

Oxytocin

Oxytocin is a nine-amino-acid peptide hormone made in the hypothalamus and released from the posterior pituitary, with a disulfide-bridged ring structure. It regulates uterine contraction and milk ejection, and synthetic oxytocin (Pitocin) is FDA-approved.



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

Length	9 residues
Formula	C ₄₃ H ₆₆ N ₁₂ O ₁₂ S ₂
Average mass	1,007.19 g/mol
Monoisotopic mass	1,006.4365 Da
Evidence	Approved drug
US status	FDA-approved (Pitocin)
WADA	Check the current Prohibited List

Nonapeptide amide with a Cys1–Cys6 disulfide ring.

Expected ions (monoisotopic)

[M+H] ⁺	[M+2H] ²⁺	[M+3H] ³⁺	[M+4H] ⁴⁺
1,007.4437	504.2255	336.4861	252.6164

What the COA should show

An oxytocin certificate of analysis should confirm identity by mass spectrometry against the expected mass shown on this page and report HPLC purity. The disulfide bond must be correctly formed: the reduced, linear form is about 2 Da heavier, and disulfide-linked dimers or oligomers can also occur. Deamidation of Gln or Asn (+1 Da), the C-terminal acid variant, and related impurities described in pharmacopoeial monographs should be considered. Salt form and net peptide content should be reported. Pharmacopoeial methods exist for oxytocin and provide useful benchmarks.

Storage and stability

Lyophilized oxytocin should be stored sealed and protected from light and moisture, at -20 °C for research material. Oxytocin in solution is temperature-sensitive and degrades through deamidation and disulfide-related reactions; this is why pharmaceutical oxytocin products carry specific storage requirements in their labeling. For lab solutions, keep them cold, aliquot them, avoid repeated freeze-thaw cycles and avoid basic pH.

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