

DAFTAR PUSTAKA

- Adedapo, AA., Jimoh, FO., Koduru, S., Afolayan, AJ., Masika, PJ. 2008. Antibacterial and antioxidant properties of the methanol extracts of the leaves and stems of *Calpurnia aurea*. *BMC Complement Altern Med*, 8(53).
- Ahmad, N., Fazal, H., Abbasi, BH., Farooq, S., Ali, M., Khan, MA. 2012. Biological role of *Piper nigrum* L. (Black pepper): A review. *Asian Pac J Trop Biomed*, 2(3): 1945–1953.
- Amin KMY, Khan MN, Rahman SZ, Khan NA. Sexual function improving effect of *Mucuna pruriens* in sexually normal male rats. *Fitoterapia*, 1996(67): 53–8.
- Anderson, KE. 2011. Mechanisms of penile erection and basis for pharmacological treatment of erectile dysfunction. *Pharmacol Rev*, 63: 811–859.
- Aversa, A., Isidori, AM., Spera, G., Lenzi, A. Fabbri, A. 2002. Androgens improve cavernous vasodilation and response to sildenafil in patients with erectile dysfunction. *Clin Endocrinol*, 58: 632 – 638.
- Bhagavathula, AS., Elnour, AA., Shehab, A. 2015. Pharmacovigilance on sexual enhancing herbal supplements. *Saudi Pharm J*, 24: 115–118.
- Bondonno, CP., Yang, X., Croft, KD., Considine, MJ., Ward, NC., Rich, L., *et al*. 2012. Flavonoid-rich apples and nitrate-rich spinach augment nitric oxide status and improve endothelial function in healthy men and women: a randomized controlled trial. *Free Radic Biol Med*, 52: 95–102.
- Buscemi, S., Rosafio, G., Arcoleo, G. Mattina, A., Canino, B., Montana, M., *et al*. 2012. Effects of red orange juice intake on endothelial function and inflammatory markers in adult subjects with increased cardiovascular risk. *Am J Clin Nutr*, 95: 1089–1095.
- Campion, S., Catlin, N., Heger, N., McDonnell, EV., Pacheco, SE., Saffarini, C., *et al*. 2012. Male reprotoxicity and endocrine disruption. *EXS*, 101: 315–360.
- Cassidy, A., Franz, M., Rimm, EB. 2016. Dietary flavonoid intake and incidence of erectile dysfunction. *Am J Clin Nutr*, 103: 534–541.
- Castela, A., Vendeira, P., Costa, C. 2011. Testosterone, endothelial health, and erectile function. *ISRN Endocrinol*, 2011: 1-7.
- Chauhan, NS., Sharma, V., Dixit, VK. Thakur, M. 2014. A review on plants used for improvement of sexual performance and virility. *Biomed Res Int*, 1-19.

- Chua, RG., Calenda, G., Zhang, X. Siragusa, J., Tong, Y., Tar, M., *et al.* 2009. Testosterone regulates erectile function and Vcsa1 expression in the corpora of rats. *Mol Cell Endocrinol*, 303: 67–73.
- Chung, E., De Young, L., Brock, GB. 2011. Investigative models in erectile dysfunction: a state-of-the-art review of current animal models. *J Sex Med*, 8: 3291–3305.
- Clemet, P., Giulioano, F. 2015. *Handbook of Clinical Neurology: Neurology of Sexual and Bladder Disorders*. 3rd ed. France: Elsevier B.V.
- Crosnoe, LE., Grober, E., Ohl, D., Kim, ED. 2013. Exogenous testosterone: a preventable cause of male infertility. *Transl Androl Urol*, 2(2): 106–113.
- Cunningham, RL., Lumia, AR., McGinnis, MY. 2012. Androgen receptors, sex behavior, and aggression. *Neuroendocrinol*, 96: 131–140.
- Damanhour, ZA., Ahmad, A. 2014. Medicinal & aromatic plants a review on therapeutic potential of *Piper nigrum* L. (black pepper): the king of spices. *Med Aromat Plants*, 3(3).
