

DAFTAR PUSTAKA

- Adams, J., Carder, P.J., Downey, S., Forbes, M.A., MacLennan, K., Allgar, V., Kaufman, S., Hallam, S., Bicknell, R., Walker, J.J. and Cairnduff, F., 2000. Vascular endothelial growth factor (VEGF) in breast cancer: comparison of plasma, serum, and tissue VEGF and microvessel density and effects of tamoxifen. *Cancer Research*, 60(11), pp.2898-2905.
- Adiyanti, S., Utoro, T., & Soejono, S. (2007). Change of Endometrium Receptivity in Estrous Phase of Rattus norvegicus after curcumin treatment: Study of Endometrium Thickness and Angiogenesis Capability. *Journal of Japanese Obstetrics and Gynecology*, 59(2).
- Akbari, S., Kariznavi, E., Jannati, M., Elyasi, S., & Tayarani-Najaran, Z. (2020). Curcumin as a preventive or therapeutic measure for chemotherapy and radiotherapy induced adverse reaction: A comprehensive review. *Food and Chemical Toxicology* (Vol. 145). Elsevier Ltd. <https://doi.org/10.1016/j.fct.2020.111699>
- Alfer, J., Happel, L., Dittrich, R., Beckmann, M.W., Hartmann, A., Gaumann, A., Buck, V.U. and Classen-Linke, I., 2017. Insufficient angiogenesis: cause of abnormally thin endometrium in subfertile patients?. *Geburtshilfe und Frauenheilkunde*, 77(07), pp.756-764.
- Ambegaokar, S.S., Wu, L., Alamshahi, K., Lau, J., Jazayeri, L., Chan, S., Khanna, P., Hsieh, E. and Timiras, P.S., 2003. Curcumin inhibits dose-dependently and time-dependently neuroglial cell proliferation and growth. *Neuroendocrinology Letters*, 24(6), pp.469-469.
- Apgar BS, Greenberg G. Using progestins in clinical practice. *Am Fam Physician*. 2000 Oct 15;62(8):1839-46, 1849-50. PMID: 11057840.
- Aplin, J. D., & Ruane, P. T. (2017). Embryo-epithelium interactions during implantation at a glance. *Journal of Cell Science*, 130(1), 15–22. <https://doi.org/10.1242/jcs.175943>
- Appendino, G., Belcaro, G., Cornelli, U., Luzzi, R., Togni, S., Dugall, M., Cesarone, M. R., Feragalli, B., Ippolito, E., Errichi, B. M., Pellegrini, L., Ledda, A., Ricci, A., Bavera, P., Hosoi, M., Stuart, S., Corsi, M., Errichi, S., & Gizzi, G. (2011). Potential role of curcumin phytosome (Meriva) in controlling the evolution of diabetic microangiopathy. A pilot study. *Panminerva Med*; 53 (Suppl. 1 to No. 3):43-9.
- Arablou, T., & Kolahdouz-Mohammadi, R. (2018). Curcumin and endometriosis: Review on potential roles and molecular mechanisms. *Biomedicine and*

Pharmacotherapy (Vol. 97, pp. 91–97). Elsevier Masson SAS.
<https://doi.org/10.1016/j.biopha.2017.10.119>.

Arruvito, L., Giulianelli, S., Flores, A.C., Paladino, N., Barboza, M., Lanari, C. and Fainboim, L., 2008. NK cells expressing a progesterone receptor are susceptible to progesterone-induced apoptosis. *The Journal of Immunology*, 180(8), pp.5746–5753.

Attig, A., Jalil, J., Husain, K. and Ahmad, W., 2018. Raging the war against inflammation with natural products. *Frontiers in pharmacology*, 9, p.976.

Bachmeier, B. E., Mirisola, V., Romeo, F., Generoso, L., Esposito, A., Dell, R., Blengio, F., Killian, P. H., Albini, A., Pfeffer, U., & Beatrice Bachmeier, P. E. (2010). Estrogen-like Transcriptional Activity of Curcumin. *Original Paper Cell Physiol Biochem* (Vol. 26). www.karger.comwww.karger.com/cpb

Baker, F.C. and Driver, H.S., 2007. Circadian rhythms, sleep, and the menstrual cycle. *Sleep medicine*, 8(6), pp.613–622.

Basnet, P. and Skalko-Basnet, N. 2011. Curcumin: An anti-inflammatory molecule from a curry spice on the path to cancer treatment. *Molecules* 16, 4567–4598.

Bjornstrom, L. and Sjoberg, M., 2005. Mechanisms of estrogen receptor signaling: convergence of genomic and nongenomic actions on target genes. *Molecular endocrinology*, 19(4), pp.833–842.

Brosens, I., Brosens, J.J., Benagiano, G., 2012. The eutopic endometrium in endometriosis: Are the changes of clinical significance? *Reprod Biomed Online*.
<https://doi.org/10.1016/j.rbmo.2012.01.022>

Busman, H., Sutyarso, Farisi, S., Fukrapti, Fahrumnisa, A.R., 2022. Turmeric Rhizome's Extract Reduce Epithelium Cells and Endometrium Layer Thickness of Female Rats. *Biomedical and Pharmacology Journal* 15, 299–304.
<https://doi.org/10.13005/bpj/2367>

Cable J.K, Grider M.H. Physiology, Progesterone. [Updated 2023 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK558960/>

Cao, H., Wei, Y. X., Zhou, Q., Zhang, Y., Guo, X. P., & Zhang, J. (2017). Inhibitory effect of curcumin in human Endometriosis endometrial cells via downregulation of Vascular endothelial growth factor. *Molecular Medicine Reports*, 16(4), 5611–5617. <https://doi.org/10.3892/mmr.2017.7250>

