

Capsaicin

Selected References:

- Chanda, S, et al. 2006. Developmental toxicity study of pure trans-capsaicin in rats and rabbits. *Int.J.Toxicol*; 25(3):205-217.
- Cooper RL, Cooper MM. 1993. Red pepper-induced dermatitis in breast-fed infants. *Dermatology*; 193:61-62.
- Cordell GA, Araujo OE. 1993. Capsaicin: identification, nomenclature, and pharmacotherapy. *Ann Pharmacother*; 27(3):330-336.
- Karlsen K, et al. 2021. Problematic use of capsaicin patches as pain relief during labour. *Moller AT. Ugeskr Laeger*; 183(19):V11200815.
- Kirby ML, et al. 1982. Effects of prenatal capsaicin treatment on fetal spontaneous activity, opiate receptor binding and acid phosphatases in the spinal cord. *Exp Neurol*; 76:298-308.
- Muralidhara, Narasimhamurthy K. 1988. Non-mutagenicity of capsaicin in albino mice. *Food Chem Toxicol*; 26:955-958.
- Murphy LM, et al. 2023. A pilot randomized control trial of topical capsaicin as adjunctive therapy for nausea and vomiting of pregnancy. *Am J Obstet Gynecol MFM*; 5(5):100997.
- Nance DM, et al. 1987 Neuroendocrine and behavioral effects of intrathecal capsaicin in adult female rats. *Brain Res Bull*; 18(1):109-114.
- No author. 2007. Final report on the safety assessment of capsicum annum extract, capsicum annum fruit extract, capsicum annum resin, capsicum annum fruit powder, capsicum frutescens fruit, capsicum frutescens fruit extract, capsicum frutescens resin, and capsaicin. *Int J Toxicol*; 26 Suppl 1:3-106.
- Oh SM, et al. 2025. High-dose 8% capsaicin patch in treatment of chronic neuropathic back pain in a pregnant woman: a case report. *Orthop Rev (Pavia)*; 17:140712.
- Perfumi M, Sparapassi L. 1999. Rat offspring treated prenatally with capsaicin do not show some of the irreversible effects induced by neonatal treatment with neurotoxin. *Pharmacol Toxicol*; 84:66-71.
- Traurig H, et al. 1984. The effects of neonatal capsaicin treatment on growth and subsequent reproductive function in the rat. *Naunyn Schmiedebergs Arch Pharmacol*; 327(3):254-259.
- Yuan LJ, et al. 2016. Capsaicin-containing chili improved postprandial hyperglycemia, hyperinsulinemia, and fasting lipid disorders in women with gestational diabetes mellitus and lowered the incidence of large-for-gestational-age newborns. *Clin Nutr*; 35(2):388-393.

Questions? Call 866.626.6847 | Text 855.999.3525 | Email or Chat at [MotherToBaby.org](https://www.MotherToBaby.org).

Disclaimer: MotherToBaby Fact Sheets are meant for general information purposes and should not replace the advice of your health care provider. MotherToBaby is a service of the non-profit Organization of Teratology Information Specialists (OTIS). Copyright by OTIS, February 1, 2026.

Capsaicin

Selected References:

