Test Definition: B6PA

Pyridoxic Acid, Plasma

Overview

Useful For

Determining the concentration of pyridoxic acid in the assessment of vitamin B6 status

Method Name

Only orderable as part of a profile. For more information see B6PRO / Vitamin B6 Profile (Pyridoxal 5-Phosphate and Pyridoxic Acid), Plasma.

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

NY State Available

Yes

Specimen

Specimen Type

Plasma Heparin

Shipping Instructions

Ship specimen in amber vial to protect from light.

Specimen Required

Only orderable as part of a profile. For more information see B6PRO / Vitamin B6 Profile (Pyridoxal 5-Phosphate and Pyridoxic Acid), Plasma.

Patient Preparation:

1. Fasting: 12 hours, required; Infants-should have specimen collected before next feeding, water can be taken as needed

2. For 24 hours before specimen collection, **patient must not take multivitamins or vitamin supplements.**

Supplies: Amber Frosted Tube, 5 mL (T915)

Collection Container/Tube: Green top (sodium or lithium heparin) or plasma gel separator (PST)

Submission Container/Tube: Amber vial

Specimen Volume: 1 mL

Collection Instructions:

1. Centrifuge at 4 degrees C within 2 hours of collection.
2. Aliquot all plasma into amber vial and freeze immediately.

Specimen Minimum Volume

0.75 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma Heparin	Frozen	29 days	LIGHT PROTECTED

Clinical & Interpretive

Clinical Information

Vitamin B6 is a complex of 6 vitamers: pyridoxal, pyridoxol, pyridoxamine, and their 5'-phosphate esters. Due to its role as a cofactor in many enzymatic reactions, pyridoxal 5-phosphate (PLP) has been determined to be the biologically active form of vitamin B6.

Vitamin B6 deficiency is a potential cause of burning mouth syndrome and a possible potentiating factor for carpal tunnel and tarsal tunnel syndromes. Persons who present with chronic, progressive nerve compression disorders may be deficient in vitamin B6 and should be evaluated. Vitamin B6 deficiency is associated with symptoms of scaling of the skin, severe gingivitis, irritability, weakness, depression, dizziness, peripheral neuropathy, and seizures. In the pediatric population, deficiencies have been characterized by diarrhea, anemia, and seizures.

Markedly elevated PLP in conjunction with low levels of pyridoxic acid are observed in cases of hypophosphatasia, a disorder characterized by low levels of alkaline phosphatase and a range of skeletal abnormalities.

Reference Values

Only orderable as part of a profile. For more information see B6PRO / Vitamin B6 Profile (Pyridoxal 5-Phosphate and Pyridoxic Acid), Plasma.

3-30 mcg/L

Interpretation

Levels for fasting individuals falling in the range of 3 to 30 mcg/L for pyridoxic acid (PA) and 5 to 50 mcg/L for pyridoxal 5-phosphate (PLP) are indicative of adequate nutrition.

PA results are not clinically significant by themselves and must be interpreted in conjugation with PLP concentrations. The following are interpretative guidelines based on PLP and PA results:
If PLP is >100 mcg/L and PA is < or =30 mcg/L:
-The increased PLP is suggestive of hypophosphatasia. Consider analysis of serum alkaline phosphatase isoenzymes (ALKI / Alkaline Phosphatase, Total and Isoenzymes, Serum) and urinary phosphoethanolamine (AAPD / Amino Acids, Quantitative, Random, Urine).

If PLP is >100 mcg/L and PA is 31 to 100 mcg/L or PLP is 81 to 100 mcg/L and PA is < or =30 mcg/L:
-The increased PLP is likely related to dietary supplementation; however, a mild expression of hypophosphatasia cannot be excluded. Consider analysis of serum alkaline phosphatase isoenzymes (ALKI / Alkaline Phosphatase, Total and Isoenzymes, Serum) and urinary phosphoethanolamine (AAPD / Amino Acids, Quantitative, Random, Urine).

If PLP is 51 to 80 mcg/L or PLP is 81 to 100 mcg/L and PA is >30 mcg/L or PLP is >100 mcg/L and PA is >100 mcg/L:
-The elevated PLP is likely due to dietary supplementation.

Cautions
No significant cautionary statements

Clinical Reference
1. Kimura M, Kanehira K, Yokoi K. Highly sensitive and simple liquid chromatographic determination in plasma of B6 vitamins, especially pyridoxal 5'-phosphate. J Chromatogr A. 1996;722(1-2):296-301. doi:10.1016/0021-9673(95)00354-1
2. Ball GFM: Vitamins: Their Role in the Human Body. Blackwell Publishing; 2004;310-325
3. Mackey AD, Davis SR, Gregory JF III: Vitamin B6. In: Shils ME, Shike M, Ross AC, et al. eds. Modern Nutrition in Health and Disease. 10th ed. Lippincott Williams and Wilkins; 2006:452-461
4. Roberts NB. Taylor A. Sodi R: Vitamins and trace elements. In: Rifai N, Horvath AR, Wittwer CT, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018:639-718

Performance

Method Description
The stable isotope pyridoxal 5-phosphate-d2 and/or pyridoxic acid-d2 is added to plasma as an internal standard. Meta-phosphoric acid solution is then added to precipitate the proteins. Following sedimentation of the proteins, an aliquot of the clarified supernatant fluid is subjected to separation of pyridoxal 5-phosphate, pyridoxic acid, and internal standards from other plasma components by reverse-phase high-performance liquid chromatography with quantitation by tandem mass spectrometry.(Unpublished Mayo method)

PDF Report
No

Day(s) Performed
Monday through Thursday, Saturday, Sunday

Report Available
3 to 7 days

Specimen Retention Time
2 weeks

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Superior Drive

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 was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

82542

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
B6PA	Pyridoxic Acid (PA), P	1688-1

Result ID	Test Result Name	Result LOINC® Value
61065	Pyridoxic Acid (PA), P	1688-1