Cha, J., Sun, X., & Dey, S. K. (2012). Mechanisms of implantation: Strategies for successful pregnancy. *Nature Medicine*, 18(12), 1754–1767.
<https://doi.org/10.1038/nm.3012>

- Chantalat, E., Valera, M. C., Vaysse, C., Noirrit, E., Rusidze, M., Weyl, A., Vergriete, K., Buscail, E., Lluet, P., Fontaine, C., Arnal, J. F., & Lenfant, F. (2020). Estrogen receptors and endometriosis. *International Journal of Molecular Sciences* (Vol. 21, Issue 8). MDPI AG. <https://doi.org/10.3390/ijms21082815>
- Chen, J. J., Wang, Y., Meng, X., Ruan, Y. C., Zou, F., & Chan, H. C. (2017). MRP4 regulates ENaC-dependent CREB/COX-2/PGE2 signaling during embryo implantation. *Oncotarget*, 8(45), 78520–78529. <https://doi.org/10.18632/oncotarget.19676>
- Chen, X., Man, G. C. W., Liu, Y., Wu, F., Huang, J., Li, T. C., & Wang, C. C. (2017). Physiological and pathological angiogenesis in endometrium at the time of embryo implantation. *American Journal of Reproductive Immunology*, 78(2), 1–7. <https://doi.org/10.1111/aji.12693>
- Condon J.C., Hardy D.B., Kovaric K., Mendelson C.R. 2006. Up-regulation of the progesterone receptor C isoform in laboring myometrium by activation of nuclear factor B may contribute to the onset of labor through inhibition of PR function. *Mol Endocrinol*; **20**: 764– 75.
- Conneely, O.M., Mulac-Jericevic, B., Lydon, J.P. and De Mayo, F.J., 2001. Reproductive functions of the progesterone receptor isoforms: lessons from knock-out mice. *Molecular and cellular endocrinology*, 179(1-2), pp.97-103.
- Conneely, O.M., Mulac-Jericevic, B., Lydon, J.P. and De Mayo, F.J., 2001. Reproductive functions of the progesterone receptor isoforms: lessons from knock-out mice. *Molecular and cellular endocrinology*, 179(1-2), pp.97-103.
- Cora, M. C., Kooistra, L., & Travlos, G. (2015). Vaginal Cytology of the Laboratory Rat and Mouse: Review and Criteria for the Staging of the Estrous Cycle Using Stained Vaginal Smears. *Toxicologic Pathology*, 43(6), 776–793. <https://doi.org/10.1177/0192623315570339>
- Couse J.F., Yates M.M., Deroo B.J. & Korach K.S. 2005. Estrogen receptor-beta is critical to granulosa cell differentiation and the ovulatory response to gonadotropins. *Endocrinology* **146** 3247–3262. (doi:10.1210/en.2005-0213)
- Critchley, H. O. D., Maybin, J. A., Armstrong, G. M., & Williams, A. R. W. (2020). Physiology of the endometrium and regulation of menstruation. *Physiological Reviews*, 100(3), 1149–1179. <https://doi.org/10.1152/physrev.00031.2019>
- Da Costa E Silva, R. D. C. P., De Oliveira Moura, K. K. V., Ribeiro Junior, C. L., & Guillo, L. A. (2016). Estrogen signaling in the proliferative endometrium: Implications in endometriosis. *Revista Da Associacao Medica Brasileira*, 62(1), 72–77. <https://doi.org/10.1590/1806-9282.62.01.72>

- Dahlman-Wright K., Cavailles V, Fuqua S.A., Jordan V.C., Katzenellenbogen J.A., Korach KS, Maggi A, Muramatsu M, Parker MG & Gustafsson JA 2006 International union of pharmacology. LXIV. Estrogen receptors. *Pharmacological Reviews* **58** 773–781. ([doi:10.1124/pr.58.4.8](https://doi.org/10.1124/pr.58.4.8))
- Dekel, N., Gnainsky, Y., Granot, I., Racicot, K., & Mor, G. (2014). The role of inflammation for a successful implantation. *American Journal of Reproductive Immunology*, 72(2), 141–147. <https://doi.org/10.1111/aji.12266>
- DeMayo, F. J., & Lydon, J. P. (2020). 90 years of Progesterone: New insights into progesterone receptor signaling in the endometrium required for embryo implantation, *Journal of Molecular Endocrinology*, 65(1), T1-T14, from <https://doi.org/10.1530/JME-19-0212>
- Demir, R., Yaba, A. and Huppertz, B., 2010. Vasculogenesis and angiogenesis in the endometrium during menstrual cycle and implantation. *Acta histochemica*, 112(3), pp.203-214.
- Deryabin, P., Griukova, A., Nikolsky, N., & Borodkina, A. (2020). The link between endometrial stromal cell senescence and decidualization in female fertility: the art of balance. *Cellular and Molecular Life Sciences*, 77(7), 1357–1370. <https://doi.org/10.1007/s00018-019-03374-0>
- Destici Isgoren, G., Dilbaz, B., Erturk Aksakal, S., Kiykac Altinbas, S., Yildirim, Z., Simsek, G. and Tapisiz, O.L., 2021. Impact of curcumin on ovarian reserve after tubal ligation: An experimental study. *Reproductive Sciences*, 28(9), pp.2458-2467. <https://doi.org/10.1007/s43032-021-00468-8>
- Dong, F., Zhang, Q., Kong, W., Chen, J., Ma, J., Wang, L., Wang, Y., Liu, Y., Li, Y. and Wen, J., 2017. Regulation of endometrial cell proliferation by estrogen-induced BDNF signaling pathway. *Gynecological Endocrinology*, 33(6), pp.485-489.
- Eliopoulos, A.G., Dumitru, C.D., Wang, C.C., Cho, J. and Tschlis, P.N., 2002. Induction of COX-2 by LPS in macrophages is regulated by Tpl2-dependent CREB activation signals. *The EMBO journal*, 21(18), pp.4831-4840.
- Elvis-Offiah B. U, Isuman S, O. Johnson M. (2023) Our Clear-Cut Improvement to the Impact of Mouse and Rat Models in the Research Involving Female Reproduction. *Animal Models and Experimental Research in Medicine*. IntechOpen. DOI: 10.5772/intechopen.106858.
- Esperanza, Y., Prabowo, S. and Handajani, F., 2021. Efektivitas Pemberian Curcumin terhadap Perbaikan Fungsi Hepar Tikus Putih (Rattus Novergicus) yang diinduksi Parasetamol Dosis Tinggi: Studi Literatur. *J Ilm Kedokt Wijaya Kusuma*, 10(2), pp.208-221.