- Al-Maawali A, et al. 2012. Taking angiotensin-converting enzyme inhibitors during pregnancy: is it safe? *Can Fam Physician*, 58(1):49-51.
- Bateman BT, et al. 2017. Angiotensin-converting enzyme inhibitors and the risk of congenital malformations. *Obstet Gynecol*, 129:174-184.
- Briggs GG. 2002. Drug effects on the fetus and breast-fed infant. *Clin Obstet Gynecol*, 45(1):6-21.
- Bullo M, et al. 2012. Pregnancy outcome following exposure to angiotensin-converting enzyme inhibitors or angiotensin receptor antagonists: a systematic review. *Hypertension*, 60(2):444-450.
- Cooper WO, et al. 2006. Major congenital malformations after first-trimester exposure to ACE Inhibitors. *The New England Journal of Medicine*, 354(23):2443-2451.
- De-Kun Li, et al. 2011. Maternal exposure to angiotensin converting enzyme inhibitors in the first trimester and risk of malformations in offspring: a retrospective cohort study. *BMJ*, 343:d5931
- Karthikeyan VJ, et al. 2011. Are angiotensin-converting enzyme inhibitors and angiotensin receptor blockers safe in pregnancy: a report of ninety-one pregnancies. *J Hypertens*, 29(2):396-369.
- Hoelzenbein M, et al. 2018. Increased rate of birth defects after first trimester use of angiotensin converting enzyme inhibitors – treatment or hypertension related? An observational cohort study. *Pregnancy Hypertens*, 13:65-71.
- National Heart, Lung and Blood Institute. Accessed May 2015. Available at: <http://www.nhlbi.nih.gov/health/resources/heart/hbp-pregnancy>
- Papadopoulou Z, et al. 2021. In Utero Exposure to Antihypertensive Medication during the First Trimester: Is the Risk Worth Taking?. *Acta Med Acad*, 50(3):372-381.
- Pucci M, et al. 2015. Angiotensin-converting enzyme inhibitors and angiotensin receptor blockers in women of childbearing age: risks versus benefits. *Expert Rev Clin Pharmacol*, 8(2):221-231.
- Quan A. 2006. Fetopathy associated with exposure to angiotensin converting enzyme inhibitors and angiotensin receptor antagonists. *Early Hum Dev*, 82(1):23-28.
- Ruys TP, et al. 2014. Cardiac medication during pregnancy, data from the ROPAC. *Int J Cardiol*, 177(1):124-128.
- Tabacova S, et al. 2003. Adverse pregnancy outcomes associated with maternal enalapril antihypertensive treatment. *Pharmacoepidemiol Drug Saf*, 12(8):633-646.
- Weber-Schoendorfer C, et al. 2020. Fetotoxic risk of AT1 blockers exceeds that of angiotensin-converting enzyme inhibitors: an observational study. *J Hypertens*, 38:133-41.

Questions? Call 866.626.6847 | Text 855.999.3525 | Email or Chat at [MotherToBaby.org](https://www.MotherToBaby.org).

Disclaimer: MotherToBaby Fact Sheets are meant for general information purposes and should not replace the advice of your health care provider. MotherToBaby is a service of the non-profit Organization of Teratology Information Specialists (OTIS). Copyright by OTIS, February 1, 2026.

Capsaicin

Selected References:

- Abhyankar A, et al. 2013. Meta-analysis: the impact of disease activity at conception on disease activity during pregnancy in patients with inflammatory bowel disease. *Aliment Pharmacol Ther*, 38(5):460-466.
- Afzali A. 2019. Update on Pregnancy in Patients With Inflammatory Bowel Disease. *Gastroenterol Hepatol (NY)*, 15(6):313-315. Andoh A, et al. 2021. Thiopurine pharmacogenomics and pregnancy in inflammatory bowel disease. *J Gastroenterol*, 56(10):881-890
- Avni Biron I, et al. 2023. Pregnancy Outcomes in a Cohort of Patients with Inflammatory Bowel Disease: Data from a Multidisciplinary Clinic in a Tertiary Center. *J Clin Med*, 12(12):4120.
- Ban L, et al. 2014. Limited risks of major congenital anomalies in children of mothers with IBD and effects of medications. *Gastroenterology*, 146(1):76-84.
- Darmadi D, et al. 2023. Inflammatory bowel disease (ulcerative colitis type) severity shows inverse correlation with semen parameter and testosterone levels. *Asian J Androl*, online ahead of print.
- Dominitz JA. 2002. Outcomes of infants born to mothers with inflammatory bowel disease: a population based cohort study. *Am J Gastroenterol*, 97(3):641-648.
- Donovan B & Spiel M. 2023. Inflammatory Bowel Disease in the Childbearing Adult and Newborn. *Neoreviews*, 24(1):10-23.
- Druvefors E, et al. 2022. Minor impact on fertility in men with inflammatory bowel disease: A National Cohort Study from Sweden. *Aliment Pharmacol Ther*, 56(2):292-300.
- Druvefors E, et al. 2023. Female and Male Fertility after Colectomy and Reconstructive Surgery in Inflammatory Bowel Disease: A National Cohort Study from Sweden. *J Crohns Colitis*, 17(10):1631-1638.
- Fabisiak N, et al. 2017. Fat-soluble Vitamin Deficiencies and Inflammatory Bowel Disease: Systematic Review and Meta-Analysis. *J Clin Gastroenterol*, 51(10):878-889.
- Friedman S, et al. 2025. The Consequences of Preterm Birth in the Children of Mothers with Inflammatory Bowel Disease: A Nationwide Cohort Study. *Inflamm Bowel Dis*. 31(9):2400-2407.
- Hirose M, et al. 2001. Active Crohn's disease with maternal vitamin K deficiency and fetal subdural hematoma. *Obstet Gynecol*, 98(5):919-921.
- Innocenti T, et al. 2022. Pregnancy outcomes in inflammatory bowel disease: Data from a large cohort survey. *Journal of digestive diseases*, 23(8-9):473-481.

