

DAFTAR PUSTAKA

- Abbate, G. M., Sacerdote, P., Amodeo, G., Mangano, A., & Levrini, L. (2016). Experimentally Induced Pulpal Lesion and Substance P Expression: Effect of Ketoprofen—A Preliminary Study. *International Journal of Dentistry*, 2016, 1–5. <https://doi.org/10.1155/2016/6820781>
- Aggarwal, B. B., & Harikumar, K. B. (2009). Potential therapeutic effects of curcumin, the anti-inflammatory agent, against neurodegenerative, cardiovascular, pulmonary, metabolic, autoimmune and neoplastic diseases. *The International Journal of Biochemistry & Cell Biology*, 41(1), 40–59. <https://doi.org/10.1016/j.biocel.2008.06.010>
- Ahmad, W., Kumolosasi, E., Jantan, I., Bukhari, S. N. A., & Jasamai, M. (2014). Effects of Novel Diarylpentanoid Analogues of Curcumin on Secretory Phospholipase A₂, Cyclooxygenases, Lipo-oxygenase, and Microsomal Prostaglandin E Synthase-1. *Chemical Biology & Drug Design*, 83(6), 670–681. <https://doi.org/10.1111/cbdd.12280>
- Al-Haboubi, H. A., & Zeitlin, I. J. (1983). Re-appraisal of the role of histamine in carrageenan-induced paw oedema. *European Journal of Pharmacology*, 88(2–3), 169–176. [https://doi.org/10.1016/0014-2999\(83\)90003-1](https://doi.org/10.1016/0014-2999(83)90003-1)
- Almawi, W. Y., & Melemedjian, O. K. (2002). Molecular mechanisms of glucocorticoid antiproliferative effects: antagonism of transcription factor activity by glucocorticoid receptor. *Journal of Leukocyte Biology*, 71(1), 9–15. <https://doi.org/10.1189/jlb.71.1.9>
- AL-Wajeeh, N. S., Hajerezaie, M., Noor, S. M., Halabi, M. F., Al-Henhena, N., Azizan, A. H. S., Kamran, S., Hassandarvish, P., Shwter, A. N., karimian, H., Ali, H. M., & Abdulla, M. A. (2016). The gastro protective effects of Cibotium barometz hair on ethanol-induced gastric ulcer in Sprague-Dawley rats. *BMC Veterinary Research*, 13(1), 27. <https://doi.org/10.1186/s12917-017-0949-z>
- Anand, P., Kunnumakkara, A. B., Newman, R. A., & Aggarwal, B. B. (2007). Bioavailability of Curcumin: Problems and Promises. *Molecular Pharmaceutics*, 4(6), 807–818. <https://doi.org/10.1021/mp700113r>
- Anderson, M. T., Staal, F. J., Gitler, C., Herzenberg, L. A., & Herzenberg, L. A. (1994). Separation of oxidant-initiated and redox-regulated steps in the NF-kappa B signal transduction pathway. *Proceedings of the National Academy of Sciences*, 91(24), 11527–11531. <https://doi.org/10.1073/pnas.91.24.11527>
- Bandgar, B. P., Hote, B. S., Jalde, S. S., & Gacche, R. N. (2012a). Synthesis and biological evaluation of novel curcumin analogues as anti-inflammatory, anti-cancer and anti-oxidant agents. *Medicinal Chemistry Research*, 21(10), 3006–3014. <https://doi.org/10.1007/s00044-011-9834-7>
- Bandgar, B. P., Hote, B. S., Jalde, S. S., & Gacche, R. N. (2012b). Synthesis and biological evaluation of novel curcumin analogues as anti-inflammatory, anti-cancer and anti-oxidant agents. *Medicinal Chemistry Research*, 21(10), 3006–3014. <https://doi.org/10.1007/s00044-011-9834-7>
- Bates, D., Schultheis, B. C., Hanes, M. C., Jolly, S. M., Chakravarthy, K. V., Deer, T. R., Levy, R. M., & Hunter, C. W. (2019). A Comprehensive Algorithm for Management of Neuropathic Pain. *Pain Medicine*, 20(Supplement_1), S2–S12. <https://doi.org/10.1093/pm/pnz075>
- Bellik, Y., Boukraâ, L., Alzahrani, H., Bakhotmah, B., Abdellah, F., Hammoudi, S., & Iguer-Ouada, M. (2012). Molecular Mechanism Underlying Anti-Inflammatory and Anti-