- Evans, J., Infusini, G., McGovern, J., Cuttle, L., Webb, A., Nebl, T., Milla, L., Kimble, R., Kempf, M., Andrews, C.J. and Leavesley, D., 2019. Menstrual fluid factors facilitate tissue repair: identification and functional action in endometrial and skin repair. *The FASEB Journal*, 33(1), pp.584-605.
- Favaro, R., Abrahamsohn, P.A. and Zorn, M.T., 2014. Decidualization and endometrial extracellular matrix remodeling. In *The guide to investigation of mouse pregnancy* (pp. 125-142). Academic Press.
- Fox, C., Morin, S., Jeong, J. W., Scott, R. T., & Lessey, B. A. (2016). Local and systemic factors and implantation: What is the evidence?. *Fertility and Sterility* (Vol. 105, Issue 4, pp. 873–884). Elsevier Inc. <https://doi.org/10.1016/j.fertnstert.2016.02.018>
- Fujita, S., Koyama, Y., Higashimoto, M., Ono, K., Ono, T., Watanabe, K., Yoshimoto, N., Momma, T., Saito, M., Sugeno, H. and Sassa, M., 2010. Regulation of circadian rhythm of human vascular endothelial growth factor by circadian rhythm of hypoxia inducible factor-1 α : implication for clinical use as anti-angiogenic therapy. *Annals of Cancer Research and Therapy*, 18(1), pp.28-36.
- Furlan, V., Konc, J., & Bren, U. (2018). Inverse molecular docking as a novel approach to study anticarcinogenic and anti-neuroinflammatory effects of curcumin. *Molecules*, 23(12). <https://doi.org/10.3390/molecules23123351>
- Gambino, Y. P., Maymó, J. L., Pérez Pérez, A., Calvo, J. C., Sánchez-Margalet, V., & Varone, C. L. (2012). Elsevier Trophoblast Research Award Lecture: Molecular mechanisms underlying estrogen functions in trophoblastic cells - Focus on leptin expression. *Placenta*, 33(SUPPL.), S63–S70. <https://doi.org/10.1016/j.placenta.2011.12.001>
- Ganjali, S., Sahebkar, A., Mahdipour, E., Jamialahmadi, K., Torabi, S., Akhlaghi, S., Ferns, G., Parizadeh, S.M.R., Ghayour-Mobarhan, M., 2014. Investigation of the effects of curcumin on serum cytokines in obese individuals: A randomized controlled trial. *The Scientific World Journal* 2014. <https://doi.org/10.1155/2014/898361>
- Gao C, Ding Z, Liang B, Chen N, Cheng D. 2003. Study on the effects of curcumin on angiogenesis. *Journal of Chinese Medicinal Materials*. Jul;26(7):499-502. PMID: 14650061.
- Gellersen, B., & Brosens, J. (2003). REVIEW Cyclic AMP and progesterone receptor cross-talk in human endometrium: a decidualizing affair. In *Journal of Endocrinology* (Vol. 178).
- Ghaneifar, Z., Yousefi, Z., Tajik, F., Nikfar, B., Ghalibafan, F., Abdollahi, E., & Momtazi-Borojeni, A. A. (2020). The potential therapeutic effects of curcumin on

pregnancy complications: Novel insights into reproductive medicine. *IUBMB Life*, 72(12), 2572–2583. <https://doi.org/10.1002/iub.2399>

Goldman, J. M., Murr, A. S., & Cooper, R. L. (2007). The Rodent Estrous Cycle. *Birth Defects Research*, 80(2), 83–97. <https://doi.org/10.1002/bdrb>

Grimm S.L, Hartig S.M., Edwards D.P., Progesterone Receptor Signaling Mechanisms, *Journal of Molecular Biology*, Volume 428, Issue 19, 2016, Pages 3831-3849, ISSN 0022-2836, <https://doi.org/10.1016/j.jmb.2016.06.020>.

Groothuis, P. G., Dassen, H. H. N. M., Romano, A., & Punyadeera, C. (2007). Estrogen and the endometrium: Lessons learned from gene expression profiling in rodents and human. *Human Reproduction Update*, 13(4), 405–417. <https://doi.org/10.1093/humupd/dmm009>

growth factor isoforms in cultured human endometrial stromal cells and its regulation by 17beta-oestradiol. *Mol. Hum. Reprod.* 4: 603–607.

Gupta, K., Sirohi, V. K., Kumari, S., Shukla, V., Manohar, M., Popli, P., & Dwivedi, A. (2018). Sorcin is involved during embryo implantation via activating VEGF/PI3K/Akt pathway in mice. *Journal of Molecular Endocrinology*, 60(2), 119–132. <https://doi.org/10.1530/JME-17-0153>

Gupta, S.C., Patchva, S., Koh, W. and Aggarwal, B.B., 2012. Discovery of curcumin, a component of golden spice, and its miraculous biological activities. *Clinical and experimental pharmacology and physiology*, 39(3), pp.283-299.