- Dart, DA., Waxman, J., Aboagye, EO. Bevan, CL. 2013. Visualising androgen receptor activity in male and female mice. *PLoS ONE*, 8(8).
- Del Rio, D., Calani, L., Scazzina, F. Jechiu, L., Cordero, C., Brighenti, F. 2010. Bioavailability of catechins from ready-to-drink tea. *J Nutr*, 26: 528–533.
- de Pascual-Teresa, S., Moreno, DA., Garcia-Viguera, C. 2010. Flavanols and anthocyanins in cardiovascular health: a review of current evidence. *Int J Mol Sci*, 11: 1679–1703.
- DeRogatis, L., Rosen, RC., Goldstein, I. Werneburg, B., Kempthorne-Rawson, J., Sand, M. 2012. Characterization of hypoactive sexual desire disorder (HSDD) in men. *J Sex Med*, 9: 812–820.
- Duarte, J., Fransisco, V., Perez-Vizcaino, F. 2014. Modulation of nitric oxide by flavonoids. *Food Funct*, 5: 1653–1668.
- D’Cruz, SC., Mathur, PP. 2005. Effect of piperine on the epididymis of adult male rats. *Asian J Androl*, 7(4): 363–368.
- d’Emmanuele, Sorrentino, R., Roviezzo, F., Imbimbo, C., Palmieri, A., De Dominicis, G., *et al.* 2005. Peripheral relaxant activity of apomorphine and of a D1 selective receptor agonist on human corpus cavernosum strips. *Int J Impot Res*, 17: 127–133.
- Federer, WT. 1991. *Statistics and society: Data collection and Interpretation*, 2nd ed. NY: Marcel dekker, Inc. 142.

- Fernández-Guasti, A., Kruijver, FP., Fodor, M., Swaab, DF. 2000. Sex differences in the distribution of androgen receptors in the human hypothalamus. *J Comp Neurol*, 425: 422–435.
- Fisher, HE., Aron, A., Brown, LL. 2006. Romantic love: a mammalian brain system for mate choice. *Philos Trans R Soc Lond*, 361(1476): 2173–2186.
- Fluck, CE., Miller, WL., Auchus, RJ. 2003. The 17,20 lyase activity of cytochrome P450c17 from human fetal testis favors the $\Delta 5$ steroidogenic pathway. *J Clin Endocrinol Metab*, 88: 3762–3766.
- Flück, CE., Pandey, AV. 2014. Steroidogenesis of the testis – new genes and pathways. *Ann Endocrinol*, 1-8.
- Fukami, M., Homma, K., Hasegawa, T., Ogata, T. 2013. Back door pathway for dihydrotestosterone biosynthesis: implications for normal and abnormal human sex development. *Dev Dynam*, 242: 320–329.
- Giuliano, F., Allard, J. 2001. Dopamine and male sexual function. *Eur Urol*, 40: 601–608.
- Gleason, ED., Fuxjager, MJ., Oyegbile, TO., Marler, CA. 2009. Testosterone release and social context: When it occurs and why. *Front in Neuroendocrinol*, 30(4): 460–469.
- Gunnels, TA., Bloomer, RJ. 2014. Increasing circulating testosterone: impact of herbal dietary supplements. *J Plant Biochem Physiol*, 2(2): 1-9.
- Hannan, JL., Albersen, M., Kutlu, O., Gratzke, C., Stief, CG., Burnett, AL. 2013. Inhibition of Rho-kinase improves erectile function, increases nitric oxide signaling and decreases penile apoptosis in a rat model of cavernous nerve injury. *J Urol*, 189: 1155–1161.
- Harborne, JB., Williams, CA. 2000. Advances in flavonoid research since 1992. *Phytochem*, 55(6): 481–504.
- Harding, SM., McGinnis, MY. 2003. Effects of testosterone in the VMN on copulation, partner preference, and vocalizations in male rats. *Horm Behav*, 43: 327–335.
- He, F., Yu, P., Wu, R. 2013. Relationship between sexual satiety and motivation, brain androgen receptors and testosterone in male mandarin voles. *Behav Brain Res*, 250: 257–263.