- Allergic Activities of Phytochemicals: An Update. *Molecules*, 18(1), 322–353. <https://doi.org/10.3390/molecules18010322>
- Benson, A., Pifer, R., Behrendt, C. L., Hooper, L. V., & Yarovinsky, F. (2009). Gut Commensal Bacteria Direct a Protective Immune Response against *Toxoplasma gondii*. *Cell Host & Microbe*, 6(2), 187–196. <https://doi.org/10.1016/j.chom.2009.06.005>
- Biebl, M. M., & Buchner, J. (2019). Structure, Function, and Regulation of the Hsp90 Machinery. *Cold Spring Harbor Perspectives in Biology*, 11(9), a034017. <https://doi.org/10.1101/cshperspect.a034017>
- Biswas, S. K. (2016). Does the Interdependence between Oxidative Stress and Inflammation Explain the Antioxidant Paradox? *Oxidative Medicine and Cellular Longevity*, 2016, 1–9. <https://doi.org/10.1155/2016/5698931>
- Bonferoni, M. C., Rossi, S., Sandri, G., & Ferrari, F. (2017). Nanoparticle formulations to enhance tumor targeting of poorly soluble polyphenols with potential anticancer properties. *Seminars in Cancer Biology*, 46, 205–214. <https://doi.org/10.1016/j.semcancer.2017.06.010>
- Boufridi, A., & Quinn, R. J. (2018). Harnessing the Properties of Natural Products. *Annual Review of Pharmacology and Toxicology*, 58(1), 451–470. <https://doi.org/10.1146/annurev-pharmtox-010716-105029>
- Buckley, C. D., Gilroy, D. W., & Serhan, C. N. (2014). Proresolving Lipid Mediators and Mechanisms in the Resolution of Acute Inflammation. *Immunity*, 40(3), 315–327. <https://doi.org/10.1016/j.immuni.2014.02.009>
- Bustos-Salgado, P., Andrade-Carrera, B., Domínguez-Villegas, V., Díaz-Garrido, N., Rodríguez-Lagunas, M. J., Badía, J., Balmori, L., Mallandrich, M., Calpena-Campmany, A., & Garduño-Ramírez, M. L. (2021). Screening Anti-Inflammatory Effects of Flavanones Solutions. *International Journal of Molecular Sciences*, 22(16), 8878. <https://doi.org/10.3390/ijms22168878>
- Calixto, J. B., Otuki, M. F., & Santos, A. R. S. (2003). Anti-Inflammatory Compounds of Plant Origin. Part I. Action on Arachidonic Acid Pathway, Nitric Oxide and Nuclear Factor κ B (NF- κ B). *Planta Medica*, 69(11), 973–983. <https://doi.org/10.1055/s-2003-45141>
- Chainani-Wu, N. (2003). Safety and Anti-Inflammatory Activity of Curcumin: A Component of Tumeric (*Curcuma longa*). *The Journal of Alternative and Complementary Medicine*, 9(1), 161–168. <https://doi.org/10.1089/107555303321223035>
- Charan, J., & Kantharia, N. D. (2013). How to calculate sample size in animal studies? *Journal of Pharmacology and Pharmacotherapeutics*, 4(4), 303–306. <https://doi.org/10.4103/0976-500X.119726>
- Chen, L.-H., Song, J.-L., Qian, Y., Zhao, X., Suo, H.-Y., & Li, J. (2014). Increased Preventive Effect on Colon Carcinogenesis by Use of Resistant Starch (RS3) as the Carrier for Polysaccharide of *Larimichthys Crocea* Swimming Bladder. *International Journal of Molecular Sciences*, 15(1), 817–829. <https://doi.org/10.3390/ijms15010817>
- Chien, C.-M., Lin, K.-L., Su, J.-C., Chuang, P.-W., Tseng, C.-H., Chen, Y.-L., Chang, L.-S., & Lin, S.-R. (2010). Naphtho[1,2-b]furan-4,5-dione induces apoptosis of oral squamous cell carcinoma: Involvement of EGF receptor/PI3K/Akt signaling pathway. *European Journal of Pharmacology*, 636(1–3), 52–58. <https://doi.org/10.1016/j.ejphar.2010.03.030>
- Cho, J. Y., Yoo, E. S., Baik, K. U., Park, M. H., & Han, B. H. (2001). In Vitro Inhibitory Effect of Protopanaxadiol Ginsenosides on Tumor Necrosis Factor (TNF)- α Production and its Modulation by Known TNF- α Antagonists. *Planta Medica*, 67(3), 213–218.

