References - (BPA) in foodstuffs – Reproductive and Developmental Toxicity

In this guide

Acevedo N, Rubin BS, Schaeberle CM and Soto AM, 2018. Perinatal BPA exposure and reproductive axis function in CD-1 mice. Reproductive Toxicology, 79, 39–46. https://doi.org/10.1016/j.reprotox.2018.05.002.

Arbuckle TE, Agarwal A, MacPherson SH, Fraser WD, Sathyanarayana S, Ramsay T, Dodds L, Muckle G, Fisher M, Foster W, Walker M and Monnier P, 2018. Prenatal exposure to phthalates and phenols and infant endocrine-sensitive outcomes: The MIREC study. Environment International, 120, 572–583. https://doi.org/10.1016/j.envint.2018.08.034.

Auger J, Le Denmat D, Berges R, Doridot L, Salmon B, Canivenc-Lavier MC and Eustache F, 2013. Environmental levels of oestrogenic and antiandrogenic compounds feminize digit ratios in male rats and their unexposed male progeny. Proceedings of the Royal Society of London. Series B, 280(1768), 8.

Bae J, Kim S, Kannan K and Buck Louis GM, 2015. Couples' urinary bisphenol A and phthalate metabolite concentrations and the secondary sex ratio. Environmental Research, 137, 450–457. https://doi.org/10.1016%2Fj.envres.2014.11.011.

Bansal R and Zoeller RT, 2019. CLARITY-BPA: Bisphenol A or propylthiouracil on thyroid function and effects in the developing male and female rat brain. Endocrinology, 160(8), 1771–1785. https://doi.org/10.1210/en.2019-00121.

Barrett ES, Sathyanarayana S, Mbowe O, Thurston SW, Redmon JB, Nguyen RHN and Swan SH, 2017. First-trimester urinary bisphenol A concentration in relation to anogenital distance, an androgen- sensitive measure of reproductive development, in infant girls. Environmental Health Perspectives, 125(7), 077008.

Berger A, Ziv-Gal A, Cudiamat J, Wang W, Zhou CQ and Flaws JA, 2016. The effects of in utero bisphenol A exposure on the ovaries in multiple generations of mice. Reproductive Toxicology, 60, 39–52. https://doi.org/10.1016/j.reprotox.2015.12.004.

Berger K, Eskenazi B, Kogut K, Parra K, Lustig RH, Greenspan LC, Holland N, Calafat AM, Ye X and Harley KG, 2018. Association of Prenatal Urinary Concentrations of Phthalates and Bisphenol A and pubertal timing in boys and girls. Environmental Health Perspectives, 126(9), 97004. https://doi.org/10.1289/EHP3424.

Bernardo BD, Brandt JZ, Grassi TF, Silveira LTR, Scarano WR and Barbisan LF, 2015. Genistein reduces the noxious effects of in utero bisphenol A exposure on the rat prostate gland at weaning and in adulthood. Food and Chemical Toxicology, 84, 64–73. https://doi.org/10.1016/j.fct.2015.07.011.

Binder AM, Corvalan C, Pereira A, Calafat AM, Ye X, Shepherd J and Michels KB, 2018. Pre-pubertal and pubertal endocrine disrupting chemicals exposure and breast density among Chilean adolescents. Cancer Epidemiology, Biomarkers and Prevention, 1491–1499. https://doi.org/10.1158/1055-9965.epi-17-0813.

Birks L, Casas M, Garcia AM, Alexander J, Barros H, Bergström A, Bonde JP, Burdorf A, Costet N, Danileviciute A, Eggesbø M, Fernández MF, González-Galarzo MC, Regina Gražulevičienė, Hanke W, Jaddoe V, Kogevinas M, Kull I, Lertxundi A, Melaki V, Andersen AN, Olea N, Polanska K, Rusconi F, Santa-Marina L, Santos AC, Vrijkotte T, Zugna D, Nieuwenhuijsen M, Cordier S and Vrijheid M, 2016. Occupational exposure to endocrine-disrupting chemicals and BW and length of gestation: A European meta-analysis. Environmental Health Perspectives, 124(11), 1785–1793.

Bodin J, Bølling AK, Becher R, Kuper F, Løvik M and Nygaard UC, 2014. Transmaternal bisphenol A exposure accelerates diabetes Type 1 development in NOD mice. Toxicological Sciences, 137(2), 311–323. https://doi.org/10.1093/toxsci/kft242.

Boudalia S, Berges R, Chabanet C, Folia M, Decocq L, Pasquis B, Abdennebi-Najar L and Canivenc-Lavier MC, 2014. A multi-generational study on low-dose BPA exposure in Wistar rats: Effects on maternal behavior, flavor intake and development. Neurotoxicology and Teratology, 41, 16–26. https://doi.org/10.1016/j.ntt.2013.11.002.

Brandt JZ, Silveira LTR, Grassi TF, Anselmo-Franci JA, Fávaro WJ, Felisbino SL, Barbisan LF and Scarano WR, 2014. Indole-3-carbinol attenuates the deleterious gestational effects of bisphenol A exposure on the prostate gland of male F1 rats. Reproductive Toxicology, 43, 56–66. https://doi.org/10.1016/j.reprotox.2013.11.001.

Brouard V, Guénon I, Bouraima-Lelong H and Delalande C, 2016. Differential effects of bisphenol A and estradiol on rat spermatogenesis’ establishment. Reproductive Toxicology, 63, 49–61. https://doi.org/10.1016/j.reprotox.2016.05.003.

