**OXYTOCIN**

Oxytocin is a nonapeptide (nine amino acids) hormone secreted by the posterior pituitary.  Oxytocin produces action both peripherally and in the brain.  It is released in large amounts in females during childbirth, nipple stimulation, and breast feeding.  Oxytocin is released by males and females during orgasm and is considered by many to be the hormone of desire, social recognition and bonding.  Volumes of recent studies have shown that oxytocin plays a key role in maintaining other aspects of overall health.  Research confirms that adequate oxytocin is critical for normal cellular function in other organ systems.

Pharmacy can compounds oxytocin in an oral tablet, a sublingual tablet, or a cream.   Injectable oxytocin is available commercially.

*Sexual Function and Relationships*

Kreuder AK, Wassermann L, Wollseifer M, et al. [Oxytocin enhances the pain-relieving effects of social support in romantic couples](http://www.ncbi.nlm.nih.gov/pubmed/30152573).  *Hum Brain Mapp*, 2019; 40(1):242-251.

Algoe SB, Kurtz LE, Grewen K.  [Oxytocin and Social Bonds: The Role of Oxytocin in Perceptions of Romantic Partners' Bonding Behavior](http://www.ncbi.nlm.nih.gov/pubmed/28968183).  *Psychol Sci*, 2017; 28(12):1763-1772.

Scheele D, Wille A, Kendrick K, et al. [Oxytocin enhances brain reward system responses in men viewing the face of their female partner.](http://www.pnas.org/content/110/50/20308.abstract) *Proceedings of the National Academy of Sciences*, 2013; 110(50):20308-20313.

Schneiderman I, Zagoory-Sharon O, Leckman JF, Feldman R.  [Oxytocin during the initial stages of romantic attachment: relations to couples' interactive reciprocity](http://www.ncbi.nlm.nih.gov/pubmed/22281209).  *Psychoneuroendocrinology*, 2012; 37(8):1277-85

Magon N, Sanjay K. [The orgasmic history of oxytocin: Love, lust, and labor.](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3183515/) *Indian Journal of Endocrinology and Metabolism,* 2011; 15(7):156.

Burri A, Heinrichs M, Schedlowski M, Kruger TH. T[he Acute effects of intranasal oxytocin administration on endocrine and sexual function in males.](http://www.ncbi.nlm.nih.gov/pubmed/18375074) *Psychoneuroendocrinology, 2008;*33(5):591-600.

Kiss A, Mikkelsen JD. [Oxytocin--anatomy and functional assignments: a minireview.](http://www.ncbi.nlm.nih.gov/pubmed/16468232) *Endocr Regul*, 2005; 39(3):97-105.

Gimpl G, Fahrenholz F. [The oxytocin receptor system: structure, function, and regulation.](http://www.ncbi.nlm.nih.gov/pubmed/11274341) *Physiol Rev*, 2001; 81(2):629-83.

Liedtke R. [Hormone involved in reproduction may have role in the maintenance of relationships. BLTC Research.](http://www.oxytocin.org/oxytoc/index.html)website.  https://www.oxytocin.org/oxytoc/index.html. July 14, 1999. Accessed Janurary 24, 2019.

Fisher H. [Lust, attraction, and attachment in mammalian reproduction.](http://link.springer.com/article/10.1007/s12110-998-1010-5) *Hum Nat*, 1998; 9(1):23-52.

*Post Traumatic Stress Disorder*

Flanagan JC, Hand A, Jarnecke AM, et al.  [Effects of oxytocin on working memory and executive control system connectivity in posttraumatic stress disorder](http://www.ncbi.nlm.nih.gov/pubmed/30070567). *Exp Clin Psychopharmaco*l, 2018; 26(4):391-402.

Frijling J, Van Zuiden M, Koch S, et al.  [Efficacy of oxytocin administration early after psychotrauma in preventing the development of PTSD: study protocol of a randomized controlled trial.](http://www.ncbi.nlm.nih.gov/pubmed/24679046) *BMC Psychiatry*, 2014; 14(1):92.

Olff M, Koch S, Nawijn L, et al. [Social support, oxytocin, and PTSD.](http://www.ncbi.nlm.nih.gov/pubmed/25511718) *European Journal of Psychotraumatology*, 2014; 5:26513.

Koch S, Van Zuiden M, Nawijn L, et al. [Intranasal oxytocin as strategy for medication-enhanced psychotherapy of PTSD: Salience processing and fear inhibition processes.](http://www.sciencedirect.com/science/article/pii/S0306453013004344) *Psychoneuroendocrinology*, 2014; 40:242-256.

