Test Definition: ASNA

Arsenic, Nails

Overview

Useful For

Detection of nonacute arsenic exposure in nail specimens

Special Instructions

- Collecting Hair and Nails for Metals Testing

Method Name

Triple-Quadrupole Inductively Coupled Plasma Mass Spectrometry (ICP-MS/MS)

NY State Available

No

Specimen

Specimen Type

Nail

Necessary Information

Indicate source of nails (fingernails or toenails), if known.

Specimen Required

Supplies: Hair and Nails Collection Kit (T565)

Source: Fingernails or toenails

Specimen Volume: 0.2 g

Collection Instructions:

1. Prepare and transport specimen per the instructions in the kit or see Collecting Hair and Nails for Metals Testing.
2. Clippings should be taken from all 10 fingernails or toenails.

Specimen Minimum Volume

0.05 g

Reject Due To

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

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Nail	Ambient (preferred)		
	Refrigerated		

	Frozen		

Clinical & Interpretive

Clinical Information

Arsenic circulating in the blood will bind to protein by formation of a covalent complex with sulfhydryl groups of the amino acid cysteine. Keratin, the major structural protein in hair and nails, contains many cysteine residues and, therefore, is one of the major sites for accumulation of arsenic. Since arsenic has a high affinity for keratin, the concentration of arsenic in nails is higher than in other tissues.

Several weeks after exposure, transverse white striae, called Mees' lines, may appear in the fingernails.

Reference Values

0-15 years: Not established
> or =16 years: <1.0 mcg/g of nails

Interpretation

Nails grow at a rate of approximately 0.1 inch/month. Nail keratin synthesized today will grow to the distal end in approximately 6 months. Thus, a nail specimen collected at the distal end represents exposure of 6 months ago.

Nail arsenic above 1.0 mcg/g dry weight may indicate excessive exposure. It is normal for some arsenic to be present in nails, as everybody is exposed to trace amounts of arsenic from the normal diet.

The highest hair or nail arsenic concentration observed at Mayo Clinic was 210 mcg/g dry weight in a case of chronic exposure, which was the cause of death.

Cautions

No significant cautionary statements.

Clinical Reference

1.Hindmarsh JT, McCurdy RF. Clinical and environmental aspects of arsenic toxicity. Crit Rev Clin Lab Sci 1986;23(4):315-347
2.Strathmann FG, Blum LM. Toxic elements. In: Rifai N, Chiu RWK, Young I, Burnham CAD, Wittwer CT, eds. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023:chap 44

Performance

Method Description

The metal analytes of interest are analyzed by triple-quadrupole inductively coupled plasma mass spectrometry.(Unpublished Mayo method).

PDF Report

No

Day(s) Performed
Wednesday

Report Available
2 to 14 days

Specimen Retention Time
14 days

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
82175

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
ASNA	Arsenic, Nails	8157-0

Result ID	Test Result Name	Result LOINC® Value
2535	Arsenic, Nails	8157-0
ASNSC	Specimen Source	31208-2