Buck Louis GM, Sundaram R, Sweeney AM, Schisterman EF, Maisog J and Kannan K, 2014. Urinary bisphenol A, phthalates, and couple fecundity: The Longitudinal Investigation of Fertility and the Environment (LIFE) Study. Fertility and Sterility, 101(5), 1359–1366. https://doi.org/10.1016/j.fertnstert.2014.01.022.

Buck Louis GM, Smarr MM, Sun LP, Chen Z, Honda M, Wang W, Karthikraj R, Weck J and Kannan K, 2018. Endocrine disrupting chemicals in seminal plasma and couple fecundity. Environmental Research, 163, 64–70. https://doi.org/10.1016/j.envres.2018.01.028.

Burstyn I, Martin JW, Beesoon S, Bamforth F, Li QZ, Yasui Y and Cherry NM, 2013. Maternal exposure to bisphenol-A and fetal growth restriction: A case-referent study. International Journal of Environmental 12706 Research and Public Health, 10(12), 7001–7014. https://doi.org/10.3390/ijerph10127001.

Camacho L, Lewis SM, Vanlandingham MM, Olson GR, Davis KJ, Patton R, Twaddle NC, Doerge DR, Churchwell MI, Bryant MS, Mclellen FM, Woodling K, Felton RP, Maisha MP, Juliar BE, Gamboa da Costa G and Delclos KB, 2019. NTP CLARITY-BPA report (2018). A two-year toxicology study of bisphenol A (BPA) in Sprague-Dawley rats: CLARITY-BPA core study results. Food and Chemical Toxicology, 132. https://doi.org/10.1016/j.fct.2019.110728.

Cantonwine DE, Ferguson KK, Mukherjee B, McElrath TF and Meeker JD, 2015. Urinary bisphenol A levels during pregnancy and risk of preterm birth. Environmental Health Perspectives, 123(9), 895–901. https://doi.org/10.1289/ehp.1408126.

Cantonwine DE, Meeker JD, Ferguson KK, Mukherjee B, Hauser R and McElrath TF, 2016. Urinary concentrations of bisphenol A and phthalate metabolites measured during pregnancy and risk of preeclampsia. Environmental Health Perspectives, 124(10), 1651–1655. https://doi.org/10.1289/EHP188.

Cao YM, Qu XL, Ming Z, Yao YR and Zhang YZ, 2018. The correlation between exposure to BPA and the decrease of the ovarian reserve. International Journal of Clinical and Experimental Pathology, 11(7), 12753 3375–3382.

Casas M, Valvi D, Ballesteros-Gomez A, Gascon M, Fernández MF, Garcia-Esteban R, Iñiguez C, Martínez D, Murcia M, Monfort N, Luque N, Rubio S, Ventura R, Sunyer J and Vrijheid M, 2016. Exposure to bisphenol A and phthalates during pregnancy and ultrasound measures of fetal growth in the INMA- Sabadell cohort. Environmental Health Perspectives, 124(4), 521–528. https://doi.org/10.1016/j.envres.2015.07.024.

Castro B, Sánchez P, Torres JM and Ortega E, 2018. Effects of perinatal exposure to bisphenol A on the intraprostatic levels of aromatase and 5α-reductase isozymes in juvenile rats. Food and Chemical Toxicology, 115, 20–25. https://doi.org/10.1016/j.fct.2018.02.060.

Chavarro JE, Mínguez-Alarcón L, Chiu YH, Gaskins AJ, Souter I, Williams PL, Calafat AM, Hauser R and EARTH Study Team, 2016. Soy intake modifies the relation between urinary bisphenol A concentrations and pregnancy outcomes among women undergoing assisted reproduction. Journal of Clinical Endocrinology and Metabolism, 101(3), 1082–1090. https://doi.org/10.1210/jc.2015-3473.

Chin HB, Jukic AM, Wilcox AJ, Weinberg CR, Ferguson KK, Calafat AM, McConnaughey DR and Baird DD, 2019. Association of urinary concentrations of phthalate metabolites and bisphenol A with early pregnancy endpoints. Environmental Research, 168, 254–260. https://doi.org/10.1016/j.envres.2018.09.037.

Chouhan S, Yadav SK, Prakash J, Westfall S, Ghosh A, Agarwal NK and Singh SP, 2015. Increase in the expression of inducible nitric oxide synthase on exposure to bisphenol A: A possible cause for decline in steroidogenesis in male mice. Environmental Toxicology and Pharmacology, 39(1), 405–416. https://doi.org/10.1016/j.etap.2014.09.014.

Dere E, Anderson LM, Huse SM, Spade DJ, McDonnell-Clark E, Madnick SJ, Hall SJ, Camacho L, Lewis SM, Vanlandingham MM and Boekelheide K, 2018. Effects of continuous bisphenol A exposure from early gestation on 90 day old rat testes function and sperm molecular profiles: A CLARITY-BPA consortium study. Toxicology and Applied Pharmacology, 347, 1–9. https://doi.org/10.1016/j.taap.2018.03.021.

Dobrzyńska MM, Gajowik A, Radzikowska J, Tyrkiel EJ and Jankowska-Steifer EA, 2015. Male-mediated F1 effects in mice exposed to bisphenol A, either alone or in combination with X-irradiation. Mutation Research/Genetic Toxicology and Environmental Mutagenesis, 789–790, 36–45. https://doi.org/10.1016/j.mrgentox.2015.06.015

Dobrzyńska MM, Gajowik A, Jankowska-Steifer EA, Radzikowska J and Tyrkiel EJ, 2018. Reproductive and developmental F1 toxicity following exposure of pubescent F0 male mice to bisphenol A alone and in a combination with X-rays irradiation. Toxicology, 142–151. https://doi.org/10.1016/j.tox.2018.10.007.