*Mood Disorders*

De Cagna F, Fusar-Poli L, Damiani S, et al. [The Role of Intranasal Oxytocin in Anxiety and Depressive Disorders: A Systematic Review of Randomized Controlled Trials](http://www.ncbi.nlm.nih.gov/pubmed/30690935).  *Clin Psychopharmacol Neurosci*, 2019; 17(1):1-11.

Bertsch K, Herpertz SC.  [Oxytocin and Borderline Personality Disorder](http://www.ncbi.nlm.nih.gov/pubmed/28812272).  *Curr Top Behav Neurosci*, 2018; 35:499-514.

Bosch OJ, Young LJ.  [Oxytocin and Social Relationships: From Attachment to Bond Disruption](http://www.ncbi.nlm.nih.gov/pubmed/28812266).  *Curr Top Behav Neurosci*, 2018; 35:97-117.

Grace SA, Rossell SL, Heinrichs M, Kordsachia C, Labuschagne I.[Oxytocin and brain activity in humans: A systematic review and coordinate-based meta-analysis of functional MRI studies](http://www.ncbi.nlm.nih.gov/pubmed/29879563).  *Psychoneuroendocrinology*, 2018; 96:6-24.

Jiang Y, Platt ML.  [Oxytocin and vasopressin flatten dominance hierarchy and enhance behavioral synchrony in part via anterior cingulate cortex](http://www.nature.com/articles/s41598-018-25607-1).  *Sci Rep*, 2018; 8(1):8201.

Kendrick KM, Guastella AJ, Becker B.  [Overview of Human Oxytocin Research](http://www.ncbi.nlm.nih.gov/pubmed/28864976).  *Curr Top Behav Neurosci*, 2018; 35:321-348.

Jones C, Barrera I, Brothers S, Ring R, Wahlestedt C.  [Oxytocin and social functioning](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5573563/).  *Dialogues Clin Neurosci,*2017; 19(2):193-201.

Sippel LM, Allington CE, Pietrzak RH, et al. [Oxytocin and Stress-related Disorders: Neurobiological Mechanisms and Treatment Opportunities](http://journals.sagepub.com/doi/10.1177/2470547016687996).  *Chronic Stress (Thousand Oaks)*, 2017;1.

Bürkner PC, Williams DR, Simmons TC, Woolley JD. [Intranasal Oxytocin May Improve High-Level Social Cognition in Schizophrenia, But Not Social Cognition or Neurocognition in General: A Multilevel Bayesian Meta-analysis](http://www.ncbi.nlm.nih.gov/pubmed/28586471).  *Schizophr Bull*, 2017; 43(6):1291-1303.

Feeser M, Fan Y, Weigand A, et al.[Oxytocin improves mentalizing - pronounced effects for individuals with attenuated ability to empathize](http://www.ncbi.nlm.nih.gov/pubmed/25638480).  *Psychoneuroendocrinology*, 2015; 53:223-32.

Herpertz S, Bertsch K. [A New Perspective on the Pathophysiology of Borderline Personality Disorder: A Model of the Role of Oxytocin.](http://www.ncbi.nlm.nih.gov/pubmed/26324303)*American Journal of Psychiatry*, 2015; 172(9), pp.840-851.

 Murgatroyd C, Peña C, Podda G, Nestler E, Nephew B. [Early life social stress induced changes in depression and anxiety associated neural pathways which are correlated with impaired maternal care.](http://www.sciencedirect.com/science/article/pii/S0143417915000530) *Neuropeptides*, 2015; 52:103-111.

McInnis O, McQuaid R, Matheson K, Anisman H. [The moderating role of an oxytocin receptor gene polymorphism in the relation between unsupportive social interactions and coping profiles: implications for depression.](http://www.ncbi.nlm.nih.gov/pubmed/26321972) *Frontiers in Psychology*, 2015; 6:1133.

McQuaid R, McInnis O, Abizaid A, Anisman H.[Making room for oxytocin in understanding depression.](http://www.ncbi.nlm.nih.gov/pubmed/25025656)*Neuroscience & Biobehavioral Reviews*, 2014; 45, pp.305-322.

Bertsch K, Gamer M, Schmidt B, et al. [Oxytocin and Reduction of Social Threat Hypersensitivity in Women With Borderline Personality Disorder.](http://htwww.ncbi.nlm.nih.gov/pubmed/23982273)*American Journal of Psychiatry*, 2013; 170(10):1169-1177.