- Kasper OO, et al. 2002. Ulcerative colitis: female fecundity before diagnosis, during disease, and after surgery compared with a population sample. *Gastroenterology*, 122:15-19.
- Killeen S, et al. 2017. Surgical management of complicated and medically refractory inflammatory bowel disease during pregnancy. *Colorectal Dis*, 19(2):123-138.
- Lee S, et al. 2018. Pregnant Women with Inflammatory Bowel Disease Are at Increased Risk of Vitamin D Insufficiency: A Cross-Sectional Study. *Journal of Crohn's & colitis*, 12(6):702-709.
- Leenhardt R, et al. 2019. Sexual health and fertility for individuals with inflammatory bowel disease. *World J Gastroenterol*, 25(36):5423-5433.
- Lever G, et al. 2022. Risk of Adverse Pregnancy Outcomes for Women with IBD in an Expert IBD Antenatal Clinic. *Journal of clinical medicine*, 11(10):2919.
- Mahadevan U & Matro R. 2015. Care of the Pregnant Patient With Inflammatory Bowel Disease. *Obstet Gynecol*, 126(2):401-412.
- Malhi G, et al. 2022. Risk Factors for Postpartum Disease Activity in Women With Inflammatory Bowel Disease: A Systematic Review and Meta-analysis. *Inflamm Bowel Dis*, 28(7):1090-1099.
- Maliszewska A, et al. 2017. Inflammatory bowel disease and pregnancy. *Ginekologia Polska*, 88(7):398-403.
- Marild K, et al. 2022. Histological remission in inflammatory bowel disease and risk of adverse pregnancy outcomes. A nationwide study. *E Clinical Medicine*, 53:101722.
- Moens A, et al. 2020. Pregnancy outcomes in inflammatory bowel disease patients treated with vedolizumab, anti-TNF or conventional therapy: results of the European CONCEIVE study. *Aliment Pharmacol Ther*, 51(1):129-138.
- Moffat D, et al. 2009. A population-based study of breastfeeding in inflammatory bowel disease: initiation, duration, and effect on disease in the postpartum period. *The Am J of Gastroenterol*, 104(10):2517-2523.
- Morales M, et al. 2000. Crohn's disease as a risk factor for the outcome of pregnancy. *Hepatogastroenterology*, 47:1595-1598.
- Norgard B, et al. 2000. Birth outcomes of women with ulcerative colitis: a nationwide Danish cohort study. *Am J Gastroenterol*, 95(11):3165-3170.
- Olendzki B, et al. 2023. Dietary Intake of Pregnant Women with and without Inflammatory Bowel Disease in the United States. *Nutrients*, 15(11):2464.
- O'Toole A, et al. 2015. Inflammatory Bowel Disease Increases Risk of Adverse Pregnancy Outcomes: A Meta-Analysis. *Dig Dis Sci*, 60(9):2750-2761.
- Palomba S, et al. 2014. Inflammatory bowel diseases and human reproduction: a comprehensive evidence-based review. *World J Gastroenterol*, 20(23):7123-7136.
- Pervez H, et al. 2019. The Impact of Inflammatory Bowel Disease on Pregnancy and the Fetus: A Literature Review. 11(9): e5648
- Restelini S, et al. 2020. Update on the Management of Inflammatory Bowel Disease during Pregnancy and Breastfeeding. *Digestion*, 8:1-16.
- Schmidt E, & Dubinsky MC. 2022. Inflammatory Bowel Disease and Pregnancy. *The American journal of gastroenterology*, 117(10S), 60-68.
- Sousa P, et al. 2024. Navigating Reproductive Care in Patients With Inflammatory Bowel Disease: A Comprehensive Review. *J Crohns Colitis*;18(Supplement_2):ii16-ii30.
- Szymańska E, et al. 2021. Reproduction and Pregnancy in Inflammatory Bowel Disease - Management and Treatment Based on Current Guidelines. *J Gynecol Obstet Hum Reprod*, 50(3):101777.
- Talavera JIR, et al. 2021. The association between ectopic pregnancy and inflammatory bowel disease, irritable bowel syndrome, and celiac disease: A systematic review. *J Obstet Gynaecol Res*, 47(5):1601-1609.
- Torres J, et al. 2023. European Crohn's and Colitis Guidelines on Sexuality, Fertility, Pregnancy, and Lactation. *J Crohns Colitis*, 17(1):1-27.
- Vestergaard T, et al. 2023. Predictors of disease activity during pregnancy in women with inflammatory bowel disease-a Danish cohort study. *Aliment Pharmacol Ther*, 57(3):335-344.
- Wolf JL. 2002. The impact of surgery for ulcerative colitis on fertility and sexual function in women.