Dodge LE, Williams PL, Williams MA, Missmer SA, Toth TL, Calafat AM and Hauser R, 2015. Paternal urinary concentrations of parabens and other phenols in relation to reproductive outcomes among couples from a fertility clinic. Environmental Health Perspectives, 123(7), 665–671. https://doi.org/10.1289/ehp.1408605.

Ferguson KK, Meeker JD, Cantonwine DE, Chen YH, Mukherjee B and McElrath TF, 2016b. Urinary phthalate metabolite and bisphenol A associations with ultrasound and delivery indices of fetal growth. Environment International, 94, 531–537. https://doi.org/10.1016%2Fj.envint.2016.06.013.

Ferguson SA, Law CD and Kissling GE, 2014. Developmental treatment with ethinyl estradiol, but not bisphenol A, causes alterations in sexually dimorphic behaviors in male and female Sprague Dawley rats. Toxicological Sciences, 140(2), 374–392. https://doi.org/10.1093/toxsci/kfu077.

Franssen D, Gérard A, Hennuy B, Donneau AF, Bourguignon JP and Parent AS, 2016. Delayed neuroendocrine sexual maturation in female rats after a very low dose of bisphenol A through altered GABAergic neurotransmission and opposing effects of a high dose. Endocrinology, 157(5), 1740–1750. https://doi.org/10.1210/en.2015-1937.

Ganesan S and Keating AF, 2016. Bisphenol A-induced ovotoxicity involves DNA damage induction to which the ovary mounts a protective response indicated by increased expression of proteinS involved in DNA repair and xenobiotic biotransformation. Toxicological Sciences, 152(1), 169–180. https://doi.org/10.1093/toxsci/kfw076.

Gao GZ, Zhao Y, Li HX and Li W, 2018. Bisphenol A-elicited miR-146a-5p impairs murine testicular steroidogenesis through negative regulation of Mta3 signaling. Biochemical and Biophysical Research Communications, 501(2), 478–485. https://doi.org/10.1016/j.bbrc.2018.05.017.

Goldstone AE, Chen Z, Perry MJ, Kannan K and Louis GM, 2015. Urinary bisphenol A and semen quality, the LIFE Study. Reproductive Toxicology, 51, 7–13. https://doi.org/10.1016/j.reprotox.2014.11.003.

Gonzalez-Cadavid NF, 2019. Cellular-molecular signature and mechanism of BPA effects on penile erection – CLARITY-BPA grantee study results. https://doi.org/10.22427/NTP-DATA-018-00009-0001-000-9.

Grassi TF, da Silva GN, Bidinotto LT, Rossi BF, Quinalha MM, Kass L, Muñoz-de-Toro M and Barbisan LF, 2016. Global gene expression and morphological alterations in the mammary gland after gestational exposure to bisphenol A, genistein and indole-3-carbinol in female Sprague-Dawley offspring. Toxicology and Applied Pharmacology, 303, 101–109. https://doi.org/10.1016/j.taap.2016.05.004.

Guignard D, Gayrard V, Lacroix MZ, Puel S, Picard-Hagen N and Viguié C, 2017. Evidence for bisphenol A- induced disruption of maternal thyroid homeostasis in the pregnant ewe at low level representative of human exposure. Chemosphere, 182, 458–467. https://doi.org/10.1016/j.chemosphere.2017.05.028.

Gurmeet KSS, Rosnah I, Normadiah MK, Das S and Mustafa AM, 2014. Detrimental effects of bisphenol A on development and functions of the male reproductive system in experimental rats. Excli Journal, 13,151–160.

Hass U, Christiansen S, Boberg J, Rasmussen MG, Mandrup K and Axelstad M, 2016. Low-dose effect of developmental bisphenol A exposure on sperm count and behaviour in rats. Andrology, 4(4), 594–607. https://doi.org/10.1111/andr.12176.

Hu Y, Yuan DZ, Wu Y, Yu LL, Xu LZ, Yue LM, Liu L, Xu WM, Qiao XY, Zeng RJ, Yang ZL, Yin WY, Ma YX 13401 and Nie Y, 2018. Bisphenol A initiates excessive premature activation of primordial follicles in mouse ovaries via the PTEN signalling pathway. Reproductive Sciences, 25(4), 609–620. https://doi.org/10.1177/1933719117734700.

Huang DY, Zheng CC, Pan Q, Wu SS, Su X, Li L, Wu JH and Sun ZY, 2018. Oral exposure of low-dose bisphenol A promotes proliferation of dorsolateral prostate and induces epithelial-mesenchymal transition in aged rats. Scientific Reports, 8(1), 490. https://doi.org/10.1038/s41598-017-18869-8.

Huang YF, Pan WC, Tsai YA, Chang CH, Chen PJ, Shao YS, Tsai MS, Hou JW, Lu CA and Chen ML, 2017a. Concurrent exposures to nonylphenol, bisphenol A, phthalates, and organophosphate pesticides on birth outcomes: A cohort study in Taipei, Taiwan. Science of the Total Environment, 607–608, 1126–1135. https://doi.org/10.1016/j.scitotenv.2017.07.092.

Johnson SA, Javurek AB, Painter MS, Ellersieck MR, Welsh TH, Camacho L, Lewis SM, Vanlandingham MM, Ferguson SA and Rosenfeld CS, 2016. Effects of developmental exposure to bisphenol A on spatial navigational learning and memory in rats: A CLARITY-BPA study. Hormones and Behavior, 80, 139–148. https://doi.org/10.1016/j.yhbeh.2015.09.005.