Gupta, S.C.; Patchva, S.; Aggarwal, B.B. 2013. Therapeutic Roles of Curcumin: Lessons Learned from Clinical Trials. *AAPS J.*, 15, 195–218.

Hallman, K., Aleck, K., Dwyer, B., Lloyd, V., Quigley, M., Sitto, N., Siebert, A.E., Dinda, S., 2017. The effects of turmeric (Curcumin) on tumor suppressor protein (p53) and estrogen receptor (ER α) in breast cancer cells. *Breast Cancer: Targets and Therapy* 9, 153–161. <https://doi.org/10.2147/BCTT.S125783>

Han, J.A., Kim, J.I., Ongusaha, P.P., Hwang, D.H., Ballou, L.R., Mahale, A., Aaronson, S.A. and Lee, S.W., 2002. P53-mediated induction of Cox-2 counteracts p53-or genotoxic stress-induced apoptosis. *The EMBO journal*, 21(21), pp.5635-5644.

Hastati, S., & Ariani, N. (2008). Pengaruh Pentagamavunon-0 (Curcumin Analog) Terhadap Penerimaan Uterus (Effect of Pentagamavunon-0 (Curcumin Analog) on Uterus Receptivity). *Jurnal Teknologi Pertanian Universitas Mulawarman*, 4(1).

Helson, L., 2013. Curcumin (diferuloylmethane) delivery methods: a review. *Biofactors*, 39(1), pp.21-26. <https://doi.org/10.1002/biof.1080>

Hong, K., & Choi, Y. (2018). Role of estrogen and RAS signaling in repeated

- implantation failure. In *BMB Reports* (Vol. 51, Issue 5, pp. 225–229). The Biochemical Society of the Republic of Korea.
<https://doi.org/10.5483/BMBRep.2018.51.5.045>
- Huang, F., Cao, J., Liu, Q., Zou, Y., Li, H., & Yin, T. (2013). MAPK/ERK signal pathway involved expression of COX-2 and VEGF by IL-1 β induced in human endometriosis stromal cells in vitro. *International Journal of Clinical and Experimental Pathology*, 6(10), 2129–2136.
- Huang, J.C., Liu, D.Y. and Dawood, M.Y., 1998. The expression of vascular endothelial growth factor isoforms in cultured human endometrial stromal cells and its regulation by 17 β -oestradiol. *Molecular human reproduction*, 4(6), pp.603–607.
- Hubscher, C. H., Brooks, D. L., & Johnson, J. R. (2005). A quantitative method for assessing stages of the rat estrous cycle. *Biotechnic and Histochemistry*, 80(2), 79–87. <https://doi.org/10.1080/10520290500138422>. ISSN 0022-2836.
- Indira Priyadarsini, K., 2013. Chemical and structural features influencing the biological activity of curcumin. *Current pharmaceutical design*, 19(11), pp.2093–2100.
- Ingamells, S., Campbell, I.G., Anthony, F.W. and Thomas, E.J., 1996. Endometrial progesterone receptor expression during the human menstrual cycle. *Reproduction*, 106(1), pp.33–38.
- Jahanbakhshi, F., Maleki Dana, P., Badehnoosh, B., Yousefi, B., Mansournia, M.A., Jahanshahi, M., Asemi, Z., Halajzadeh, J., 2021. Curcumin anti-tumor effects on endometrial cancer with focus on its molecular targets. *Cancer Cell Int.* <https://doi.org/10.1186/s12935-021-01832-z>
- Jana, S., Chatterjee, K., Ray, A. K., Dasmahapatra, P., & Swarnakar, S. (2016). Regulation of matrix metalloproteinase-2 activity by COX-2-PGE2-pAKT axis promotes angiogenesis in Endometriosis. *PLoS ONE*, 11(10). <https://doi.org/10.1371/journal.pone.0163540>
- Kasius, A., Smit, J.G., Torrance, H.L., Eijkemans, M.J., Mol, B.W., Opmeer, B.C. and Broekmans, F.J., 2014. Endometrial thickness and pregnancy rates after IVF: a systematic review and meta-analysis. *Human reproduction update*, 20(4), pp.530–541. <https://doi.org/10.1093/humupd/dmu011>
- Kiyama, R., & Wada-Kiyama, Y. (2015). Estrogenic endocrine disruptors: Molecular mechanisms of action. *Environment International*, 83, 11–40. <https://doi.org/10.1016/j.envint.2015.05.012>
- Kraus, W.L. and Katzenellenbogen, B.S., 1993. Regulation of progesterone receptor

gene expression and growth in the rat uterus: modulation of estrogen actions by progesterone and sex steroid hormone antagonists. *Endocrinology*, 132(6), pp.2371-2379.

Kuiper G.G., Carlsson B., Grandien K., Enmark E., Haggblad J., Nilsson S. & Gustafsson J.A. 1997. Comparison of the ligand binding specificity and transcript tissue distribution of estrogen receptors alpha and beta. *Endocrinology* **138** 863–870. ([doi:10.1371/journal.pgen.0030102](https://doi.org/10.1371/journal.pgen.0030102))

Kyle D, Schwartz L. Anatomy & histology. PathologyOutlines.com website. <https://www.pathologyoutlines.com/topic/uterusnormal.html>. 2023.

Lai, T.-H., Vlahos, N., Shih, I.-M., & Zhao, Y. (2015). Expression Patterns of VEGF and Flk-1 in Human Endometrium during the Menstrual Cycle. In *J Reprod Infertil* (Vol. 16, Issue 1).

Lao, C.D.; Ruffin, M.T.; Normolle, D.; Heath, D.D.; Murray, S.I.; Bailey, J.M.; Boggs, M.E.; Crowell, J.; Rock, C.L.; Brenner, D.E. 2006. Dose escalation of a curcuminoid formulation. *BMC Complement. Altern. Med.* 6, 10.