Gastroenterology, 122(1):226-227.

- Winter R, et al. 2016. Treatment of the Pregnant Patient with Inflammatory Bowel Disease. *Inflamm Bowel Dis*, 22(3):733-744.

Questions? Call 866.626.6847 | Text 855.999.3525 | Email or Chat at [MotherToBaby.org](https://www.MotherToBaby.org).

Disclaimer: MotherToBaby Fact Sheets are meant for general information purposes and should not replace the advice of your health care provider. MotherToBaby is a service of the non-profit Organization of Teratology Information Specialists (OTIS). Copyright by OTIS, February 1, 2026.

Capsaicin

Selected References:

- Al Hasan S, et al. 2026. Prescription Stimulant Continuation in Pregnancy and Birth Outcomes. *J Atten Disord* 30(3):315-328.
- Aliakbari F, et al. 2022. Relationship between long-term use of Ritalin and semen parameters in patients referred to psychiatric centres. *First International Journal of Andrology*, 54(11):1-6.
- Baker AS, et al. 2018. Management of attention deficit hyperactivity disorder during pregnancy. *Obstet Gynecol Clin North Am*, 45(3):495-509.
- Bateman B, et. al. 2015. Attention deficit hyperactivity medications during pregnancy and the risk of congenital cardiac malformations: A cohort study, abstracts, 368. *Pharmacoepidemiol Drug Saf*, 24:1-587.
- Bello G, et al. 2022. Successful lactation after resuming methylphenidate in a woman with narcolepsy. *J Clin Sleep Med* 18:1891-1894.
- Besag F, 2014. ADHD treatment and pregnancy. *Drug Saf*, 37:397-408.
- Bolea-Alamanac B et. al. 2014. Methylphenidate use in pregnancy and lactation: a systematic review of evidence. *Br J of Clin Pharm*, 77(1):96-101.
- Briggs G, et. al. 2017. *Drugs in pregnancy and lactation: a reference guide to fetal and neonatal risk*. Tenth edition. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins Health.
- Bro SP, et. al. 2015. Adverse pregnancy outcomes after exposure to methylphenidate or atomoxetine during pregnancy. *Clinical Epi*, 7:139-147.
- Camacho X, et al. 2023. The association between psychostimulant use in pregnancy and adverse maternal and

neonatal outcomes: results from a distributed analysis in two similar jurisdictions. *Int J Epidemiol* 52(1):190-202.