Jukic AM, Calafat AM, McConnaughey DR, Longnecker MP, Hoppin JA, Weinberg CR, Wilcox AJ and Baird DD, 2016. Urinary concentrations of phthalate metabolites and bisphenol A and associations with follicular-phase length, luteal-phase length, fecundability, and early pregnancy loss. Environmental Health Perspectives, 124(3), 321–328. doi:10.1289/ehp.1408164. https://doi.org/10.1289/ehp.1408164.

Kalb AC, Kalb AL, Cardoso TF, Fernandes CG, Corcini CD, Varela Junior AS and Martínez PE, 2016. Maternal transfer of bisphenol A during nursing causes sperm impairment in male offspring. Archives of Environmental Contamination and Toxicology, 70(4), 793–801. doi.org/10.1007/s00244-015-0199-7. Maternal Transfer of Bisphenol A During Nursing Causes Sperm Impairment in Male Offspring | SpringerLink.

Kasper-Sonnenberg M, Wittsiepe J, Wald K, Koch HM and Wilhelm M, 2017. Pre-pubertal exposure with phthalates and bisphenol A and pubertal development. PLoS ONE, 12(11), e0187922. https://doi.org/10.1371/journal.pone.0187922.

Kass L, Durando M, Altamirano GA, Manfroni-Ghibaudo GE, Luque EH and Muñoz-de-Toro M, 2015. Prenatal bisphenol A exposure delays the development of the male rat mammary gland. Reproductive Toxicology, 54, 37–46. https://doi.org/10.1016/j.reprotox.2014.02.001.

Kendziorski JA and Belcher SM, 2015. Strain-specific induction of endometrial periglandular fibrosis in mice exposed during adulthood to the endocrine disrupting chemical bisphenol A. Reproductive Toxicology, 58, 119–130. https://doi.org/10.1016/j.reprotox.2015.08.00.

Lathi RB, Liebert CA, Brookfield KF, Taylor JA, vom Saal FS, Fujimoto VY and Baker VL, 2014. Conjugated bisphenol A in maternal serum in relation to miscarriage risk. Fertility and Sterility, 102(1), 123–128. https://doi.org/10.1016/j.fertnstert.2014.03.024.

Leclerc F, Dubois MF and Aris A, 2014. Maternal, placental and fetal exposure to bisphenol A in women with and without preeclampsia. Hypertension in Pregnancy, 33(3), 341–348. https://doi.org/10.3109/10641955.2014.892607.

Lee HA, Kim YJ, Lee H, Gwak HS, Park EA, Cho SJ, Kim HS, Ha EH and Park H, 2013. Effect of urinary bisphenol A on androgenic hormones and insulin resistance in preadolescent girls: A pilot study from the Ewha birth & growth cohort. International Journal of Environmental Research and Public Health, 10(11), 5737–5749. https://doi.org/10.3390/ijerph10115737.

Lee YM, Hong YC, Ha M, Kim Y, Park H, Kim HS and Ha EH, 2018. Prenatal bisphenol-A exposure affects fetal length growth by maternal glutathione transferase polymorphisms, and neonatal exposure affects child volume growth by sex: From multiregional prospective birth cohort MOCEH study. Science of the Total Environment, 612, 1433–1441. https://doi.org/10.1016/j.scitotenv.2017.08.317.

Lejonklou MH, Christiansen S, Örberg J, Shen L, Larsson S, Boberg J, Hass U and Lind PM, 2016. Low-dose developmental exposure to bisphenol A alters the femoral bone geometry in Wistar rats. Chemosphere 164, 339–346. https://doi.org/10.1016/j.chemosphere.2016.08.114.

Lester F, Arbuckle TE, Peng Y and McIsaac MA, 2018. Impact of exposure to phenols during early pregnancy on birth weight in two Canadian cohort studies subject to measurement errors. Environment International 120, 231–237. https://doi.org/10.1016/j.envint.2018.08.005.

Leung YK, Govindarajah V, Cheong A, Veevers J, Song D, Gear R, Zhu XG, Ying J, Kendler A, Medvedovic M, Belcher S and Ho SM, 2017. Gestational high-fat diet and bisphenol A exposure heightens mammary cancer risk. Endocrine-Related Cancer 24(7), 365–378. https://doi.org/10.1530/erc-17-0006.

Leung YK, Biesiada J, Govindarajah V, Ying J, Kendler A, Medvedovic M and Ho SM, 2020. Low-dose bisphenol A in a rat model of endometrial cancer: A CLARITY-BPA study. Environmental Health Perspectives 128(12) https://doi.org/10.1289/EHP6875.

Li QX, Davila J, Kannan A, Flaws JA, Bagchi MK and Bagchi IC, 2016. Chronic exposure to bisphenol A affects uterine function during early pregnancy in mice. Endocrinology 157(5), 1764–1774. https://doi.org/10.1210/en.2015-2031.

Lind T, Lejonklou MH, Dunder L, Rasmusson A, Larsson S, Melhus H and Lind PM, 2017. Low-dose developmental exposure to bisphenol A induces sex-specific effects in bone of Fischer 344 rat offspring. Environmental Research 159, 61–68. https://doi.org/10.1016/j.envres.2017.07.020.

Mahalingam S, Ther L, Gao LY, Wang W, Ziv-Gal A and Flaws JA, 2017. The effects of in utero bisphenol A exposure on ovarian follicle numbers and steroidogenesis in the F1 and F2 generations of mice. Reproductive Toxicology, 74, 150–157. https://doi.org/10.1016/j.reprotox.2016.09.013.

Mandrup K, Boberg J, Isling LK, Christiansen S and Hass U, 2016. Low-dose effects of bisphenol A on mammary gland development in rats. Andrology, 4(4), 673–683. https://doi.org/10.1111/andr.12193.