Lebron-Milad, K. and Milad, M.R., 2012. Sex differences, gonadal hormones and the fear extinction network: implications for anxiety disorders. *Biology of mood & anxiety disorders*, 2, pp.1-12.

Leister, K. P., Huang, R., Goodwin, B. L., Chen, A., Austin, C. P., & Xia, M. (2011). Two high throughput screen assays for measurement of TNF- α in THP-1 cells. *Current Chemical Genomics*, 5(1), 21–29. <https://doi.org/10.2174/1875397301105010021>

Leitao B, Jones MC, Fusi L, Higham J, Lee Y, Takano M, Goto T, Christian M, Lam EW, Brosens JJ. 2009. Silencing of the JNK pathway maintains progesterone receptor activity in decidualizing human endometrial stromal cells exposed to oxidative stress signals. *FASEB J.* 2010 May;24(5):1541-51. doi: 10.1096/fj.09-149153. Epub. Dec 21. PMID: 20026682; PMCID: PMC2857868.

Li, T.C., Tuckerman, E.M. and Laird, S.M., 2002. Endometrial factors in recurrent miscarriage. *Human Reproduction Update*, 8(1), pp.43-52.

Liu, H., Sun, X., Zhao, Y., Xia, M., & Wang, C. (2020). Anti-angiogenesis effect and mechanism study of Huangzhi Neiyi capsule in a rat endometriosis model. *Journal of International Medical Research*, 48(1). <https://doi.org/10.1177/0300060519899767>

Lonard D.M., Lanz R.B., O'Malley B.W. 2008. Nuclear receptor coregulators and human disease. *Endocr Rev.*; **28**: 575– 87.

Lösel, R. and Wehling, M., 2003. Nongenomic actions of steroid hormones. *Nature*

reviews Molecular cell biology, 4(1), pp.46-55.

- Lv, S., Wang, N., Ma, J., Li, W.P., Chen, Z.J. and Zhang, C., 2019. Impaired decidualization caused by downregulation of circadian clock gene BMAL1 contributes to human recurrent miscarriage. *Biology of reproduction*, 101(1), pp.138-147.
- Mackens, S., Santos-Ribeiro, S., Van De Vijver, A., Racca, A., Van Landuyt, L., Tournaye, H. and Blockeel, C., 2017. Frozen embryo transfer: a review on the optimal endometrial preparation and timing. *Human Reproduction*, 32(11), pp.2234-2242.
- Maia Jr, H. Maltez A., Studard E., Zausner B., Athyde C., and Coutinho, E., 2005. Effect of the menstrual cycle and oral contraceptives on cyclooxygenase-2 expression in the endometrium. *Gynecology Endocrinology*, Volume 21; I. 2005 Pages 57-61.
- Majeed, M., Badmaev, V., Shivakumar, U. and Rajendran, R., 1995. Curcuminoids. *Antioxidant Phytonutrients, Nutriscience, Piscataway, NJ, USA*.
- Makieva, S., Giacomini, E., Ottolina, J., Sanchez, A. M., Papaleo, E., & Viganò, P. (2018). Inside the endometrial cell signaling subway: Mind the gap(s). *International Journal of Molecular Sciences*, 19(9). <https://doi.org/10.3390/ijms19092477>
- Margawati, E.T. dan Mulyaningsih, N. 1996. Superovulasi pada mencit dara strain CBR berbagai Dosis PMSG, *Jurnal Biologi Indonesia*, Vol. I, No.4, p:19-23.
- Martin, C.J.H., Watson, R.R. and Preedy, V.R. eds., 2013. *Nutrition and diet in menopause* (p. 469). Humana Press.
- Mclaren, J. 2000. Vascular endothelial growth factor and endometriotic angiogenesis. In *Human Reproduction Update* (Vol. 6, Issue 1).
- Mehasseb, M.K., Panchal, R., Taylor, A.H., Brown, L., Bell, S.C. and Habiba, M., 2011. Estrogen and progesterone receptor isoform distribution through the menstrual cycle in uteri with and without adenomyosis. *Fertility and sterility*, 95(7), pp.2228-2235.
- Meikle, A., Bielli, A., Masironi, B., Pedrana, G., Wang, H., Forsberg, M., & Sahlin, L. (2000). An immunohistochemical study on the regulation receptor α by estradiol in the endometrium of the immature ewe. *Reproduction Nutrition Development*, 40(6), 587–596. <https://doi.org/10.1051/rnd:2000102>
- Messaoudi, S., El Kasmi, I., Bourdieu, A., Crespo, K., Bissonnette, L., Le Saint, C., Bissonnette, F. and Kadoch, I.J., 2019. 15 years of transcriptomic analysis on endometrial receptivity: what have we learnt?. *Fertility Research and*

Practice, 5(1), pp.1-9.