- Cohen JM, et al. 2017. Placental complications associated with psychostimulant use in pregnancy. *Obstet Gynecol.* 130(6):1192-1201.
- Collin-Levesque L, et al. 2018. Infant exposure to methylphenidate and duloxetine during lactation: A case report. *Breastfeed Med* 13:221-225.
- Debooy, VD. 1993. Intravenous pentazocine and methylphenidate abuse during pregnancy. *Am J dis Child* 147(10):1062-1065.
- Diav-Citrin, O et. al. 2016. Methylphenidate in Pregnancy: A multicenter, prospective, comparative, observational study. *J Clin Psychiatry*, 77(9):1176-1181.
- Dideriksen D, et. al. 2013. First trimester in utero exposure to methylphenidate. *Basic and Clin Pharm and Tox*, 112:73-76.
- Golub M, et al. 2005. NTP CERHR Expert Panel Report on the reproductive and developmental toxicity of amphetamine and methamphetamine. *Birth Defects Res B Dev Reprod Toxicol*, 74(6):471-584.
- Hackett LP, et al. 2005. Infant dose and safety of breastfeeding for dexamphetamine and methylphenidate in mothers with attention deficit hyperactivity disorder. *Ther Drug Monit* 27:220-221.
- Hackett LP, et al. 2006. Methylphenidate and breast-feeding. *Ann Pharmacother* 40:1890-1891.
- Haervig KB, et. al. 2014. Use of ADHD medication during pregnancy from 1999-2010: a Danish register-based study. *Pharmacoepidemiol and Drug Saf*, 23:526-533.
- Humphreys C, et. al. 2007. Exposure to attention deficit hyperactivity disorder medications during pregnancy. *Can Fam Physician*, 53:1153-1155.
- Huybrechts KF, et al. 2018. Association between methylphenidate and amphetamine use in pregnancy and risk of congenital malformations: a cohort study from the International Pregnancy Safety Study Consortium. *JAMA Psychiatry*, 75(2):167-175.
- Ilett KF, et. al. 2006. Transfer of dexamphetamine into breast milk during treatment for attention deficit hyperactivity disorder. *Br J of Clin Pharm*, 63(3):371-375.
- Kallen B, et. al. 2013. The use of central nervous system active drugs during pregnancy. *Pharmaceuticals*, 6:1221-1286.
- Kim J, et al. 2025. Managing attention-deficit/hyperactivity disorder in a breastfeeding mother: A case report. *Pharmacotherapy* 45:529-534.
- Louik C, et. al. 2015. Increasing use of ADHD medications in pregnancy. *Pharmacoepidemiol Drug Saf*, 24(2):218-220.
- Madsen KB, et al. 2023. In utero exposure to ADHD medication and long-term offspring outcomes. *Mol Psychiatry*, 28(4):1739-1746.
- Madsen KB, et al. 2025. In utero exposure to methylphenidate, amphetamines and atomoxetine and offspring neurodevelopmental disorders – a population-based cohort study and meta-analysis. *Mol Psychiatry* 30(9): 3885-3894.
- Malo J et. al. 2015. ADHD drugs, pregnancy and lactation—increasing inquiries and need for more safety data. *Birth Def Res Pt A*, 103:458-464.
- Ornoy A, et al. 2020. The effects of drugs used for the treatment of attention deficit hyperactivity disorder (ADHD) on pregnancy outcome and breast feeding: a critical review. *Curr Neuropharmacol*, Online ahead of print.
- Pottegard A, et. al. 2014. First-trimester exposure to methylphenidate: a population-based cohort study. *J Clin Psychiatry*, 75(1):e88-93.
- Spigset O, et. al. 2007. Excretion of methylphenidate in breast milk. *Am J Psychiatry*, 164:348.
- Suarez, EA, et al. 2024. Prescription stimulant use during pregnancy and risk of neurodevelopmental disorders in children. *JAMA Psychiatry*, e235073.
- Szpunar MJ, et al. 2023. Risk of major malformations in infants after first-trimester exposure to stimulants. *J Clin Psychopharmacol*, 43:326-332.