Martinez AM, Cheong A, Ying J, Xue JC, Kannan K, Leung YK, Thomas MA and Ho SM, 2015. Effects of high-butterfat diet on embryo implantation in female rats exposed to bisphenol A. Biology of Reproduction, 93(6), 147. https://doi.org/10.1095/biolreprod.115.131433.

Meng Y, Lin R, Wu F, Sun Q and Jia L, 2018. Decreased capacity for sperm production induced by perinatal bisphenol A exposure is associated with an increased inflammatory response in the offspring of C57BL/6 male mice. International Journal of Environmental Research and Public Health, 15(10). https://doi.org/10.3390/ijerph15102158.

Mínguez-Alarcón L, Gaskins AJ, Chiu YH, Williams PL, Ehrlich S, Chavarro JE, Petrozza JC, Ford JB, Calafat AM, Hauser R and EARTH Study Team, 2015. Urinary bisphenol A concentrations and association with in vitro fertilization outcomes among women from a fertility clinic. Human Reproduction, 30(9), 2120– 2128. https://doi.org/10.1093/humrep/dev183.

Mínguez-Alarcón L, Gaskins AJ, Chiu YH, Souter I, Williams PL, Calafat AM, Hauser R, Chavarro JE and EARTH Study team, 2016. Dietary folate intake and modification of the association of urinary bisphenol A concentrations with in vitro fertilization outcomes among women from a fertility clinic. Reproductive Toxicology, 65, 104–112. https://doi.org/10.1016/j.reprotox.2016.07.012.

Montévil M, Acevedo N, Schaeberle CM, Bharadwaj M, Fenton SE and Soto AM, 2020. A combined morphometric and statistical approach to assess nonmonotonicity in the developing mammary gland of rats in the CLARITY-BPA study. Environmental Health Perspectives, 128(5), 57001. https://doi.org/10.1289/ehp6301.

Moore-Ambriz TR, Acuña-Hernández DG, Ramos-Robles B, Sánchez-Gutiérrez M, Santacruz-Márquez R, Sierra-Santoyo A, Piña-Guzmán B, Shibayama M and Hernández-Ochoa I, 2015. Exposure to bisphenol A in young adult mice does not alter ovulation but does alter the fertilization ability of oocytes. Toxicology and Applied Pharmacology, 289(3), 507–514. https://doi.org/10.1016/j.taap.2015.10.010.

Mustieles V, Williams PL, Fernandez MF, Mínguez-Alarcón L, Ford JB, Calafat AM, Hauser R, Messerlian C and Environment and Reproductive Health (EARTH) Study

Team, 2018. Maternal and paternal preconception exposure to bisphenols and size at birth. Human Reproduction, 1528–1537. https://doi.org/10.1093/humrep/dey234.

NTP CLARITY-BPA report (2018). A two-year toxicology study of bisphenol A (BPA) in Sprague-Dawley rats: CLARITY-BPA core study results. Food and Chemical Toxicology, 132. 12728. https://doi.org/10.1016/j.fct.2019.110728.

Ogo FM, Lion Siervo GEM, Staurengo-Ferrari L, Oliveira Mendes L, Luchetta NR, Vieira HR, Fattori V and Verri WA, Jr, 2018. S and W. RF. Ogo FM, de Lion Siervo GEM, Staurengo-Ferrari L, de Oliveira Mendes L, Luchetta NR, Vieira HR, Fattori V, Verri WA, Scarano WR and Fernandes GSA, 2018. Bisphenol A exposure impairs epididymal development during the peripubertal period of rats: Inflammatory profile and tissue changes. Basic and Clinical Pharmacology and Toxicology, 122(2), 262–270. https://doi.org/10.1111/bcpt.12894.

Olukole SG, Ajani SO, Ola-Davies EO, Lanipekun DO, Aina OO, Oyeyemi MO and Oke BO, 2018. Melatonin ameliorates bisphenol A-induced perturbations of the prostate gland of adult Wistar rats. Biomedicine and Pharmacotherapy, 105, 73–82. https://doi.org/10.1016/j.biopha.2017.05.125.

Park B, Kwon JE, Cho SM, Kim CW, Lee DE, Koo YT, Lee SH, Lee HM and Kang SC, 2018. Protective effect of Lespedeza cuneata ethanol extract on bisphenol A-induced testicular dysfunction in vivo and in vitro. Biomedicine and Pharmacotherapy, 102, 76–85. https://doi.org/10.1016/j.biopha.2018.03.045.

Patel BB, Raad M, Sebag IA and Chalifour LE, 2013. Lifelong exposure to bisphenol A alters cardiac structure/function, protein expression, and DNA methylation in adult mice. Toxicological Sciences, 133(1), 174–185. https://doi.org/10.1093/toxsci/kft026.

Pinney SE, Mesaros CA, Snyder NW, Busch CM, Xiao R, Aijaz S, Ijaz N, Blair IA and Manson JM, 2017. Second trimester amniotic fluid bisphenol A concentration is associated with decreased birth weight in term infants. Reproductive Toxicology, 67, 1–9. https://doi.org/10.1016/j.reprotox.2016.11.007.

Philippat C, Botton J, Calafat AM, Ye XY, Charles MA, Slama R and EDEN Study Group, 2014. Prenatal exposure to phenols and growth in boys. Epidemiology, 25(5), 625–635. https://doi.org/10.1097/ede.0000000000000132.

