# PRODUCT INFORMATION

## CTOP (trifluoroacetate salt)

*Item No. 27377*

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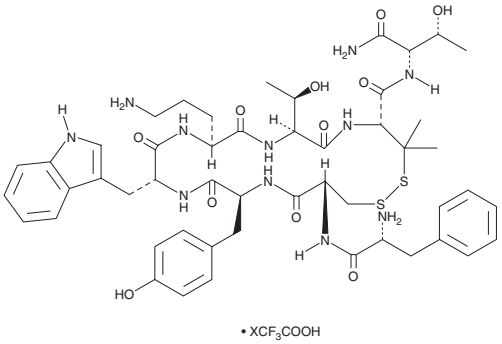
| **Formal Name:** | D-phenylalanyl-L-cysteinyl-L-tyrosyl-D-tryptophyl-L-ornithyl-L-threonyl-3-mercapto-L-valyl-L-threoninamide-cyclic (2→7)-disulfide, trifluoroacetate salt |
| **Synonym:** | Phe-Cys-Tyr-Trp-Orn-Thr-Pen-Thr |
| **MF:** | $C_{50}H_{67}N_{11}O_{11}S_2 \bullet XCF_3COOH$ |
| **FW:** | 1,062.3 |
| **Purity:** | ≥98% |
| **UV/Vis.:** | $\lambda_{max}$: 220, 269, 386 nm |
| **Supplied as:** | A solid |
| **Storage:** | -20°C |
| **Stability:** | ≥4 years |




*Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.*

### Laboratory Procedures

CTOP (trifluoroacetate salt) is supplied as a solid. A stock solution may be made by dissolving the CTOP (trifluoroacetate salt) in the solvent of choice, which should be purged with an inert gas. CTOP (trifluoroacetate salt) is slightly soluble in ethanol.

CTOP (trifluoroacetate salt) is slightly soluble in aqueous solutions. To enhance aqueous solubility, dilute the organic solvent solution into aqueous buffers or isotonic saline. If performing biological experiments, ensure the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. We do not recommend storing the aqueous solution for more than one day.

### Description

CTOP is a peptide antagonist of the μ-opioid receptor ($IC_{50}$ = 2.8 nM).[1] It is selective for μ-opioid receptors over δ-opioid receptors ($IC_{50}$ = 13,500 nM) and somatostatin receptors ($IC_{50}$ = 24,000 nM). CTOP inhibits the antinociceptive effect of morphine in the tail flick test in mice ($ED_{50}$ = 0.018 nmol) and reverses morphine-induced increases in locomotor activity ($ED_{50}$ = 0.02 nmol).[2] It also induces withdrawal symptoms in a mouse model of chronic, but not acute, morphine dependence.

### References


1. Pelton, J.T., Kazmierski, W., Gluya, K., *et al.* Design and synthesis of conformationally constrained somatostatin analogues with high potency and specificity for μ opioid receptors. *J. Med. Chem.* **29(11)**, 2370-2375 (2013).
2. Gulya, K., Kriván, M., Nyolczas, N., *et al.* Central effects of the potent and highly selective μ opioid antagonist D-Phe-Cys-Tyr-D-Trp-Orn-Thr-Pen-Thr-$NH_2$ (CTOP) in mice. *Eur. J. Pharmacol.* **150(3)**, 355-360 (1988).





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