- Heemers, HV., Tindall, DJ. 2007. Androgen receptor (AR) coregulators, a diversity of functions converging on and regulating the AR transcriptional complex. *Endocr Rev*, 28(7): 778–808.

- Heinlein, CA., Chang C.2002. Androgen receptor (AR) coregulators: an overview. *Endocr Rev*, 23(2): 175–200.
- Hirata, N., Tokunaga, M., Naruto, S., Iinuma, M., Matsuda, H. 2007. Testosterone 5 α -reductase inhibitory active constituents of *Piper nigrum* leaf. *Biol Pharm Bull*, 30(12): 2402-2405.
- Hull, EM., Dominguez, JM. 2007. Sexual behavior in male rodents. *Horm Behav*, 52(1): 45–55.
- Hull, EM., Muschamp, JW., Sato, S. 2004. Dopamine and serotonin: influences on male sexual behavior. *Physiol Behav*, 83: 291–307.
- Hyun, JS., Bivalacqua, TJ., Baig, MR., Yang, DY., Leungwattanakij, S., Abdel-Mageed, A., *et al.* 2002. Localization of peripheral dopamine D1 and D2 receptors in rat corpus cavernosum. *BJU Int*, 90: 105–112.
- HZ, TWE. 2017. Pengaruh ekstrak etanol buah lada hitam (*Piper nigrum* L.) Terhadap sistem reproduksi tikus wistar jantan dewasa: Kajian pada hormon FSH, LH, testosteron dan sel-sel spermatogenik. Master thesis. Universitas Gadjah Mada (unpublished).
- Janarthanan, R., Gopichand, C., Dineshbabu, J., Shanmuganathan, B., Periyasami, L. 2014. Effect of piperine on goat epididymal spermatozoa: an in vitro study. *Asian J Pharm Clin Res*, 7(5): 2–6.
- Kamtchouing, P., Mbongue, GYF., Dimo, T., Watcho, P., Jatsa, HB., Sokeng, SD. 2002. Effects of *Aframomum melegueta* and *Piper guineense* on sexual behaviour of male rats. *Behav Pharmacol*, 13(3): 243–247.
- Kondo, Y., Sachs, BD., Sakuma, Y. 1997. Importance of the medial amygdala in rat penile erection evoked by remote stimuli from estrous females. *Behav Brain Res*, 88: 153–160.
- Kotta, S., Ansari, SH., Ali, J. 2013. Exploring scientifically proven herbal aphrodisiacs. *Pharmacogn Rev*, 7(13).
- Kpomah, ED., Uwakwe, AA., Abbey, BW. 2012. Aphrodisiac studies of diherbal mixture of *Zanthoxylum Leprieurii* Guill. & Perr. And *Piper Guineense* Schumach. & Thonn. on male Wistar rats. *GJRMI*, 1(9): 381–390.
- Kumar, S., Saravan, KM., Raja, B. 2010. Efficacy of piperine, an alkaloidal constituent of pepper on nitric oxide, antioxidants and lipid peroxidation markers in L-NAME induced hypertensive rats. *Int. J Res Pharm Sci*, 1(3): 303-307.
- Landete, JM. 2012. Updated knowledge about polyphenols: Functions, bioavailability, metabolism, and health. *Crit Rev Food Sci Nutr*, 52: 936–948.

- Laurence, D.R. & Bacharach, A.L. 1964. Evaluation of drug activities. Pharmacometrics. London: Academic Press. p:161.
- Lee, HJ., Chang, C. 2003. Recent advances in androgen receptor action. *Cell Mol Life Sci*, 60: 1613–1622.
- Leva, A., Rinaldi, LMR. 2003. Recent advances in androgen receptor action. *Cell Mol Life Sci*, 60: 1613–1622.
- Li, W., Pandeya, AK., Yin, X., Chen, JJ., Stocco, DM., Grammas, P. 2011. Effects of apigenin on steroidogenesis and steroidogenic acute regulatory gene expression in mouse Leydig cells. *J Nutr Biochem*, 22(3): 212–218.
