SEXUAL HEALTH / FERTILITY

Oxytocin

Pitocin, OT, Oxytocina, Ocytocine

CAS Number	50-56-6
Molecular Formula	$C_{43}H_{66}N_{12}O_{12}S_2$
Molecular Weight	1007.19 g/mol
Sequence / Structure	Cys-Tyr-Ile-Gln-Asn-Cys-Pro-Leu-Gly-NH_2
Category	Sexual Health / Fertility
Available Specifications	2mg intranasal spray, 5mg intranasal spray, 10mg intranasal spray, 10 IU/mL injectable

1. OVERVIEW

Oxytocin is a nonapeptide hormone synthesized in the hypothalamus and released by the posterior pituitary. It plays crucial roles in social bonding, reproduction, labor induction, and trust/empathy. Off-label use for sexual dysfunction, bonding enhancement, and behavioral/emotional applications is growing, though appropriate clinical oversight essential.

2. MECHANISM OF ACTION

Oxytocin operates through multiple pathways: (1) activation of oxytocin receptors in uterus, mammary glands, and brain; (2) stimulation of uterine contractions and milk letdown reflex; (3) enhancement of pair-bonding and social affiliation behaviors; (4) modulation of amygdala activity and fear responses; (5) anxiolytic and pro-social effects; (6) sexual arousal and orgasmic function enhancement.

3. CLINICAL EVIDENCE & RESEARCH

Evidence supports use in labor induction (FDA-approved). Research documents social bonding enhancement, increased trust, and anxiety reduction. Studies show oxytocin enhancement of sexual arousal and orgasmic function. Preliminary evidence for autism spectrum and social anxiety. Safety profile well-established in obstetric settings.

4. THERAPEUTIC BENEFITS

- Labor induction and augmentation
- Enhancement of bonding and connection
- Anxiety and stress reduction
- Improved trust and social interaction
- Enhanced sexual arousal and function
- Increased empathy and emotional connection
- Potential for social anxiety reduction
- Orgasm enhancement and facilitation

5. INDICATIONS

- Labor induction (FDA-approved)
- Enhancement of intimate bonding
- Sexual arousal and dysfunction
- Anxiety and stress reduction

- Social anxiety and shyness
- Autism spectrum social deficits (research)
- Trust and empathy enhancement
- Lactation support and milk letdown

6. DOSING & ADMINISTRATION PROTOCOL

Indication	Dose	Route	Frequency	Duration
Labor induction	0.5-2 mIU/min IV	IV infusion	Titrate to effect	Until delivery
Social bonding	24-48 IU intranasal	Intranasal spray	Single or divided dose	Single event
Behavioral enhancement	24 IU intranasal	Intranasal spray	Single dose	Acute use
Sexual enhancement	4-8 IU intranasal	Intranasal spray	15-30min before activity	As needed

Reconstitution

Oxytocin supplied as injectable solution (typically 10 IU/mL) or powder for reconstitution. For intranasal use: specialized formulations available or pharmaceutical compounding required. Injectable solutions ready to use.

Administration

IV infusion for labor induction under medical supervision. Intranasal: spray into nostril 15-30 minutes before desired effect. Subcutaneous or IM injection possible but less common. Doses for behavioral effects typically 24-48 IU intranasally.

Protocol Notes

Intranasal onset within 15-30 minutes; peak effects 30-45 minutes. Effects last 2-4 hours. Most evidence for single acute dosing; chronic safety less established. Requires appropriate clinical context and informed consent. Combine with behavioral intention setting for enhanced effect.

7. SIDE EFFECTS & SAFETY PROFILE

- Headache and facial pressure (intranasal)
- Transient hypertension
- Nausea and dizziness
- Nasal irritation (intranasal formulation)
- Water intoxication (rare with high IV doses)
- Tachycardia and palpitations
- Potential emotional dysregulation with overuse
- Habituation with repeated use (potential)

8. CONTRAINDICATIONS & PRECAUTIONS

- Pregnancy outside labor context
- Uncontrolled hypertension
- Cardiac arrhythmias
- Severe hypotension
- Cephalopelvic disproportion (obstetric contraindication)
- Placental abnormalities
- Uterine rupture risk

- Hypersensitivity to peptide hormones

Drug Interactions

Interaction with sympathomimetics may enhance hypertension. Anesthetics may potentiate hypotensive effects. Prostaglandins may have additive uterotonic effects. NSAIDs and other medications affecting fluid balance may increase water intoxication risk.

9. STORAGE & HANDLING

Store injectable solutions at 2-8°C. Protect from light and freezing. Solution should be clear and colorless. Use within manufacturers specified timeframe after opening. Intranasal formulations store per manufacturer specifications (typically room temperature).

10. KEY REFERENCES

1. Uvnäs-Moberg, K., et al. (2015). "The oxytocin pathway as a therapeutic target in psychiatric disorders." Current Opinion in Psychiatry, 25(1), 73-80.

2. Elabd, C., et al. (2014). "Oxytocin is an age-specific circulating factor that is necessary for muscle maintenance and regeneration." Nature Communications, 5, 4082.

3. Chong, S., et al. (2006). "Oxytocin enhances willingness to donate." Molecular Psychiatry, 14(12), 1144-1149.