Hamann S, Sloan P. [Oral naltrexone to enhance analgesia in patients receiving continuous int rathecal morphine for chronic pain: a randomized, double-blind, prospective pilot study.](http://www.ncbi.nlm.nih.gov/pubmed/18027539) *J Opioid Manag*, 2007; 3(3):137-144.

Domes G, Heinrichs M, Gläscher J, et al. [Oxytocin Attenuates Amygdala Responses to Emotional Faces Regardless of Valence.](http://www.ncbi.nlm.nih.gov/pubmed/17617382) *Biological Psychiatry*, 2007; 62(10):1187- 1190.

*Weight Loss and Obesity*

Ding C, Leow MK, Magkos F.  [Oxytocin in metabolic homeostasis: implications for obesity and diabetes management](http://www.ncbi.nlm.nih.gov/pubmed/30253045).  *Obes Rev*, 2019; 20(1):22-40.

Spetter MS, Hallschmid M.  [Current findings on the role of oxytocin in the regulation of food intake](http://www.ncbi.nlm.nih.gov/pubmed/28284882).  *Physiol Behav*, 2017; 176:31-39.

Olszewski PK, Klockars A, Levine AS.  [Oxytocin and potential benefits for obesity treatment](http://www.ncbi.nlm.nih.gov/pubmed/28590323). *Curr Opin Endocrinol Diabetes Obes*, 2017; 24(5):320-325.

Lawson EA.  [The effects of oxytocin on eating behaviour and metabolism in humans](http://www.ncbi.nlm.nih.gov/pubmed/28960210).  *Nat Rev Endocrinol*, 2017; 13(12):700-709.

Altirriba J, Pataky Z, Golay A, Rohner-Jeanrenaud F. [Oxytocin: metabolic effects and potential use for obesity treatment.](http://www.ncbi.nlm.nih.gov/pubmed/25799660)*Rev Med Suisse*, 2015; 14(11):97-100.

 Blevins J, Baskin D.  [Translational and therapeutic potential of oxytocin as an anti-obesity strategy: Insights from rodents, nonhuman primates and humans.](http://www.ncbi.nlm.nih.gov/pubmed/26013577)*Physiology & Behavior*, 2015; 152:438-449.

Cai D, and Purkayastha S.  [A new horizon: oxytocin as a novel therapeutic option for obesity and diabetes.](http://www.ncbi.nlm.nih.gov/pubmed/24159336) *Drug Discovery Today: Disease Mechanisms*, 2013; 10(1-2):e63-e68.

Blevins J, Ho J. [Role of oxytocin signaling in the regulation of body weight.](http://http/www.ncbi.nlm.nih.gov/pubmed/24065622) *Rev Endocr Metab Disord*, 2013; 14(4):311-329.

*Autism*

Cai Q, Feng L, Yap KZ.  [Systematic review and meta-analysis of reported adverse events of long-term intranasal oxytocintreatment for autism spectrum disorder](http://www.ncbi.nlm.nih.gov/pubmed/29232031).  *Psychiatry Clin Neurosci*, 2018; 72(3):140-151.

Quintana DS, Westlye LT, Hope S, et al. [Dose-dependent social-cognitive effects of intranasal oxytocin delivered with novel Breath Powered device in adults with autism spectrum disorder: a randomized placebo-controlled double-blind crossover trial](http://www.ncbi.nlm.nih.gov/pubmed/28534875).  *Transl Psychiatry*, 2017; 7(5):e1136.

Guastella A, Hickie I. [Oxytocin Treatment, Circuitry, and Autism: A Critical Review of the Literature Placing Oxytocin Into the Autism Context.](http://www.ncbi.nlm.nih.gov/pubmed/26257243) *Biological Psychiatry,* 2016; 79(3):234-242.

Auyeung B, Lombardo M, Heinrichs M, et al. [Oxytocin increases eye contact during a real-time, naturalistic social interaction in males with and without autism.](http://www.nature.com/articles/tp2014146) *Translational Psychiatry*, 2015; 5(2):507.

Li H, Shan L, Du L, Jay F.  [Research advances in the management of autism spectrum disorders in children.](http://www.ncbi.nlm.nih.gov/pubmed/26287360)*Zhongguo Dang Dai Er Ke Za Zhi*, 2015; 17(8):886-92.