- Moghaddam, N.S.A., Oskouie, M.N., Butler, A.E., Petit, P.X., Barreto, G.E. and Sahebkar, A., 2019. Hormetic effects of curcumin: What is the evidence?. *Journal of cellular physiology*, 234(7), pp.10060-10071.
- Mohajeri, M., Bianconi, V., Ávila-Rodriguez, M. F., Barreto, G. E., Jamialahmadi, T., Pirro, M., & Sahebkar, A. (2020). Curcumin: a phytochemical modulator of estrogens and androgens in tumors of the reproductive system. In *Pharmacological Research* (Vol. 156). Academic Press. <https://doi.org/10.1016/j.phrs.2020.104765>
- Mthembu, Nonkululeko & Mbita, Zukile & Hull, Rodney & Dlamini, Zodwa. (2017). Abnormalities in alternative splicing of angiogenesis-related genes and their role in HIV-related cancers. *HIV/AIDS: Research and Palliative Care*. Volume 9. 10.2147/HIV.S124911.
- Mukhopadhyay A, Basu N, Ghatak N, Gujral PK. Anti-inflammatory and irritant activities of curcumin analogues in rats. *Agents Actions*. 1982 Oct;12(4):508-15. doi: 10.1007/BF01965935. PMID: 7180736.
- Murata, T., Narita, K., & Ichimaru, T. (2014). *Rat Uterine Oxytocin Receptor and Estrogen Receptor α and β mRNA Levels are Regulated by Estrogen Through Multiple Estrogen Receptors*. *J. Reprod. D.* Vol. 60 (1): 55-61.
- Murphy, C. J., Tang, H., Van Kirk, E. A., Shen, Y., & Murdoch, W. J. (2012). Reproductive effects of a pegylated curcumin. *Reproductive Toxicology*, 34(1), 120–124. <https://doi.org/10.1016/j.reprotox.2012.04.005>
- Mylonas, I., Jeschke, U., Shabani, N., Kuhn, C., Balle, A., Kriegel, S., Kupka, M.S. and Friese, K., 2004. Immunohistochemical analysis of estrogen receptor alpha, estrogen receptor beta and progesterone receptor in normal human endometrium. *Acta histochemica*, 106(3), pp.245-252.
- Nardo, L. G., & Williams, L. (2005). Vascular endothelial growth factor expression in the endometrium during the menstrual cycle, implantation window and early pregnancy. In *Current Opinion in Obstetrics and Gynecology* (Vol. 17).
- Nejati-Koshki, K., Akbarzadeh, A., & Pourhassan-Moghaddam, M. (2014). Curcumin inhibits leptin gene expression and secretion in breast cancer cells by estrogen receptors. *Cancer Cell International*, 14(1). <https://doi.org/10.1186/1475-2867-14-66>
- Ng, S.W., Norwitz, G.A., Pavlicev, M., Tilburgs, T., Simón, C. and Norwitz, E.R., 2020. Endometrial decidualization: the primary driver of pregnancy health. *International journal of molecular sciences*, 21(11), p.4092.
- Noyes, N., Liu, H.C., Sultan, K., Schattman, G. and Rosenwaks, Z., 1995.

Implantation: endometrial thickness appears to be a significant factor in embryo implantation in in-vitro fertilization. *Human Reproduction*, 10(4), pp.919-922.

<https://doi.org/10.1093/oxfordjournals.humrep.a136061>

Nugraha, G. (2017) Panduan Pemeriksaan Laboratorium Hematologi Dasar, edisi 2. Jakarta: CV. Trans Info Media.

Ochoa-Bernal, M. A., & Fazleabas, A. T. (2020). Physiologic events of embryo implantation and decidualization in human and non-human primates. *International Journal of Molecular Sciences*, 21(6). <https://doi.org/10.3390/ijms21061973>

Okada, H., Tsuzuki, T. and Murata, H., 2018. Decidualization of the human endometrium. *Reproductive medicine and biology*, 17(3), pp.220-227.

Okada, H., Tsuzuki, T., Shindoh, H., Nishigaki, A., Yasuda, K. and Kanzaki, H., 2014. Regulation of decidualization and angiogenesis in the human endometrium: mini review. *Journal of Obstetrics and Gynaecology Research*, 40(5), pp.1180-1187.

Parker M.G., Christian M., White R. 2006. The nuclear receptor co-repressor RIP140 controls the expression of metabolic gene network. *Biochem Soc Trans*; **34**: 1103– 6.

Patel, B., Elguero, S., Thakore, S., Dahoud, W., Bedaiwy, M. and Mesiano, S., 2015. Role of nuclear progesterone receptor isoforms in uterine pathophysiology. *Human reproduction update*, 21(2), pp.155-173.

Paterni, I., Granchi, C., Katzenellenbogen, J.A. and Minutolo, F., 2014. Estrogen receptors alpha (ER α) and beta (ER β): subtype-selective ligands and clinical potential. *Steroids*, 90, pp.13-29.

Peluso J.J. Progesterone receptor membrane component 1 and its role in ovarian follicle growth. *Front Neurosci*. 2013; **10**: 3389– 95.

Plaisier, M. (2011). Decidualisation and angiogenesis. *Best Practice and Research: Clinical Obstetrics and Gynaecology*, 25(3), 259–271. <https://doi.org/10.1016/j.bpobgyn.2010.10.011>

Purwanti, E., Kadarsih, S. and Dasuki, D., 2013. Ekspresi cyclooxygenase (cox-2) akibat pemberian kurkumin pada rattus norvegicus strain *sprague dawley* setelah mendapat stimulasi *luteinizing hormon*. *Jurnal Ilmiah Kesehatan Keperawatan*, 9(2).

Purwitasari, A. A., Rozifa, A. W., Irawan, D. D., Kalsum, U., Ratnawati, R., Nurdiana, N., & Anita, K. W. (2019). Effect of Chitosan on Histology of Reproductive Organs of Female Wistar Rats (*Rattus norvegicus*) Exposed to Acetate Lead. *Jurnal Kedokteran Brawijaya*, 30(4), 259–266. <https://doi.org/10.21776/ub.jkb.2019.030.04.5>

