

# Certificate of Analysis

## Livagen

H-Lys-Glu-Asp-Ala-OH

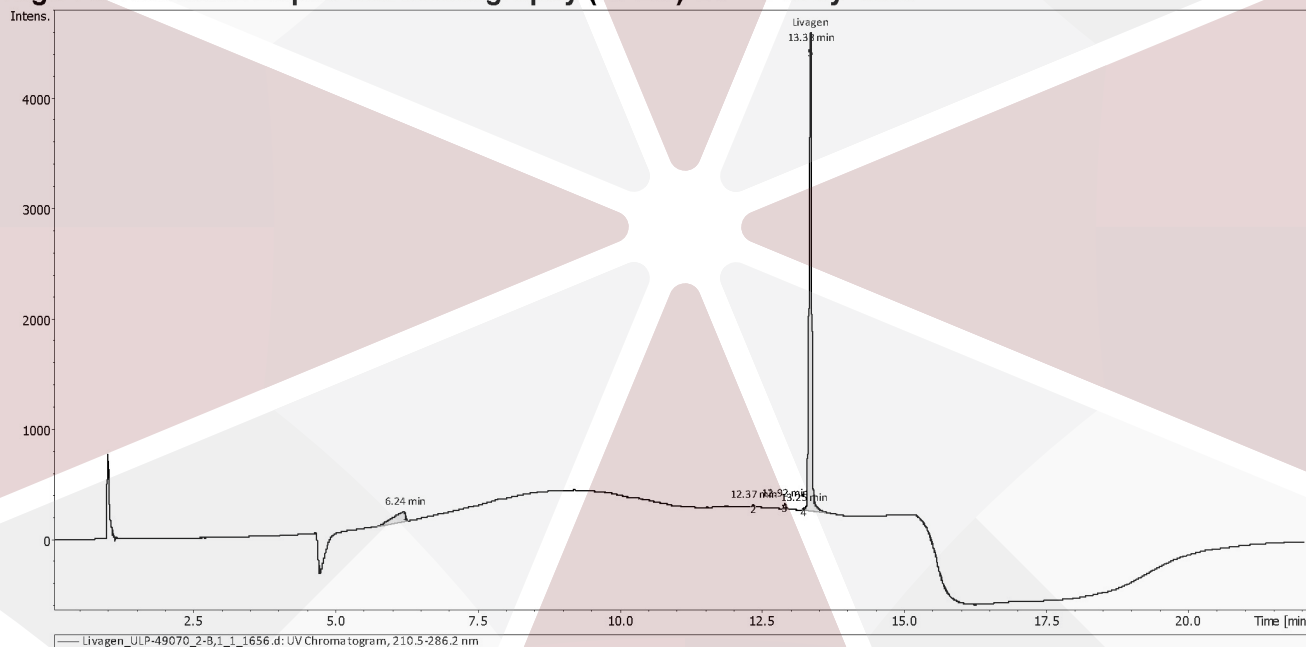
**Compound** : Livagen  
**Lot number** : ULP-49070  
**Analysis date** : 2024-12-31  
**Purity %** : 99.00%  
**Method** : HPLC-UV-MS

**Client** : UMBRELLA.us  
3280 E Hemisphere Loop  
Tucson, Arizona 85706

PubChem CID : 87919683

<https://pubchem.ncbi.nlm.nih.gov/compound/87919683>

### High Performance Liquid Chromatography (HPLC) UV – Purity Test



Livagen\_ULP-49070\_2-8\_1\_1\_1656.d: UV Chromatogram, 210.5-286.2 nm

PEAK LIST		Number of detected peaks: 5		
	Time (min)	Area	%Area	
1	6.24	1.36E+03	8.26	mannitol (MW 182.08)
2	12.37	4.11E+01	0.25	
3	12.92	1.26E+02	0.76	
4	13.25	2.88E+01	0.17	Livagen
5	13.38	1.50E+04	90.55	
Overall purity			99.00	

Analysis Performed by  
Ken Pendarvis, ChE  
Analytical Chemist  
MZ Biolabs  
[contact@mzbiolabs.com](mailto:contact@mzbiolabs.com)



Note: Injectable peptides may contain salts and sugars to aid in solubility and act as pH buffers.  
These are not normally detected using UV and are not considered impurities.