- <https://doi.org/10.1055/s-2001-12005>
- Chou, T. (2003). Anti-inflammatory and analgesic effects of paeonol in carrageenan-evoked thermal hyperalgesia. *British Journal of Pharmacology*, 139(6), 1146–1152. <https://doi.org/10.1038/sj.bjp.0705360>
- Chung, H.-J., Lee, H.-S., Shin, J.-S., Lee, S.-H., Park, B.-M., Youn, Y.-S., & Lee, S. K. (2010). Modulation of acute and chronic inflammatory processes by a traditional medicine preparation GCSB-5 both in vitro and in vivo animal models. *Journal of Ethnopharmacology*, 130(3), 450–459. <https://doi.org/10.1016/j.jep.2010.05.020>
- Colloca, L., Ludman, T., Bouhassira, D., Baron, R., Dickenson, A. H., Yarnitsky, D., Freeman, R., Truini, A., Attal, N., Finnerup, N. B., Eccleston, C., Kalso, E., Bennett, D. L., Dworkin, R. H., & Raja, S. N. (2017). Neuropathic pain. *Nature Reviews Disease Primers*, 3(1), 17002. <https://doi.org/10.1038/nrdp.2017.2>
- Cong, H. H., Khaziakhmetova, V. N., & Zigashina, L. E. (2015). Rat paw oedema modeling and NSAIDs: Timing of effects. *International Journal of Risk & Safety in Medicine*, 27(s1), S76–S77. <https://doi.org/10.3233/JRS-150697>
- Croxtall, J. D., Choudhury, Q., & Flower, R. J. (2000). Glucocorticoids act within minutes to inhibit recruitment of signalling factors to activated EGF receptors through a receptor-dependent, transcription-independent mechanism. *British Journal of Pharmacology*, 130(2), 289–298. <https://doi.org/10.1038/sj.bjp.0703272>
- Davis, A., & Robson, J. (2016). The dangers of NSAIDs: look both ways. *British Journal of General Practice*, 66(645), 172–173. <https://doi.org/10.3399/bjgp16X684433>
- de Anda-Jáuregui, G., Guo, K., McGregor, B. A., & Hur, J. (2018). Exploration of the Anti-Inflammatory Drug Space Through Network Pharmacology: Applications for Drug Repurposing. *Frontiers in Physiology*, 9. <https://doi.org/10.3389/fphys.2018.00151>
- Dewanjee, S., Dua, T. K., & Sahu, R. (2013). Potential anti-inflammatory effect of *Leea macrophylla* Roxb. leaves: A wild edible plant. *Food and Chemical Toxicology*, 59, 514–520. <https://doi.org/10.1016/j.fct.2013.06.038>
- Dubois, C., Vanden Abeele, F., Lehen'kyi, V., Gkika, D., Guarmit, B., Lepage, G., Slomianny, C., Borowiec, A. S., Bidaux, G., Benahmed, M., Shuba, Y., & Prevarskaya, N. (2014). Remodeling of Channel-Forming ORAI Proteins Determines an Oncogenic Switch in Prostate Cancer. *Cancer Cell*, 26(1), 19–32. <https://doi.org/10.1016/j.ccr.2014.04.025>
- Duvoix, A., Blasius, R., Delhalle, S., Schnekenburger, M., Morceau, F., Henry, E., Dicato, M., & Diederich, M. (2005). Chemopreventive and therapeutic effects of curcumin. *Cancer Letters*, 223(2), 181–190. <https://doi.org/10.1016/j.canlet.2004.09.041>
- Duwiejua, M., Woode, E., & Obiri, D. D. (2002). Pseudo-akuammigine, an alkaloid from *Picralima nitida* seeds, has anti-inflammatory and analgesic actions in rats. *Journal of Ethnopharmacology*, 81(1), 73–79. [https://doi.org/10.1016/S0378-8741\(02\)00058-2](https://doi.org/10.1016/S0378-8741(02)00058-2)
- Dzoyem, J. P., McGaw, L. J., Kuete, V., & Bakowsky, U. (2017). Anti-inflammatory and Antinociceptive Activities of African Medicinal Spices and Vegetables. Dalam *Medicinal Spices and Vegetables from Africa* (hlm. 239–270). Elsevier. <https://doi.org/10.1016/B978-0-12-809286-6.00009-1>
