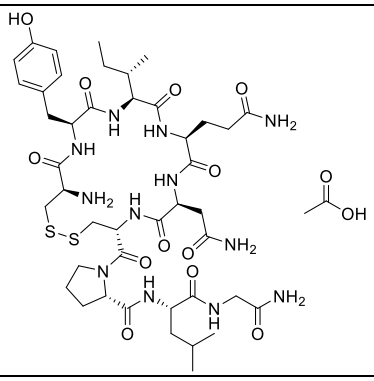
Product data sheet

MedKoo Cat#: 319932 Name: Oxytocin acetate CAS#: 6233-83-6 (acetate) Chemical Formula: $C_{45}H_{70}N_{12}O_{14}S_2$ Exact Mass: Molecular Weight: 1067.25	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

Oxytocin is a medication and hormone. As a medication, it is used to cause contraction of the uterus, which is used to start labor, increase the speed of labor, and to stop bleeding following delivery. It is used either by injection into a muscle or into a vein. Medical uses can result in excessive contraction of the uterus that can cause distress in an unborn baby. Common side effects in the mother include nausea and a slow heart rate. Oxytocin is normally produced in the hypothalamus and stored in the posterior pituitary gland. It plays a role in social bonding, sexual reproduction in both sexes, and during and after childbirth. It is released due to stretching of the cervix and uterus during labor and with stimulation of the nipples from breastfeeding.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	44	41.23
Water	50	46.85

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	0.94 mL	4.68 mL	9.37 mL
5 mM	0.19 mL	0.94 mL	1.87 mL
10 mM	0.09 mL	0.47 mL	0.94 mL
50 mM	0.02 mL	0.09 mL	0.19 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

Moore JJ, Dubyak GR, Moore RM, Vander Kooy D. Oxytocin activates the inositol-phospholipid-protein kinase-C system and stimulates prostaglandin production in human amnion cells. Endocrinology. 1988 Oct;123(4):1771-7. doi: 10.1210/endo-123-4-1771. PMID: 3138102.

In vivo study

Succu S, Sanna F, Cocco C, Melis T, Boi A, Ferri GL, Argiolas A, Melis MR. Oxytocin induces penile erection when injected into the ventral tegmental area of male rats: role of nitric oxide and cyclic GMP. Eur J Neurosci. 2008 Aug;28(4):813-21. doi: 10.1111/j.1460-9568.2008.06385.x. Epub 2008 Jul 30. PMID: 18671741.

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7. Bioactivity

Biological target:

Oxytocin is a mammalian neurohypophysial hormone, a ligand of oxytocin receptor.

In vitro activity

Oxytocin provoked 3-, 2.5-, and 4-fold increases in inositol triphosphate, inositol bisphosphate, and inositol monophosphate, respectively. [Ca2+]i, measured with the fluorescent dye fura-2, was stimulated by oxytocin and vasopressin (oxytocin greater than vasopressin) in a dose-dependent manner. The [Ca2+]i transient produced by oxytocin reached a peak in 15 sec, followed by a slow return to baseline over 10 min. Preincubation with phorbol 12-myristate-13 acetate (PMA) markedly blunted the oxytocin-induced transient. No [Ca2+]i transient was seen with leukotrienes, PG, serotonin, angiotensin, or alpha- or beta-adrenergic agents. PGE2 production increased 30- to 50-fold with phospholipase-C and PMA, and 10-fold with the calcium ionophore A23187. Oxytocin and vasopressin produced 10- and 3-fold PGE2 increases, respectively. Increased PGE2 production induced by PMA, oxytocin, and A23187 was first seen after 8 hr of incubation and reached maximal levels at 24 h. Minimal PGE2 stimulation occurred with agents that produced no [Ca2+]i transient. Direct activators of the inositol phospholipid-protein kinase-C system in human amnion induce large increases in PGE2 in human amnion cells. Oxytocin and vasopressin are hormonal activators of this system in these cells, as demonstrated by their effects on inositol phosphate turnover and [Ca2+]i. These hormones also increase PGE2 production and may influence labor by stimulating PGE2 production in amnion through the inositol phospholipid-protein kinase-C system.

Reference: Moore JJ, Dubyak GR, Moore RM, Vander Kooy D. Oxytocin activates the inositol-phospholipid-protein kinase-C system and stimulates prostaglandin production in human amnion cells. Endocrinology. 1988 Oct;123(4):1771-7. doi: 10.1210/endo-123-4-1771. PMID: 3138102.

In vivo activity

Immunohistochemistry reveals that in the caudal VTA oxytocin-containing axons/fibres (originating from the paraventricular nucleus of the hypothalamus) contact cell bodies of mesolimbic dopaminergic (tyrosine hydroxylase-positive) neurons containing both NO synthase and guanylate cyclase. These results suggest that oxytocin injected into the VTA induces penile erection by activating NO synthase in the cell bodies of mesolimbic dopaminergic neurons. NO in turn activates guanylate cyclase present in these neurons, thereby increasing cyclic GMP concentration.

Reference: Succu S, Sanna F, Cocco C, Melis T, Boi A, Ferri GL, Argiolas A, Melis MR. Oxytocin induces penile erection when injected into the ventral tegmental area of male rats: role of nitric oxide and cyclic GMP. Eur J Neurosci. 2008 Aug;28(4):813-21. doi: 10.1111/j.1460-9568.2008.06385.x. Epub 2008 Jul 30. PMID: 18671741.

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.