- Puspita, D. 2011. Ekspresi siklooksigenase-2 (COX-2) di sel granulosa folikel ovarium akibat pemberian kurkumin dengan dan tanpa penambahan teofilin setelah stimulasi lh (Kajian in vivo untuk menentukan letak kerja kurkumin pada rattus norvegicus strain sprague dawley dalam jalur transduksi signal ekspresi COX-2 pada jalur cAMP). *Tesis*. Fakultas Kedokteran Universitas Gadjah Mada, Yogyakarta.
- Rajuddin, Wiweko B., Nugroho L. 2019. The effects of curcumin administration on expression patterns of vegf and cox-2 in fertile endometrium: a randomized clinical trial. *International Journal of Applied Pharmaceutic*. Vol 11, Special Issue 6, 2019: 149-152. DOI: <http://dx.doi.org/10.22159/ijap.2019.v11s6.33581>
- Razandi, M., Oh, P., Pedram, A., Schnitzer, J. and Levin, E.R., 2002. ERs associate with and regulate the production of caveolin: implications for signaling and cellular actions. *Molecular endocrinology*, 16(1), pp.100-115.
- Reed B.G., Carr B.R. 1998. The Normal Menstrual Cycle and the Control of Ovulation. In: *Endotext*. MDText.com, Inc., South Dartmouth (MA); 2018. PMID: 25905282.
- Rietjens, I.M., Louisse, J. and Beekmann, K., 2017. The potential health effects of dietary phytoestrogens. *British journal of pharmacology*, 174(11), pp.1263-1280.
- Sacher, Ronal A dan Mc Pherson, Richard A. (editor). 2004. *Tinjauan Klinis Hasil Pemeriksaan Laboratorium Edisi 11*. Jakarta: EGC
- Saifi, B., Haftcheshmeh, S.M., Feligioni, M., Izadpanah, E., Rahimi, K., Hassanzadeh, K., Mohammadi, A. and Sahebkar, A., 2022. An overview of the therapeutic effects of curcumin in reproductive disorders with a focus on the antiinflammatory and immunomodulatory activities. *Phytotherapy Research*, 36(2), pp.808-823.
- Samad, T.A., Moore, K.A., Sapirstein, A., Billet, S., Allchorne, A., Poole, S., Bonventre, J.V. and Woolf, C.J., 2001. Interleukin-1 β -mediated induction of Cox-2 in the CNS contributes to inflammatory pain hypersensitivity. *Nature*, 410(6827), pp.471-475.
- Sanaei, M., Kavoosi, F., & Arabloo, M. (2020). Effect of curcumin in comparison with trichostatin a on the reactivation of Estrogen Receptor Alpha gene expression, cell growth inhibition and apoptosis induction in hepatocellular carcinoma hepa 1-6 cell lline. *Asian Pacific Journal of Cancer Prevention*, 21(4), 1045–1050. <https://doi.org/10.31557/APJCP.2020.21.4.1045>
- Schild, R.L., Knobloch, C., Dorn, C., Fimmers, R., Van Der Ven, H. and Hansmann, M., 2001. Endometrial receptivity in an in vitro fertilization program as assessed by spiral artery blood flow, endometrial thickness, endometrial volume, and uterine artery blood flow. *Fertility and Sterility*, 75(2), pp.361-366.

- Sciarra, F.; Franceschini, E.; Campolo, F.; Gianfrilli, D.; Pallotti, F.; Paoli, D.; Isidori, A.M.; Venneri, M.A. 2020. Disruption of Circadian Rhythms: A Crucial Factor in the Etiology of Infertility. *Int. J. Mol. Sci.*, 21, 3943. <https://doi.org/10.3390/ijms21113943>
- Scontre, V. A., Martins, J. C., de Melo Sette, C. V., Mutti, H., Cubero, D., Fonseca, F., & Del Giglio, A. (2018). Curcuma longa (Turmeric) for Prevention of Capecitabine-Induced Hand-Foot Syndrome: A Pilot Study. *Journal of Dietary Supplements*, 15(5), 606–612. <https://doi.org/10.1080/19390211.2017.1366387>
- Shakeri, Abolfazl; Ward, Natalie; Panahi, Yunes; Sahebkar, Amirhossein. Current Vascular Pharmacology, Volume 17, Number 3, 2019, pp. 262-269(8) <https://doi.org/10.2174/1570161116666180209113014>
- Shao R. Progesterone receptor isoforms A and B: new insights into the mechanism of progesterone resistance for the treatment of endometrial carcinoma. *Cancer medical science*. 2013 Dec 18;7:381. doi: 10.3332/ecancer.2013.381. PMID: 24386010; PMCID: PMC3869473.
- Sharma, R.A., Steward, W.P. and Gescher, A.J., 2007. Pharmacokinetics and pharmacodynamics of curcumin. *The molecular targets and therapeutic uses of curcumin in health and disease*, pp.453-470.
- Sharpe-Timms, K. L. (2002). Using rats as a research model for the study of endometriosis. *Annals of the New York Academy of Sciences*, 955(January), 318–327. <https://doi.org/10.1111/j.1749-6632.2002.tb02792.x>
- Shehzad, A., Rehman, G. and Lee, Y.S., 2013. Curcumin in inflammatory diseases. *Biofactors*, 39(1), pp.69-77.
- Shenouda, N.S., Zhou, C., Browning, J.D., Ansell, P.J., Sakla, M.S., Lubahn, D.B. and MacDonald, R.S., 2004. Phytoestrogens in common herbs regulate prostate cancer cell growth in vitro. *Nutrition and cancer*, 49(2), pp.200-208.
- Sirotkin, A.V. and Harrath, A.H., 2014. Phytoestrogens and their effects. *European journal of pharmacology*, 741, pp.230-236.
- Sirotkin, A.V., 2022. The influence of turmeric and curcumin on female reproductive processes. *Planta Medica*, 88(12), pp.1020-1025.
- Steigerwalt, R., Nebbioso, M., Appendino, G., Belcaro, G., Ciammaichella, G., Cornelli, U., Luzzi, R., Togni, S., Dugall, M., Cesarone, M.R., Ippolito, E., Errichi, B.M., Ledda, A., Hosoi, M., Corsi, M., 2012. Meriva ® A Lecithinized Curcumin Delivery System In Diabetic Microangiopathy And Retinopathy. *Panminerva Mmed* 2012;54(Suppl. 1 to No. 4):11-6
- Strauss III, J. F., & Barbier, R. L. (2013). *Elsevier Health Sciences Amazon.com*

BukuKita.com Gramedia Find in a library All sellers » Shop for Books on Google Play Browse the world's largest eBookstore and start reading today on the web, tablet, phone, or ereader. Go to Google Play Now » Books on G. Elsevier Health Sciences.