- Eddouks, M., Chattopadhyay, D., & Zeggwagh, N. A. (2012). Animal Models as Tools to Investigate Antidiabetic and Anti-Inflammatory Plants. *Evidence-Based Complementary and Alternative Medicine*, 2012, 1–14. <https://doi.org/10.1155/2012/142087>
- Fadus, M. C., Lau, C., Bikhchandani, J., & Lynch, H. T. (2017). Curcumin: An age-old anti-inflammatory and anti-neoplastic agent. *Journal of Traditional and Complementary*

- Medicine*, 7(3), 339–346. <https://doi.org/10.1016/j.jtcme.2016.08.002>
- Fehrenbacher, J. C., Vasko, M. R., & Duarte, D. B. (2012). Models of Inflammation: Carrageenan- or Complete Freund's Adjuvant (CFA)-Induced Edema and Hypersensitivity in the Rat. *Current Protocols in Pharmacology*, 56(1). <https://doi.org/10.1002/0471141755.ph0504s56>
- Flohé, L., Brigelius-Flohé, R., Saliou, C., Traber, M. G., & Packer, L. (1997). Redox Regulation of NF-kappa B Activation. *Free Radical Biology and Medicine*, 22(6), 1115–1126. [https://doi.org/10.1016/S0891-5849\(96\)00501-1](https://doi.org/10.1016/S0891-5849(96)00501-1)
- Franceschi, C., & Campisi, J. (2014). Chronic Inflammation (Inflammaging) and Its Potential Contribution to Age-Associated Diseases. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 69(Suppl 1), S4–S9. <https://doi.org/10.1093/gerona/glu057>
- Furman, D., Campisi, J., Verdin, E., Carrera-Bastos, P., Targ, S., Franceschi, C., Ferrucci, L., Gilroy, D. W., Fasano, A., Miller, G. W., Miller, A. H., Mantovani, A., Weyand, C. M., Barzilai, N., Goronzy, J. J., Rando, T. A., Effros, R. B., Lucia, A., Kleinstreuer, N., & Slavich, G. M. (2019). Chronic inflammation in the etiology of disease across the life span. *Nature Medicine*, 25(12), 1822–1832. <https://doi.org/10.1038/s41591-019-0675-0>
- Ghorbanzadeh, B., Mansouri, M., Hemmati, A., Naghizadeh, B., Mard, S., & Rezaie, A. (2015). A study of the mechanisms underlying the anti-inflammatory effect of ellagic acid in carrageenan-induced paw edema in rats. *Indian Journal of Pharmacology*, 47(3), 292. <https://doi.org/10.4103/0253-7613.157127>
- Gilligan, J. P., Lovato, S. J., Erion, M. D., & Jeng, A. Y. (1994). Modulation of carrageenan-induced hind paw edema by substance P. *Inflammation*, 18(3), 285–292. <https://doi.org/10.1007/BF01534269>
- Goel, A., Boland, C. R., & Chauhan, D. P. (2001). Specific inhibition of cyclooxygenase-2 (COX-2) expression by dietary curcumin in HT-29 human colon cancer cells. *Cancer Letters*, 172(2), 111–118. [https://doi.org/10.1016/S0304-3835\(01\)00655-3](https://doi.org/10.1016/S0304-3835(01)00655-3)
- Guo, R.-F., & Ward, P. A. (2005). ROLE OF C5A IN INFLAMMATORY RESPONSES. *Annual Review of Immunology*, 23(1), 821–852. <https://doi.org/10.1146/annurev.immunol.23.021704.115835>
- Halici, Z., Dengiz, G. O., Odabasoglu, F., Suleyman, H., Cadirci, E., & Halici, M. (2007). Amiodarone has anti-inflammatory and anti-oxidative properties: An experimental study in rats with carrageenan-induced paw edema. *European Journal of Pharmacology*, 566(1–3), 215–221. <https://doi.org/10.1016/j.ejphar.2007.03.046>
- Hamor, G. H., & Watson, L. D. (1971). Schiff Base Derivatives of Anti-Inflammatory O-Substituted Hydroxylamines. *Journal of Pharmaceutical Sciences*, 60(6), 925–927. <https://doi.org/10.1002/jps.2600600628>