- Loke, WM., Hodgson, JM., Proudfoot, JM., McKinley, AJ., Puddey, IB., Croft, KD. 2008. Pure dietary flavonoids quercetin and (2)-epicatechin augment nitric oxide products and reduce endothelin-1 acutely in healthy men. *Am J Clin Nutr*, 88: 1018–1025.
- Lu, NZ., Wardell, SE., Burnstein, KL., Defranco, D., Fuller, PJ., Giguere, V., *et al.* 2006. International Union of Pharmacology. LXV. The pharmacology and classification of the nuclear receptor superfamily: glucocorticoid, mineralocorticoid, progesterone, and androgen receptors. *Pharmacol Rev*, 58 (4): 782–797.
- Lu, YL., Kuang, L., Zhu, H., Wu, H., Wang, X., Pang, Y. 2007. Changes in aortic endothelium ultrastructure in male rats following castration, replacement with testosterone and administration of 5 α -reductase inhibitor. *Asian J Androl*, 9(6): 843–847.
- Mahendroo, M., Wilson, JD., Richardson, JA., Uchus, RJ. 2004. Steroid 5 α -reductase1 promotes 5 α -androstane-3 α ,17 β -diol synthesis in immature mouse testes by two pathways. *Mol Cell Endocrinol*, 222: 113–120.
- Martin, SA., Atlantis, E., Lange, K., Taylor, AW., O'Loughlin, P., Wittert, GA., *et al.* 2014. Adelaide male ageing study. Predictors of sexual dysfunction incidence and remission in men. *J Sex Med*, 11: 1136–1147.
- Matsuda, D., Ohte, S., Ohshiro, T., Jiang, W., Rudel, L., Hong, B., *et al.* 2008. Molecular target of piperine in the inhibition of lipid droplet accumulation in macrophages. *Biol Pharm Bull*, 31: 1063–1066.
- Matsumoto, T., Kondo, Y., Sachs, BD., Yamanouchi, K. 1997. Effects of p-chlorophenylalanine on reflexive and noncontact penile erections in male rats. *Physiol Behav*, 61(2):165 – 168.
- McGinnis, MY., Montana, RC., Lumia, AR. 2002. Effects of hydroxyflutamide in the medialpreoptic area or lateral septum on reproductive behavior of male rats. *Brain Res Bull*, 59.

- McVary, KT. 2007. Clinical practice: Erectile dysfunction. *N Engl J Med*, 357: 2472-2481.
- Meghwal, M., Goswami, T., 2012. Nutritional constituent of black pepper as medicinal molecules : A Review *Sci Rep*, 1(1).
- Melis, MR., Argiolas, A. 2011. Central control of penile erection: a revisitation of the role of oxytocin and its interaction with dopamine and glutamic acid in male rats. *Neurosci Biobehav Rev*, 35: 939–55.
- Miller, WL., Auchus, RJ. 2011. The molecular biology, biochemistry, and physiology of human steroidogenesis and its disorders. *Endocr Rev*, 32(1): 81–151.
- Miller, WL., Bose, HS. 2011. Early steps in steroidogenesis: Intracellular cholesterol trafficking: Thematic Review Series: Genetics of Human Lipid Diseases. *J Lipid Res*, 52(12): 2111–2135.
- Miranda, AF., Gallo, CB., De Souza, DB., Costa, WS., Sampaio, FJ. 2012. Effects of castration and late hormonal replacement in the structure of rat corpora cavernosa. *J Androl*, 33: 1224–1232.
- Mirone, V., Imbimbo, C., Fusco, F., Verzea, P., Creta, M., Tajana, G. 2009. Androgens and morphologic remodeling at penile and cardiovascular levels: a common piece in complicated puzzles?. *Eur Urol*, 56(2): 309–316.
- Mitchell, KR., Wellings, KA., Graham, C. 2014. How do men and women define sexual desire and sexual arousal?. *J Sex Marital Ther*, 40: 17–32.
