

Client: Example Client ABC123  
123 Test Drive  
Salt Lake City, UT 84108  
UNITED STATES

Physician: Doctor, Example

**Patient: Patient, Example**

**DOB:** 12/24/2022  
**Gender:** Male  
**Patient Identifiers:** 01234567890ABCD, 012345  
**Visit Number (FIN):** 01234567890ABCD  
**Collection Date:** 00/00/0000 00:00

**Amino Acids Quantitative by LC-MS/MS, CSF**

ARUP test code 0080137

Amino Acids, CSF Interpretation

See Note

ABNORMAL. Non specific elevation of several amino acids could be secondary to blood contamination or functional impairment of the blood brain barrier. Would evaluate plasma amino acids.

INTERPRETIVE INFORMATION: Amino Acids Quantitative, CSF

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Alpha-amino butyric acid, CSF	4.6 umol/L		(Ref Interval: <=8.0)
Alanine, CSF	<b>58.5 umol/L</b>	<b>H</b>	<b>(Ref Interval: 16.0-46.0)</b>
Allo-isoleucine, CSF	<2.0 umol/L		(Ref Interval: <=2.0)
Alpha-aminoadipic acid, CSF	<2.0 umol/L		(Ref Interval: <=2.0)
Anserine, CSF	<5.0 umol/L		(Ref Interval: <=7.0)
Arginine, CSF	29.1 umol/L		(Ref Interval: 8.0-31.0)
Argininosuccinic Acid, CSF	<2.0 umol/L		(Ref Interval: <=2.0)
Asparagine, CSF	<b>20.4 umol/L</b>	<b>H</b>	<b>(Ref Interval: 4.0-13.0)</b>

**H=High, L=Low, \*=Abnormal, C=Critical**

Aspartic Acid, CSF	<5.0 umol/L	(Ref Interval: <=5.0)
Beta-amino isobutyric acid, CSF	<5.0 umol/L	(Ref Interval: <=5.0)
Beta-alanine, CSF	<25.0 umol/L	(Ref Interval: <=25.0)
Citrulline, CSF	<b>5.3 umol/L H</b>	(Ref Interval: <=5.0)
Cystathionine, CSF	<5.0 umol/L	(Ref Interval: <=5.0)
Cystine, CSF	<5.0 umol/L	(Ref Interval: <=5.0)
Ethanolamine, CSF	<b>40.3 umol/L H</b>	(Ref Interval: <=40.0)
Gamma-amino butyric acid, CSF	<5.0 umol/L	(Ref Interval: <=5.0)
Glutamic Acid, CSF	<5.0 umol/L	(Ref Interval: <=5.0)
Glutamine, CSF	<b>766.3 umol/L H</b>	(Ref Interval: 330.0-630.0)
Glycine, CSF	10.5 umol/L	(Ref Interval: 5.0-20.0)
Histidine, CSF	21.7 umol/L	(Ref Interval: 7.0-24.0)
Homocitrulline, CSF	<5.0 umol/L	(Ref Interval: <=5.0)
Homocystine, CSF	<2.0 umol/L	(Ref Interval: <=2.0)
Hydroxylysine, CSF	<5.0 umol/L	(Ref Interval: <=5.0)
Hydroxyproline, CSF	3.8 umol/L	(Ref Interval: <=4.0)

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Unless otherwise indicated, testing performed at:

ARUP LABORATORIES | 800-522-2787 | aruplab.com  
500 Chipeta Way, Salt Lake City, UT 84108-1221  
Jonathan R. Genzen, MD, PhD, Laboratory Director

Patient: Patient, Example  
ARUP Accession: 23-013-402633  
Patient Identifiers: 01234567890ABCD, 012345  
Visit Number (FIN): 01234567890ABCD  
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Isoleucine, CSF	<b>13.0</b> umol/L	<b>H</b>	(Ref Interval: <=12.0)
Leucine, CSF	<b>29.0</b> umol/L	<b>H</b>	(Ref Interval: 5.0-22.0)
Lysine, CSF	31.9 umol/L		(Ref Interval: 10.0-36.0)
Methionine, CSF	<b>8.8</b> umol/L	<b>H</b>	(Ref Interval: 2.0-7.0)
Ornithine, CSF	<b>19.7</b> umol/L	<b>H</b>	(Ref Interval: <=10.0)
Phenylalanine, CSF	15.5 umol/L		(Ref Interval: 6.0-20.0)
Proline, CSF	<b>5.5</b> umol/L	<b>H</b>	(Ref Interval: <=5.0)
Sarcosine, CSF	<5.0 umol/L		(Ref Interval: <=5.0)
Serine, CSF	<b>88.1</b> umol/L	<b>H</b>	(Ref Interval: 18.0-66.0)
Taurine, CSF	12.8 umol/L		(Ref Interval: <=13.0)
Threonine, CSF	<b>74.9</b> umol/L	<b>H</b>	(Ref Interval: 14.0-59.0)
Tryptophan, CSF	<b>7.0</b> umol/L	<b>H</b>	(Ref Interval: <=5.0)
Tyrosine, CSF	18.4 umol/L		(Ref Interval: 5.0-23.0)
Valine, CSF	<b>44.0</b> umol/L	<b>H</b>	(Ref Interval: 8.0-30.0)

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VERIFIED/REPORTED DATES

Procedure	Accession	Collected	Received	Verified/Reported
Amino Acids, CSF Interpretation	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Alpha-amino butyric acid, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Alanine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Allo-isoleucine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Alpha-aminoadipic acid, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Anserine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Arginine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Argininosuccinic Acid, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Asparagine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Aspartic Acid, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Beta-amino isobutyric acid, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Beta-alanine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Citrulline, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Cystathionine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Cystine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Ethanolamine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Gamma-amino butyric acid, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Glutamic Acid, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Glutamine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Glycine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Histidine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Homocitrulline, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Homocystine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Hydroxylysine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Hydroxyproline, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Isoleucine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Leucine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Lysine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Methionine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Ornithine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Phenylalanine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Proline, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Sarcosine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Serine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Taurine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Threonine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Tryptophan, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Tyrosine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Valine, CSF	23-013-402633	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00

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END OF CHART

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