

CERTIFICATE OF ANALYSIS

Thymalin

Product name	Thymalin (Thymulin)	Molecular formula	$C_{33}H_{54}N_{12}O_{15}$
Batch number	-	Molecular weight	858.86 g/mol
CAS number	63958-90-7	Quantity	10 mg
Date of manufacture	-	PubChem CID	3085284
Storage	Powder: -20°C 3 years; 4°C 2 years; 15°C 3 months.	Storage	In solvent: -80°C 6 months; -20°C 1 month; 10°C 1 week

Amino acid sequence

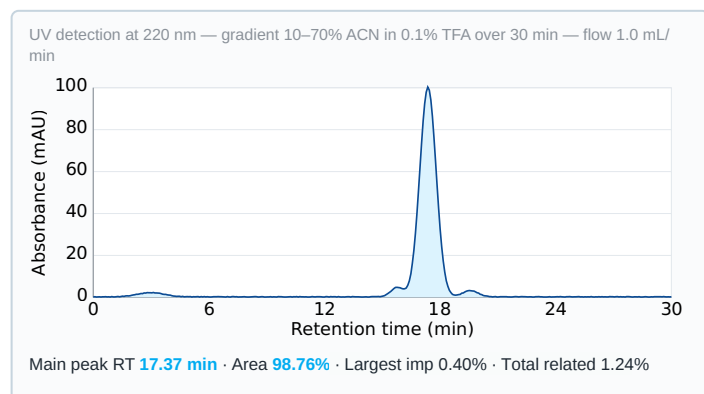
pGlu-AKSQGGSN (Thymulin nonapeptide)
 9 residues

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	Acetate salt (report)	5.2% (acetate)	✓
Total related substances	RP-HPLC	≤ 2.0%	1.24%	✓
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	✓

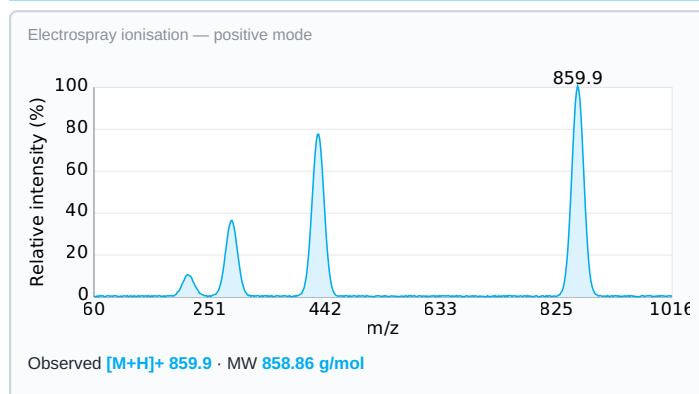
HPLC chromatogram

RP-HPLC C18



Mass spectrum

ESI-MS positive



✓ 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.