- Morand, C., Dubray, C., Milenkovic, D., Lioger, D., Martin, JF., Scalbert, A., *et al.* 2011. Hesperidin contributes to the vascular protective effects of orange juice: a randomized crossover study in healthy volunteers. *Am J Clin Nutr*, 93: 73–80.
- Nieuwenhuys, R., Voogd, J., van Huijzen, C. 2008. *The human central nervous system*. 4th ed. Germany: Springer.
- O'Hara, L., Curley, M., Ferreira, MT., Cruickshanks, L., Milne, L., Smith, LB. 2015. Pituitary androgen receptor signalling regulates prolactin but not gonadotrophins in the male mouse. *PLoS ONE*, 10(3): 1-18.
- Parhizkar, S., Yusoff, MJ., Dollah, MA. 2013. Effect of *Phaleria macrocarpa* on sperm characteristics in adult rats. *Adv Pharm Bull*, 3(2): 345-352.
- Purves-Tyson, TD., Owens, SJ., Double, KL., Desai, R., Handelsman, DJ., Weickert, CS., *et al.* 2014. Testosterone induces molecular changes in dopamine signaling pathway molecules in the adolescent male rat nigrostriatal pathway. *PLoS ONE*, 9(3).

- Rahman, M., Miyamoto, H., Chang, C. 2004. Androgen receptor coregulators in prostate cancer: mechanisms and clinical implications. *Clin Cancer Res*, 10(7): 2208–2219.
- Rodriguez-Tolra, J., Barreda, JT., del Rio, L., di Gregorio, S., Franco, ME. 2013. Effects of testosterone treatment on body composition in males with testosterone deficiency syndrome. *Aging Male*, 16: 184–190.
- Romano-Torres M., Phillips-Farfan BV., Chavira R., Rodríguez-Manzo, G., Fernández-Guasti, A. 2007. Relationship between sexual satiety and brain androgen receptors. *Neuroendocrinol*, 85: 16–26.
- Rosler, AS., Bernabe, J., Denys, P., Ilexandre, L., Giuliano, F. 2006. Penile Reflex. 15th World Meeting of the International Society of Sexual Medicine. Cairo, Egypt.
- Sasaki, M., Gonzalez-Zulueta, M., Huang, H., Herring, WJ., Ahn, S., Ginty, DD., et al. 2000. Dynamic regulation of neuronal NO synthase transcription by calcium influx through a CREB family transcription factor-dependent mechanism. *Neurobiol*, 97 (15): 8617–8622.
- Scalbert, A., Morand, C., Manach, C., Rémésy, C. 2002. Absorption and metabolism of polyphenols in the gut and impact on health. *Biomed Pharmacother*, 56: 276–282.
- Schewe, T., Steffen, Y., Sies, H. 2008. How do dietary flavanols improve vascular function? A position paper. *Arch Biochem Biophys*, 476: 102–106.
- Shah, SS., Shah, GD., Singh, SD. 2011. Effect of piperine in the regulation of obesity-induced dyslipidemia in high-fat diet rats. *Indian J Pharmacol*, 43(3): 296–299.
- Shalet, SM. 2009. Normal testicular function and spermatogenesis. *Pediatr Blood Cancer*, 53: 285–288.
- Shang, Y., Myers, M., Brown, M. 2002. Formation of the androgen receptor transcription complex. *Mol Cell*, 9: 601–610.
- Shindel, A. 2014. *Sexual function in Britain: findings from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3)*. Yearbook of Urology 2014.
- Simonsen, U., Comerma-Steffensen, S., Andersson, K. 2016. Modulation of dopaminergic pathways to treat erectile dysfunction. *BCPT*, 119: 63–74.
- Srinivasan, K. 2007. Black pepper and its pungent principle-piperine: A review of diverse physiological effects. *Crit Rev Food Sci Nutr*, 47: 735–748.

- Standring, S. 2009. *Gray's Anatomy*. 40th ed. Churchill Livingstone, London.
- Steels, E., Rao, A., Vitetta, L. 2011. Physiological aspects of male enhanced by standarized trigonella foenum-graecum extract and mineral formulation. *Phytother Res*, 25: 1294–1300.
