

SS-31 (elamipretide)

SS-31, known as elamipretide, is a synthetic mitochondria-targeted tetrapeptide that binds the inner-membrane lipid cardiolipin. It received FDA accelerated approval in September 2025 as Forzinity for Barth syndrome.



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

Length	4 residues
Formula	$C_{32}H_{49}N_9O_5$
Average mass	639.79 g/mol
Monoisotopic mass	639.3857 Da
Evidence	Approved drug
US status	FDA accelerated approval as elamipretide (Forzinity, Sept 2025)
WADA	Check the current Prohibited List

Tetrapeptide amide: D-Arg, 2',6'-dimethyltyrosine, Lys, Phe.

Expected ions (monoisotopic)

$[M+H]^+$	$[M+2H]^{2+}$	$[M+3H]^{3+}$	$[M+4H]^{4+}$
640.3929	320.7001	214.1358	160.8537

What the COA should show

A certificate of analysis for SS-31 should confirm identity by mass spectrometry against the expected mass shown on this page and report HPLC purity. Compound-specific points include confirming the D-configuration of arginine, which standard MS cannot distinguish from the L-form; chiral analysis or a validated method with a D/L reference is needed to exclude the diastereomer. The presence of the non-standard Dmt residue and the C-terminal amide should be consistent with the observed mass. The salt form and net peptide content should be reported, as the peptide carries several positive charges.

Storage and stability

Store lyophilized SS-31 sealed at -20 °C, protected from light and moisture. The D-amino acid and non-standard residues give good resistance to proteases, but the material is still subject to hydrolysis and moisture uptake. Allow vials to reach room temperature before opening, aliquot prepared solutions and avoid repeated freeze-thaw cycles. Cationic peptides can adsorb to surfaces at low concentrations.

Full entry, references and latest research: <https://peptidewiki.net/compounds/ss-31/>
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