

Thymosin α1

Thymosin α1 is a 28-amino-acid N-acetylated peptide derived from prothymosin α. Its synthetic form, thymalfasin (Zadaxin), is approved in several countries outside the US and has been studied as an immune modulator in clinical trials.



■ Hydrophobic
 ■ Acidic
 ■ Basic
 ■ Polar
 ■ Gly, Pro, Cys
 ■ Non-standard

Length	28 residues
Formula	C ₁₂₉ H ₂₁₅ N ₃₃ O ₅₅
Average mass	3,108.28 g/mol
Monoisotopic mass	3,106.5041 Da
Evidence	Approved drug
US status	Not FDA-approved; approved in several other countries (Zadaxin)
WADA	Check the current Prohibited List

28 residues, N-terminally acetylated (thymalfasin).

Expected ions (monoisotopic)

[M+H] ⁺	[M+2H] ²⁺	[M+3H] ³⁺	[M+4H] ⁴⁺
3,107.5114	1,554.2593	1,036.5087	777.6333

What the COA should show

A good certificate of analysis should confirm identity by mass spectrometry, with the observed mass matching the expected mass shown on this page for the N-acetylated sequence, and report HPLC purity with the chromatogram. Check for the presence of the N-terminal acetyl group, since a non-acetylated peptide differs by 42 Da. As a 28-residue synthetic peptide, deletion and truncation impurities should be reported as related substances. The many aspartate and glutamate residues and the C-terminal asparagine can be sites of isomerization or deamidation, which may produce peaks close to the main peak. The salt form and net peptide content should be stated, and endotoxin results are relevant for cell work.

Storage and stability

Store lyophilized thymosin α1 sealed at -20 °C or colder, or at 2–8 °C if a product's labeling specifies, protected from light and moisture, and equilibrate before opening. It lacks oxidation-prone residues, but in solution its aspartate and asparagine residues can slowly degrade, especially at elevated temperature or extreme pH. Prepare solutions in sterile water or buffer for lab use, refrigerate for short-term work, aliquot for frozen storage, and avoid repeated freeze-thaw cycles.