- Suresh, D., Srinivasan, K. 2010. Tissue distribution & elimination of capsaicin, piperine & curcumin following oral intake in rats. *Indian J Med Res*, 131: 682-691.
- Sutyarso, Kanedi, M., Rosa, E. 2015. Effect of black pepper (*Piper nigrum* Linn.) extract on sexual drive in male mice. *J Med Plants Res*, 9: 42-47.
- Sutyarso, Muhartono, Kanedi, M. 2016. The effect of fruit extracts of black pepper on the fertility potential of male albino mice. *Am J Med Biol Res*, 4(1).
- Swaney, WT., Dubose, BN., Curley, JP., Champagne, FA. 2012. Sexual experience affects reproductive behavior and preoptic androgen receptors in male mice. *Horm Behav*, 61(4): 472–478.
- Swerdloff, RS. 2008. *The testis and male sexual function*. In: Arend WP, Armitago JO, Clements DR, Drazen JM, Grigges RC, Larusso N. Cecil Textbook of Medicine. 23rd Ed. Philadelphia: Elsevier Saunders.
- Thilakarathna, SH., Rupasinghe, HP. 2013. Flavonoid bioavailability and attempts for bioavailability enhancement. *J Nutr*, 5: 3367-3387.
- Tortora, GJ.& Derrickson, B. 2014. *Principles of Anatomy and Physiology*. Ed: 14th. John Wiley & Sons. USA.
- Traish, AM., Goldstein, I., Kim, NN. 2007. Testosterone and erectile function: from basic research to a new clinical paradigm for managing men with androgen insufficiency and erectile dysfunction. *Eur Urol*, 52(1): 54–70.
- Traish, AM. 2009. Androgens play a pivotal role in maintaining penile tissue architecture and erection: a review. *J Androl*, 30(4): 363–369.
- Ubuka, T., Son, YL., Tobari, Y., Narihiro, M., Bentley, GE., Kriegsfeld, LJ., *et al*. 2014. Central and direct regulation of testicular activity by gonadotropin-inhibitory hormone and its receptor. *Front Endocrinol*, 5(8).
- van Anders, SM. 2012. Testosterone and sexual desire in healthy women and men. *Arch Sex Behav*, 41(6): 1471-1484.
- Walker, WH. 2011. Testosterone signaling and the regulation of spermatogenesis. *Spermatogenesis*, 1(2): 116-120.

- Wang, XJ., Xu, TY., Xia, LL., Zhang, XH., Zhu, ZW., Chen, DR., *et al.* 2015. Castration impairs erectile organ structure and function by inhibiting autophagy and promoting apoptosis of corpus cavernosum smooth muscle cells in rats. *Int Urol Nephrol*, 47: 1105–1115.
- Wu, D., Gore, AC. 2010. Changes in androgen receptor, estrogen receptor alpha, and sexual behavior with aging and testosterone in male rats. *Horm Behav*, 58(2): 306–316.
- Wu, F., Tajar, A., Pye, S. 2008. Hypothalamic-pituitary testicular axis disruptions in older men are differentially linked to age and modifiable risk factors: the European male aging study. *J Clin Endocrinol Metab*, 93: 2737–2745.
- Yakubu, MT., Akanji, MA. 2011. Effect of aqueous extract of massularia acuminata stem on sexual behaviour of male wistar rats. *Evid Based Complement Alternat Med*, 2011: 1-10.
- Yeap, BB., Araujo, AB., Wittert, GA. 2012. Do low testosterone levels contribute to ill-health during male ageing?. *Crit Rev Clin Lab Sci*, 49: 168–182.
- Yu, WHA., McGinnis, MY. 2001. Androgen receptors in cranial nerve motor nuclei of male and female rats. *J Neurobiol*, 46: 1–10.
- Zhang, XH., Melman, A., DiSanto, ME. 2011. Update on corpus cavernosum smooth muscle contractile pathways in erectile function: a role for testosterone?. *J Sex Med*, 8: 1865–1879.