- Suharsanti R., Astutiningsih C., Susilowati N.D. 2020. Kadar Kurkumin Ekstrak Rimpang Kunyit (*Curcuma domestica*) secara KLT Densitometri dengan Perbedaan Ekstraksi. *Jurnal Wiyata: Penelitian Sains dan Kesehatan*, Vol. 7 No. 2. <http://dx.doi.org/10.56710/wiyata.v7i2.387>.
- Supardjan, A.M. & Da'i, M. 2005. Hubungan struktur dan aktivitas sitostatik turunan kurkumin terhadap sel Myeloma. *Majalah Farmasi Indonesia*, 16 (2), 100 – 104.
- Syarif, R., Soejono, S., Meiyanto, E., & Wahyuningsih, M. 2016. Efek kurkumin terhadap sekresi estrogen dan ekspresi reseptor estrogen β kultur sel granulosa babi folikel sedang. *Jurnal Kedokteran Brawijaya*. 29(1), 32–38.
- Tahergorabi, Z. and Khazaei, M., 2012. A review on angiogenesis and its assays. *Iranian journal of basic medical sciences*, 15(6), p.1110.
- Taraborrelli, S. 2015. Physiology, production and action of progesterone. In *Acta Obstetricia et Gynecologica Scandinavica* (Vol. 94, pp. 8–16). Taylor and Francis Ltd. <https://doi.org/10.1111/aogs.12771>
- Taylor, R. N., Lebovic, D. I., Hornung, D., & Mueller, M. D. 2014. *Endocrine and Paracrine Regulation of Endometrial Angiogenesis*. Volume 428, Issue 19
- Visa, N. and Percipalle, P., 2010. Nuclear functions of actin. *Cold Spring Harbor perspectives in biology*, 2(4), p.a000620.
- Wang, H.Q., Kim, M.P., Tian, H.F., Langenbach, R. and Smart, R.C., 2001. Protein kinase C- α coordinately regulates cytosolic phospholipase A2 activity and the expression of cyclooxygenase-2 through different mechanisms in mouse keratinocytes. *Molecular Pharmacology*, 59(4), pp.860-866.
- Wang, T. Y., & Chen, J. X. 2019. Effects of Curcumin on Vessel Formation Insight into the Pro-and Antiangiogenesis of Curcumin. In *Evidence-based Complementary and Alternative Medicine*. Hindawi Limited. <https://doi.org/10.1155/2019/1390795>
- Ward, J.D., 2008. *A manual for laboratory animal management* (Vol. 5). World Scientific Publishing Company.
- Weissman, A., Gotlieb, L. and Casper, R.F., 1999. The detrimental effect of increased endometrial thickness on implantation and pregnancy rates and outcome in an in vitro fertilization program. *Fertility and sterility*, 71(1), pp.147-149.
- Westwood, F. R. (2008). The Female Rat Reproductive Cycle: A Practical Histological Guide to Staging. *Toxicologic Pathology*, 36(3), 375–384.

<https://doi.org/10.1177/0192623308315665>

- Yanagihara, N., Zhang, H., Toyohira, Y., Takahashi, K., Ueno, S., Tsutsui, M. and Takahashi, K., 2014. New insights into the pharmacological potential of plant flavonoids in the catecholamine system. *Journal of pharmacological sciences*, 124(2), pp.123-128.
- Yaşar, P., Ayaz, G., User, S.D., Güpür, G. and Muyan, M., 2017. Molecular mechanism of estrogen–estrogen receptor signaling. *Reproductive medicine and biology*, 16(1), pp.4-20.
- Young, S.L., 2013. Oestrogen and progesterone action on endometrium: a translational approach to understanding endometrial receptivity. *Reproductive biomedicine online*, 27(5), pp.497-505.
- Yu, K., Huang, Z. Y., Xu, X. L., Li, J., Fu, X. W., & Deng, S. L. 2022. Estrogen Receptor Function: Impact on the Human Endometrium. *Frontiers in Endocrinology* (Vol. 13). Frontiers Media S.A. <https://doi.org/10.3389/fendo.2022.827724>
- Zhang, Y., Cao, H., Yu, Z., Peng, H.-Y., & Zhang, C. 2013. Curcumin inhibits endometriosis endometrial cells by reducing estradiol production. In *Iran J Reprod Med* (Vol. 11, Issue 5).
- Zhou, H., Beevers, C. S., & Huang, S. 2011. The Targets of Curcumin. In *Current Drug Targets* (Vol. 12).
- Zorofchian Moghadamtousi, S., Abdul Kadir, H., Hassandarvish, P., Tajik, H., Abubakar, S. and Zandi, K., 2014. A review on antibacterial, antiviral, and antifungal activity of curcumin. *BioMed research international*, 2014.
- Zygmunt, M., Herr, F., Münstedt, K., Lang, U., Liang, O.D., 2003. Angiogenesis and vasculogenesis in pregnancy, *European Journal of Obstetrics and Gynecology and Reproductive Biology*. Elsevier Ireland Ltd. [https://doi.org/10.1016/S0301-2115\(03\)00168-4](https://doi.org/10.1016/S0301-2115(03)00168-4).