- Handler, N., Jaeger, W., Puschacher, H., Leisser, K., & Erker, T. (2007). Synthesis of Novel Curcumin Analogues and Their Evaluation as Selective Cyclooxygenase-1 (COX-1) Inhibitors. *Chemical and Pharmaceutical Bulletin*, 55(1), 64–71. <https://doi.org/10.1248/cpb.55.64>
- He, R., Li, Y., Han, C., Lin, R., Qian, W., & Hou, X. (2019). L-Fucose ameliorates DSS-induced acute colitis via inhibiting macrophage M1 polarization and inhibiting NLRP3 inflammasome and NF-kB activation. *International Immunopharmacology*, 73, 379–388. <https://doi.org/10.1016/j.intimp.2019.05.013>
- HEINRICH, P. C., BEHRMANN, I., HAAN, S., HERMANN, H. M., MÜLLER-NEUEN,

- G., & SCHAPER, F. (2003). Principles of interleukin (IL)-6-type cytokine signalling and its regulation. *Biochemical Journal*, 374(1), 1–20. <https://doi.org/10.1042/bj20030407>
- Heras, B., & Hortelano, S. (2009). Molecular Basis of the Anti-Inflammatory Effects of Terpenoids. *Inflammation & Allergy-Drug Targets*, 8(1), 28–39. <https://doi.org/10.2174/187152809787582534>
- Hersh, E. M., & Bodey, G. P. (1970). Leukocytic Mechanisms in Inflammation. *Annual Review of Medicine*, 21(1), 105–132. <https://doi.org/10.1146/annurev.me.21.020170.000541>
- Hinson, R. M., Williams, J. A., & Shacter, E. (1996). Elevated interleukin 6 is induced by prostaglandin E2 in a murine model of inflammation: possible role of cyclooxygenase-2. *Proceedings of the National Academy of Sciences*, 93(10), 4885–4890. <https://doi.org/10.1073/pnas.93.10.4885>
- Hirano, T., Yasukawa, K., Harada, H., Taga, T., Watanabe, Y., Matsuda, T., Kashiwamura, S., Nakajima, K., Koyama, K., Iwamatsu, A., Tsunasawa, S., Sakiyama, F., Matsui, H., Takahara, Y., Taniguchi, T., & Kishimoto, T. (1986). Complementary DNA for a novel human interleukin (BSF-2) that induces B lymphocytes to produce immunoglobulin. *Nature*, 324(6092), 73–76. <https://doi.org/10.1038/324073a0>
- Hopkin, S. J., Lewis, J. W., Krautter, F., Chimen, M., & McGettrick, H. M. (2019). Triggering the Resolution of Immune Mediated Inflammatory Diseases: Can Targeting Leukocyte Migration Be the Answer? *Frontiers in Pharmacology*, 10. <https://doi.org/10.3389/fphar.2019.00184>
- Itokawa, H., Shi, Q., Akiyama, T., Morris-Natschke, S. L., & Lee, K.-H. (2008). Recent advances in the investigation of curcuminoids. *Chinese Medicine*, 3(1), 11. <https://doi.org/10.1186/1749-8546-3-11>
- Iyer, S., Koltsov, J. C. B., Steinhaus, M., Ross, T., Stein, D., Yang, J., LaFage, V., Albert, T., & Kim, H. J. (2019). A Prospective, Psychometric Validation of National Institutes of Health Patient-Reported Outcomes Measurement Information System Physical Function, Pain Interference, and Upper Extremity Computer Adaptive Testing in Cervical Spine Patients. *Spine*, 44(22), 1539–1549. <https://doi.org/10.1097/BRS.00000000000003133>
- Jayaprakasha, G. K., Jagan Mohan Rao, L., & Sakariah, K. K. (2005). Chemistry and biological activities of *C. longa*. *Trends in Food Science & Technology*, 16(12), 533–548. <https://doi.org/10.1016/j.tifs.2005.08.006>
- Kim, H. Y., Park, E. J., Joe, E., & Jou, I. (2003). Curcumin Suppresses Janus Kinase-STAT Inflammatory Signaling through Activation of Src Homology 2 Domain-Containing Tyrosine Phosphatase 2 in Brain Microglia. *The Journal of Immunology*, 171(11), 6072–6079. <https://doi.org/10.4049/jimmunol.171.11.6072>