- Upadhyaya HP, et al. 2003. Neuroendocrine and behavioral responses to dopaminergic agonists in adolescents with alcohol abuse. *Psychopharmacology (Berl)* 166:95-101.
- Wajnberg R, et. al. 2011. Pregnancy outcome after in-utero exposure to methylphenidate: a prospective comparative cohort study. *Repro Tox*, 31:255-268.

Questions? Call 866.626.6847 | Text 855.999.3525 | Email or Chat at [MotherToBaby.org](https://www.MotherToBaby.org).

Disclaimer: MotherToBaby Fact Sheets are meant for general information purposes and should not replace the advice of your health care provider. MotherToBaby is a service of the non-profit Organization of Teratology Information Specialists (OTIS). Copyright by OTIS, February 1, 2026.

Capsaicin

Selected References:

- Diav-Citrin et al. 2003. Pregnancy outcome after gestational exposure to loratadine or antihistamines: a prospective controlled cohort study. *J Allergy Clin Immunol* 111(6):1239-1243.
- Gilboa SM, et al. 2009. National Birth Defects Prevention Study: Use of antihistamine medications during early pregnancy and isolated major malformations. *Birth Defects Res A Clin Mol Teratol* 85(2):137-150.
- Gilboa SM, et al. 2014. Antihistamines and birth defects: a systematic review of the literature. *Expert Opin Drug Saf* 13(12): 1667-1698.
- Gonzalez-Estrada A et al. 2016. Allergy medications during pregnancy. *American J Med Sci* 352(3):326-331.
- Hilbert J, et al. 1988. Excretion of loratadine in human breast milk. *J Clin Pharmacol* 28:234-239.
- Kallen, B. 2005. Methodologic issues in the epidemiologic study of the teratogenicity of drugs. *Congenit Anom (Kyoto)* 45: 44-51.
- Kallen B, Otterblad Olausson P. 2001. Monitoring of maternal drug use and infant congenital malformations. Does loratadine cause hypospadias? *Int J Risk Saf Med* 14(3-4):115-119.
- Kallen B, Otterblad Olausson P. 2006. No increased risk of infant hypospadias after maternal use of loratadine in early pregnancy. *Int M Med Sci* 3(3):106-107.
- Keles N. 2004. Treatment of allergic rhinitis during pregnancy. *Am J Rhinol* 18(1):23-28.
- Li Q, et al. 2013. Assessment of antihistamine use in early pregnancy and birth defects. *J Allergy Clin Immunol Pract.* 1(6):666-74.e1.

- Med Lett Drugs Ther. 2019. OTC drugs for seasonal allergies; 61(1570):57-60.
- Merlob P, Stahl B. 2002. Prospective follow-up of adverse reactions in breast-fed infants exposed to loratadine treatment (1999-2001). BENTIS Newsletter Number 10: 43-51.
- Moretti M, et al. 2003. Fetal safety of loratadine use in the first trimester of pregnancy: A multicenter study. J Allergy Clin Immunol. 111(3) 479-483.
- Pedersen L, et al. 2006b. Maternal use of loratadine during pregnancy and risk of hypospadias in offspring. Int J Med Sci 3(1) 21-25.
- Schwarz EB et al. 2008. Risk of hypospadias in offspring of women using loratadine during pregnancy: a systematic review and meta-analysis. Drug Saf 31(9):775-788.
- Werler M, et al. 2004. Evaluation of an association between loratadine and hypospadias - United States, 1997-2001. MMWR 53(10):219-221.

Questions? Call 866.626.6847 | Text 855.999.3525 | Email or Chat at [MotherToBaby.org](https://www.MotherToBaby.org).

Disclaimer: MotherToBaby Fact Sheets are meant for general information purposes and should not replace the advice of your health care provider. MotherToBaby is a service of the non-profit Organization of Teratology Information Specialists (OTIS). Copyright by OTIS, February 1, 2026.