Pollack AZ, Mumford SL, Krall JR, Carmichael AE, Sjaarda LA, Perkins NJ, Kannan K and Schisterman EF, 2018. Exposure to bisphenol A, chlorophenols, benzophenones, and parabens in relation to reproductive 1hormones in healthy women: A chemical mixture approach. Environment International, 120, 137–144. https://doi.org/10.1016/j.envint.2018.07.028.

Prins GS, Ye SH, Birch L, Zhang X, Cheong A, Lin H, Calderon-Gierszal E, Groen J, Hu WY, Ho SM and van Breemen RB, 2017. Prostate cancer risk and DNA methylation signatures in aging rats following developmental BPA exposure: a dose–response analysis. Environmental Health Perspectives, 125(7), 077007. https://doi.org/10.1289/EHP1050.

Prins GS, Hu WY, Xie L, Shi GB, Hu DP, Birch L and Bosland MC, 2018. Evaluation of bisphenol A (BPA) exposures on prostate stem cell homeostasis and prostate cancer Risk in the NCTR-Sprague-Dawley rat: An NIEHS/FDA CLARITY-BPA consortium study. Environmental Health Perspectives, 126(11), 117001. https://doi.org/10.1289/EHP3953.

Quan C, Wang C, Duan P, Huang W and Yang KD, 2017. Prenatal bisphenol A exposure leads to reproductive hazards on male offspring via the Akt/mTOR and mitochondrial apoptosis pathways. Environmental Toxicology, 32(3), 1007–1023. https://doi.org/10.1002/tox.22300.

Radko L, Minta M, Jasik A, Stypuła-Trębas S and Żmudzki J, 2015. Usefulness of immature golden hamster (Mesocricetus auratus) as a model for uterotrophic assay. Bulletin of the Veterinary Institute in Pulawy, 59(4), 533–540. https://doi.org/10.1515/bvip-2015-0080.

Rahman MS, Kwon WS, Karmakar PC, Yoon SJ, Ryu BY and Pang MG, 2017. Gestational exposure to bisphenol A affects the function and proteome profile of F1 spermatozoa in adult mice. Environmental Health Perspectives, 125(2), 238–245. https://doi.org/10.1289/EHP378.

Rashid H, Sharma S, Beigh S, Ahmad F and Raisuddin S, 2018. Bisphenol A-induced endocrine toxicity and male Reprotoxicopathy are modulated by the dietary iron deficiency. Endocrine, Metabolic and Immune Disorders Drug Targets, 18(6), 626–636. https://doi.org/10.2174/1871530318666180521095443.

Santamaría C, Durando M, Muñoz de Toro MM, Luque EH and Rodriguez HA, 2016. Ovarian dysfunctions in adult female rat offspring born to mothers perinatally exposed to low doses of bisphenol A. Journal of Steroid Biochemistry and Molecular Biology, 158, 220–230. https://doi.org/10.1016/j.jsbmb.2015.11.016.

Santamaría CG, Rodriguez HA, Abud JE, Rivera OE, Muñoz-de-Toro M and Luque EH, 2017. Impaired ovarian response to exogenous gonadotropins in female rat offspring born to mothers perinatally exposed to bisphenol A. Reproductive Toxicology, 73, 259–268. https://doi.org/10.1016/j.reprotox.2017.06.050.

Shi M, Sekulovski N, MacLean JA and Hayashi K, 2018. Prenatal exposure to bisphenol A analogues on male reproductive functions in mice. Toxicological Sciences, 163(2), 620–631. https://doi.org/10.1093/toxsci/kfy061.

Smarr MM, Grantz KL, Sundaram R, Maisog JM, Kannan K and Buck Louis GM, 2015. Parental urinary biomarkers of preconception exposure to bisphenol A and phthalates in relation to birth outcomes. Environmental Health, 14, 11. doi:10.1186/s12940-015-0060-5. Parental urinary biomarkers of preconception exposure to bisphenol A and phthalates in relation to birth outcomes | Environmental Health | Full Text (biomedcentral.com).

Soleimani Mehranjani MS and Mansoori T, 2016. Stereological study on the effect of vitamin C in preventing the adverse effects of bisphenol A on rat ovary. International Journal of Reproductive Biomedicine, 14496 14(6), 403–410. doi:10.29252/ijrm.14.6.403. World Journal of Diabetes - Baishideng Publishing Group (wjgnet.com).

Souter I, Smith KW, Dimitriadis I, Ehrlich S, Williams PL, Calafat AM and Hauser R, 2013. The association of bisphenol-A urinary concentrations with antral follicle counts and other measures of ovarian reserve in women undergoing infertility treatments. Reproductive Toxicology, 42, 224–231. https://doi.org/10.1016/j.reprotox.2013.09.008.

Spörndly-Nees E, Boberg J, Ekstedt E, Holm L, Fakhrzadeh A, Dunder L, Kushnir MM, Lejonklou MH and Lind PM, 2018. Low-dose exposure to bisphenol A during development has limited effects on male reproduction in midpubertal and aging Fischer 344 rats. Reproductive Toxicology, 81, 196–206. https://doi.org/10.1016/j.reprotox.2018.08.007.

Srivastava S and Gupta P, 2018. Alteration in apoptotic rate of testicular cells and sperms following administration of bisphenol A (BPA) in Wistar albino rats. Environmental Science and Pollution Research International, 25(22), 21635–21643 doi:10.1007/s11356-018-2229. Alteration in apoptotic rate of testicular cells and sperms following administration of Bisphenol A (BPA) in Wistar albino rats | SpringerLink

Sun X, Li D, Liang H, Miao M, Song X, Wang Z, Zhou Z and Yuan W, 2018. Maternal exposure to bisphenol A and anogenital distance throughout infancy: A longitudinal study from Shanghai, China. Environment International, 121(1), 269–275. https://doi.org/10.1016/j.envint.2018.08.055.

