result Name	Result LOINC Value
82955	Tryptophan	20659-9
34619	Interpretation (TRYPP)	59462-2
38056	Reviewed By	18771-6