

## CERTIFICATE OF ANALYSIS

Thymalin Batch █████ November 2025

Product name	<b>Thymalin (Thymulin)</b>	Molecular formula	<b>C<sub>33</sub>H<sub>54</sub>N<sub>12</sub>O<sub>15</sub></b>
Batch number	████	Molecular weight	<b>858.86 g/mol</b>
CAS number	<b>63958-90-7</b>	Quantity	<b>10 mg</b>
Date of manufacture	<b>November 2025</b>	PubChem CID	<b>3085284</b>
Storage	<b>Powder: -20°C 3 years; 4°C 2 years; 15°C 3 months.</b>	Storage	<b>In solvent: -80°C 6 months; -20°C 1 month; 10°C 1 week</b>

### Amino acid sequence

pGlu-AKSQGGSN (Thymulin nonapeptide)  
9 residues

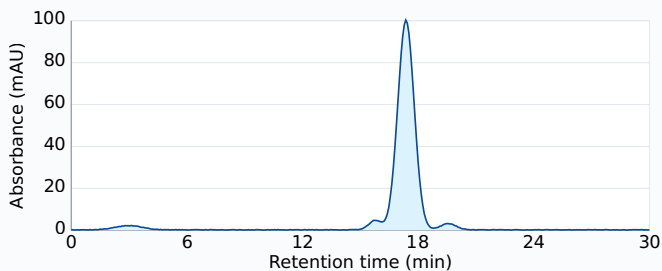
### Analytical results

Test parameter	Method	Specification	Result	Status
Appearance	Visual	White to off-white powder	Conforms	✓
Peptide purity	RP-HPLC (C18)	≥ 98.5%	98.76%	✓
Molecular weight confirmation	ESI-MS	858.86 ± 1.0 Da	Conforms	✓
Water content	Karl Fischer	≤ 10.0%	4.6%	✓
Counter-ion content	HPLC	TFA ≤ 0.50% (acetate salt)	5.2% (acetate)	✓
Total related substances	RP-HPLC	≤ 2.0%	0.5%	✓
Largest single impurity	RP-HPLC	≤ 1.0%	0.4%	✓
Residual solvent — Acetonitrile	GC-HS	≤ 410 ppm	< 410 ppm	✓
Residual solvent — DCM	GC-HS	≤ 600 ppm	< 600 ppm	✓
Residual solvent — DMF	GC-HS	≤ 880 ppm	< 880 ppm	✓
Bacterial endotoxins	LAL kinetic turbidimetric	< 5 EU/mg	< 0.5 EU/mg	✓
Bioburden	USP <61>	< 100 CFU/g (USP <61>)	< 10 CFU/g	✓

### HPLC chromatogram

RP-HPLC C18

UV detection at 220 nm — gradient 10–70% ACN in 0.1% TFA over 30 min — flow 1.0 mL/min

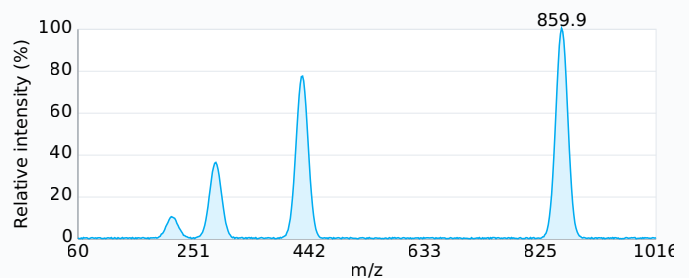


Main peak RT 17.37 min · Area 98.76% · Largest imp 0.4% · Total related 0.5%

### Mass spectrum

ESI-MS positive

Electrospray ionisation — positive mode



Observed [M+H]<sup>+</sup> 859.9 · MW 858.86 g/mol

✓ Overall result: Conforms to specification

Results relate only to the batch tested, by the stated methods at time of release, and are provided in good faith without warranty — OP Labs does not guarantee the accuracy or completeness of the results. Storage figures are recommendations, not stability data. Research use only.