Tarapore P, Hennessy M, Song D, Ying J, Ouyang B, Govindarajah V, Leung YK and Ho SM, 2017. High butter-fat diet and bisphenol A additively impair male rat spermatogenesis. Reproductive Toxicology, 68, 191–199. https://doi.org/10.1016/j.reprotox.2016.09.008.

Thilagavathi S, Pugalendhi P, Rajakumar T and Vasudevan K, 2017. Monotonic dose effect of bisphenol-A, an estrogenic endocrine disruptor, on estrogen synthesis in female Sprague-Dawley rats. Indian Journal of Clinical Biochemistry, 1–10. Monotonic Dose Effect of Bisphenol-A, an Estrogenic Endocrine Disruptor, on Estrogen Synthesis in Female Sprague-Dawley Rats | SpringerLink

Tucker DK, Hayes Bouknight SH, Brar SS, Kissling GE and Fenton SE, 2018. Evaluation of prenatal exposure to bisphenol analogues on development and long-term health of the mammary gland in female mice. Environmental Health Perspectives, 126(8), 087003. https://doi.org/10.1289/EHP3189.

Ullah A, Pirzada M, Jahan S, Ullah H, Shaheen G, Rehman H, Siddiqui MF and Butt MA, 2018a. Bisphenol A and its analogs bisphenol B, bisphenol F, and bisphenol S: Comparative in vitro and in vivo studies on the sperms and testicular tissues of rats. Chemosphere, 209, 508–516. https://doi.org/10.1177/0748233719831528.

Ullah A, Pirzada M, Jahan S, Ullah H, Turi N, Ullah W, Siddiqui MF, Zakria M, Lodhi KZ and Khan MM, 2018b. Impact of low-dose chronic exposure to bisphenol A and its analogue bisphenol B, bisphenol F and bisphenol S on hypothalamo-pituitary-testicular activities in adult rats: A focus on the possible hormonal mode of action. Food and Chemical Toxicology, 121, 24–36. https://doi.org/10.1016/j.fct.2018.08.024.

van Esterik JCJ, Dollé MET, Lamoree MH, van Leeuwen SPJ, Hamers T, Legler J and van der Ven LTM, 2014. Programming of metabolic effects in C57BL/6JxFVB mice by exposure to bisphenol A during gestation and lactation. Toxicology, 321, 40–52. https://doi.org/10.1016/j.tox.2014.04.001.

Veiga-Lopez A, Kannan K, Liao CY, Ye W, Domino SE and Padmanabhan V, 2015. Gender-specific effects on gestational length and birth weight by early pregnancy BPA exposure. Journal of Clinical Endocrinology and Metabolism, 100(11), E1394–E1403. https://doi.org/10.1210/jc.2015-1724.

Vigezzi L, Bosquiazzo VL, Kass L, Ramos JG, Muñoz-de-Toro M and Luque EH, 2015. Developmental exposure to bisphenol A alters the differentiation and functional response of the adult rat uterus to estrogen treatment. Reproductive Toxicology, 52, 83–92. https://doi.org/10.1016/j.reprotox.2015.01.011.

Vijaykumar T, Singh D, Vanage GR, Dhumal RV and Dighe VD, 2017. Bisphenol A-induced ultrastructural changes in the testes of common marmoset. Indian Journal of Medical Research, 146(1), 126–137. https://doi.org/10.4103/ijmr.ijmr_927_15.

Wang B, Zhou W, Zhu WT, Chen L, Wang WY, Tian Y, Shen LS, Zhang J and Shanghai Birth Cohort Study, 2018. Associations of female exposure to bisphenol A with fecundability: Evidence from a preconception cohort study. Environment International, 117, 139–145. https://doi.org/10.1016/j.envint.2018.05.003.

Wang C, Li ZH, Han HJ, Luo GY, Zhou BR, Wang SL and Wang JD, 2016. Impairment of object recognition memory by maternal bisphenol A exposure is associated with inhibition of Akt and ERK/CREB/BDNF pathway in the male offspring hippocampus. Toxicology, 341–343, 56–64. https://doi.org/10.1016/j.tox.2016.01.010.

Wang HF, Liu M, Li N, Luo T, Zheng LP and Zeng XH, 2016. Bisphenol A impairs mature sperm functions by a CatSper-relevant mechanism. Toxicological Sciences, 152(1), 145–154. https://doi.org/10.1093/toxsci/kfw070.

Wang W, Hafner KS and Flaws JA, 2014. In utero bisphenol A exposure disrupts germ cell nest breakdown and reduces fertility with age in the mouse. Toxicology and Applied Pharmacology, 276(2), 157–164. https://doi.org/10.1016/j.taap.2014.02.009.

Watkins DJ, Téllez-Rojo MM, Ferguson KK, Lee JM, Solano-Gonzalez M, Blank-Goldenberg C, Peterson KE and Meeker JD, 2014. In utero and peripubertal exposure to phthalates and BPA in relation to female sexual maturation. Environmental Research, 134, 233–241. https://doi.org/10.1016%2Fj.envres.2014.08.010.

Watkins DJ, Sánchez BN, Téllez-Rojo MM, Lee JM, Mercado-García A, Blank-Goldenberg C, Peterson KE and Meeker JD, 2017a. Impact of phthalate and BPA exposure during in utero windows of susceptibility on reproductive hormones and sexual maturation in peripubertal males. Environmental Health: A Global Access Science Source, 16(1), 69. https://doi.org/10.1186/s12940-017-0278-5.