2025-01-08

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## Mass Spectrometry (MS) – Identity Test

### Identity confirmed using HPLC-MS

Molecular weight calculated using monoisotopic m/z values from mass spectrum

Expected monoisotopic mass : 461.21 Da

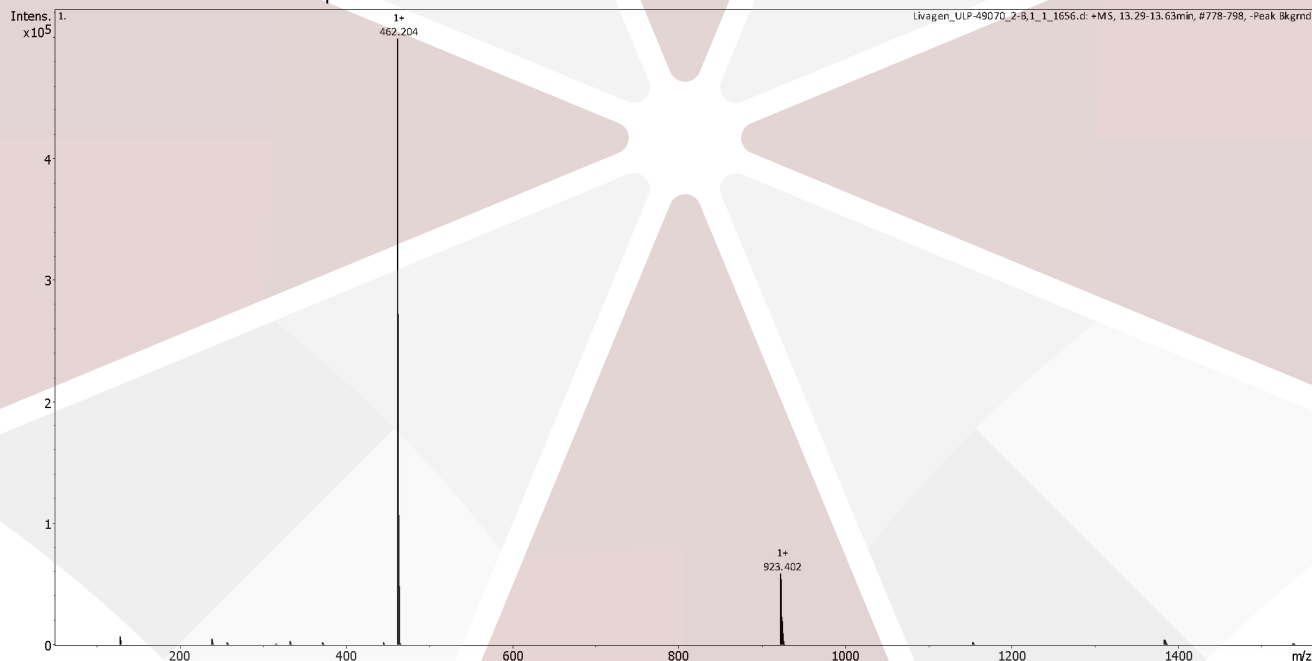
Measured monoisotopic mass : 461.20 Da

**Molecular weight confirmed**

Note : Monoisotopic m/z values are not easily seen in full spectrum view for larger molecules and peptides.

The dominant isotopic peak (base peak) shown in the spectrum below can be used to approximate the average molecular weight frequently reported by vendors and databases as a secondary means of confirmation.

### Recorded MS spectrum



Analysis Performed by  
Ken Pendarvis, ChE  
Analytical Chemist  
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2025-01-08