Hollander E, Bartz J, Chaplin W, et al. [Oxytocin Increases Retention of Social Cognition in Autism](http://www.ncbi.nlm.nih.gov/pubmed/16904652)[.](http://http/www.ncbi.nlm.nih.gov/pubmed/16904652)*Biological Psychiatry*, 2007; 61(4):498-503.

*Addiction*

Moeini M, Omidi A, Sehat M, Banafshe HR.  [The Effects of Oxytocin on Withdrawal, Craving and Stress Response in Heroin-Dependent Patients: A Randomized, Double-Blind Clinical Trial](http://www.ncbi.nlm.nih.gov/pubmed/30630161). *Eur Addict Res,*2019; 25(1):41-47.

Nielsen S, Gowing L, Sabioni P, Le Foll B.  [Pharmacotherapies for cannabis dependence](http://www.ncbi.nlm.nih.gov/pubmed/30687936).  *Cochrane Database Syst Rev,* 2019; 1:CD008940.

Lin S, Lee L, Tsai H, et al.  [Association between Blood Level of Plasma Oxytocin and Novelty Seeking among Methadone-Maintained Heroin Users.](http://www.ncbi.nlm.nih.gov/pubmed/25871910)*Neuropsychobiology*, 2015; 71(2):65-69.

Zhou L, Sun W, Young A, et al.  [Oxytocin Reduces Cocaine Seeking and Reverses Chronic Cocaine-Induced Changes in Glutamate Receptor Function.](http://www.ncbi.nlm.nih.gov/pubmed/25539504) *International Journal of Neuropsychopharmacology*, 2014; 18(1):1093.

Rehme M, Hillemacher T, Heberlein A. [Comment on "Intranasal Oxytocin Blocks Alcohol Withdrawal in Human Subjects” by Pedersen and Colleagues](http://doi.org/10.1111/acer.12147). *Alcoholism: Clinical and Experimental Research*, 2013; 37(5):720-721.

McGregor I, Bowen M. [Breaking the loop: Oxytocin as a potential treatment for drug addiction.](http://www.ncbi.nlm.nih.gov/pubmed/22198308) *Hormones and Behavior*, 2012; 61(3):331-339.

*Pediatric*

Taylor A, Lee H, Buisman-Pijlman F. [Oxytocin treatment in pediatric populations.](http://www.ncbi.nlm.nih.gov/pubmed/25360094)  *Frontiers in Behavioral. Neuroscience*, 2014; 8:360.

 *Pain*

Kreuder AK, Wassermann L, Wollseifer M, et al. [Oxytocin enhances the pain-relieving effects of social support in romantic couples](http://www.ncbi.nlm.nih.gov/pubmed/30152573).  *Hum Brain Mapp*, 2019; 40(1):242-251.

 Tracy L, Georgiou-Karistianis N, Gibson S, Giummarra M. [Oxytocin and the modulation of pain experience: Implications for chronic pain management.](http://www.ncbi.nlm.nih.gov/pubmed/25956252) *Neuroscience & Biobehavioral Reviews*, 2015; 55:53-67.

Rash J, Aguirre-Camacho A, Campbell T. [Oxytocin and Pain](http://journals.lww.com/clinicalpain/Abstract/2014/05000/Oxytocin_and_Pain__A_Systematic_Review_and.10.aspx). *The Clinical Journal of Pain*, 2013; 30:453-462.

*Vaginal Atrophy*

Kallak TK, Uvnäs-Moberg K.  [Oxytocin stimulates cell proliferation in vaginal cell line Vk2E6E7](http://journals.sagepub.com/doi/full/10.1177/2053369117693148?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%3dpubmed).  *Post* *Reprod Health*, 2017; 23(1):6-12.

Al-Saqi SH, Jonasson AF, Naessén T, Uvnäs-Moberg K.  [Oxytocin improves cytological and histological profiles of vaginal atrophy in postmenopausal women](http://www.ncbi.nlm.nih.gov/pubmed/26883689).  *Post Reprod Health*, 2016; 22(1):25-33.

Al-Saqi SH, Uvnäs-Moberg K, Jonasson AF. [Intravaginally applied oxytocin improves post-menopausal vaginal atrophy.](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4566058/)  *Post Reprod Health*, 2015; 21(3):88-97.

Jonasson A, Edwall L, Uvnas-Moberg K. [Topical oxytocin reverses vaginal atrophy in postmenopausal women: a double-blind randomized pilot study.](http://www.ncbi.nlm.nih.gov/pubmed/22120944) *Menopause International*, 2011; 17(4):120-125.