Watkins DJ, Sánchez BN, Téllez-Rojo MM, Lee JM, Mercado-García A, Blank-Goldenberg C, Peterson KE and Meeker JD, 2017b. Phthalate and bisphenol A exposure during in utero windows of susceptibility in relation to reproductive hormones and pubertal development in girls. Environmental Research, 159, 143–151. https://doi.org/10.1016/j.envres.2017.07.051.

Weinberger B, Vetrano AM, Archer FE, Marcella SW, Buckley B, Wartenberg D, Robson MG, Klim J, Azhar S, Cavin S, Wang L and Rich DQ, 2014. Effects of maternal exposure to phthalates and bisphenol A during pregnancy on gestational age. Journal of Maternal-Fetal and Neonatal Medicine, 27(4), 323–327. https://doi.org/10.3109/14767058.2013.815718.

Wolff MS, Teitelbaum SL, McGovern K, Pinney SM, Windham GC, Galvez M, Pajak A, Rybak M, Calafat AM, Kushi LH, Biro FM and Breast Cancer and Environment Research Program, 2015. Environmental phenols and pubertal development in girls. Environment International, 84, 174–180. [PDF] Environmental phenols and pubertal development in girlsbyundefined · 10.1016/j.envint.2015.08.008 · Citationsy.

Wolff MS, Pajak A, Pinney SM, Windham GC, Galvez M, Rybak M, Silva MJ, Ye X, Calafat AM, Kushi LH, Biro FM, Teitelbaum SL and Breast Cancer and Environment Research Program, 2017. Associations of urinary phthalate and phenol biomarkers with menarche in a multiethnic cohort of young girls. Reproductive Toxicology, 67, 56–64. https://doi.org/10.1016/j.reprotox.2016.11.009.

Woods MM, Lanphear BP, Braun JM and McCandless LC, 2017. Gestational exposure to endocrine disrupting chemicals in relation to infant birth weight: A Bayesian analysis of the HOME Study. Environmental Health: A Global Access Science Source, 16(1), 115. https://doi.org/10.1186/s12940-017-0332-3.

Wu JH, Huang DY, Su X, Yan H and Sun ZY, 2016. Oral administration of low-dose bisphenol A promotes proliferation of ventral prostate and upregulates prostaglandin D-2 synthase expression in adult rats. Toxicology and Industrial Health, 32(11), 1848–1858. https://doi.org/10.1177/0748233715590758.

Xie MN, Bu PL, Li FJ, Lan SJ, Wu HJ, Yuan L and Wang Y, 2016. Neonatal bisphenol A exposure induces meiotic arrest and apoptosis of spermatogenic cells. Oncotarget, 7(9), 10606–10615. doi:10.18632/oncotarget.7218. https://doi.org/10.18632/oncotarget.7218.

Xu XH, Dong FN, Yang YL, Wang Y, Wang R and Shen XY, 2015. Sex-specific effects of long-term exposure to bisphenol-A on anxiety- and depression-like behaviors in adult mice. Chemosphere, 120, 258–266. https://doi.org/10.1016/j.chemosphere.2014.07.021.

Ye YZ, Zhou QJ, Feng LP, Wu JN, Xiong Y and Li XT, 2017. Maternal serum bisphenol A levels and risk of pre-eclampsia: A nested case-control study. European Journal of Public Health, 27(6), 1102–1107. doi:10.1093/eurpub/ckx148. Maternal serum bisphenol A levels and risk of pre-eclampsia: a nested case-control study - PubMed (nih.gov).

Yin L, Dai YL, Cui ZH, Jiang X, Liu WB, Han F, Lin A, Cao J and Liu JY, 2017. The regulation of cellular apoptosis by the ROS-triggered PERK/EIF2a chop pathway plays a vital role in bisphenol A-induced male reproductive toxicity. Toxicology and Applied Pharmacology, 314, 98–108. doi:10.1016/j.taap.2016.11.013 The regulation of cellular apoptosis by the ROS-triggered PERK/EIF2α/chop pathway plays a vital role in bisphenol A-induced male reproductive toxicity (researchgate.net).

Yuan M, Hu M, Lou Y, Wang Q, Mao L, Zhan Q and Jin F, 2018. Environmentally relevant levels of bisphenol A affect uterine decidualization and embryo implantation through the estrogen receptor/serum and glucocorticoid-regulated kinase 1/epithelial sodium ion channel alpha-subunit pathway in a mouse model. Fertility and Sterility, 109(4), 735–744 https://doi.org/10.1016/j.fertnstert.2017.12.003.

Zaid SSM, Othman S and Kassim NM, 2014. Potential protective effect of Tualang honey on BPA-induced ovarian toxicity in prepubertal rat. BMC Complementary and Alternative Medicine, 14(1), 509 doi:10.1186/1472-6882-14-509 https://doi.org/10.1186/1472-6882-14-509.

Zhang J, Zhang XC, Li YN, Zhou ZZ, Wu CL, Liu ZY, Hao LX, Fan SS, Jiang F, Xie Y and Jiang L, 2017. Low dose of bisphenol A enhance the susceptibility of thyroid carcinoma stimulated by DHPN and iodine excess in F344 rats. Oncotarget, 8(41), 69874–69887 doi:10.18632/oncotarget.1943 (PDF) Low dose of Bisphenol A enhance the susceptibility of thyroid carcinoma stimulated by DHPN and iodine excess in F344 rats (researchgate.net).

Ziv-Gal A, Wang W, Zhou CQ and Flaws JA, 2015. The effects of in utero bisphenol A exposure on reproductive capacity in several generations of mice. Toxicology and Applied Pharmacology, 284(3), 354–362. https://doi.org/10.1016/j.taap.2015.03.003.