- Kim, K. H., Im, H.-W., Karmacharya, M. B., Kim, S., Min, B.-H., Park, S. R., & Choi, B. H. (2020). Low-intensity ultrasound attenuates paw edema formation and decreases vascular permeability induced by carrageenan injection in rats. *Journal of Inflammation*, 17(1), 7. <https://doi.org/10.1186/s12950-020-0235-x>
- Kimura, A., & Kishimoto, T. (2010). IL-6: Regulator of Treg/Th17 balance. *European Journal of Immunology*, 40(7), 1830–1835. <https://doi.org/10.1002/eji.201040391>
- Kishimoto, T. (2006). Interleukin-6: discovery of a pleiotropic cytokine. *Arthritis Research & Therapy*, 8(Suppl 2), S2. <https://doi.org/10.1186/ar1916>
- Kohli, P., & Levy, B. D. (2009). Resolvins and protectins: mediating solutions to inflammation. *British Journal of Pharmacology*, 158(4), 960–971. <https://doi.org/10.1111/j.1476-5381.2009.00290.x>

- Kulkarni, R., Achaiah, G., & Narahari Sastry, G. (2006). Novel Targets for Antiinflammatory and Antiarthritic Agents. *Current Pharmaceutical Design*, 12(19), 2437–2454. <https://doi.org/10.2174/138161206777698945>
- Kumari, N., Dwarakanath, B. S., Das, A., & Bhatt, A. N. (2016). Role of interleukin-6 in cancer progression and therapeutic resistance. *Tumor Biology*, 37(9), 11553–11572. <https://doi.org/10.1007/s13277-016-5098-7>
- Labianca, R., Sarzi-Puttini, P., Zuccaro, S. M., Cherubino, P., Vellucci, R., & Fornasari, D. (2012). Adverse Effects Associated with Non-opioid and Opioid Treatment in Patients with Chronic Pain. *Clinical Drug Investigation*, 32, 53–63. <https://doi.org/10.2165/11630080-000000000-00000>
- Larsen, G. L., & Henson, P. M. (1983). Mediators of Inflammation. *Annual Review of Immunology*, 1(1), 335–359. <https://doi.org/10.1146/annurev.iy.01.040183.002003>
- Lawrence, T., & Gilroy, D. W. (2006). Chronic inflammation: a failure of resolution? *International Journal of Experimental Pathology*, 88(2), 85–94. <https://doi.org/10.1111/j.1365-2613.2006.00507.x>
- LEE, H. J., SEO, H.-S., KIM, G.-J., JEON, C. Y., PARK, J. H., JANG, B.-H., PARK, S.-J., SHIN, Y.-C., & KO, S.-G. (2013). Houttuynia cordata Thunb inhibits the production of pro-inflammatory cytokines through inhibition of the NFκB signaling pathway in HMC-1 human mast cells. *Molecular Medicine Reports*, 8(3), 731–736. <https://doi.org/10.3892/mmr.2013.1585>
- Lee, J.-H., Choi, J. K., Noh, M. S., Hwang, B. Y., Hong, Y. S., & Lee, J. J. (2004). Anti-Inflammatory Effect of Kamebakaurin in *in vivo* Animal Models. *Planta Medica*, 70(6), 526–530. <https://doi.org/10.1055/s-2004-827152>
- Li, N., Cao, L., Cheng, Y., Meng, Z.-Q., Tang, Z.-H., Liu, W.-J., Wang, Z.-Z., Ding, G., & Xiao, W. (2014). *In vivo* anti-inflammatory and analgesic activities of strictosamide from *Nauclea officinalis*. *Pharmaceutical Biology*, 52(11), 1445–1450. <https://doi.org/10.3109/13880209.2014.895910>
- Li, Z., Peng, S., Chen, X., Zhu, Y., Zou, L., Liu, W., & Liu, C. (2018). Pluronics modified liposomes for curcumin encapsulation: Sustained release, stability and bioaccessibility. *Food Research International*, 108, 246–253. <https://doi.org/10.1016/j.foodres.2018.03.048>
- Liang, G., Li, X., Chen, L., Yang, S., Wu, X., Studer, E., Gurley, E., Hylemon, P. B., Ye, F., Li, Y., & Zhou, H. (2008). Synthesis and anti-inflammatory activities of mono-carbonyl analogues of curcumin. *Bioorganic & Medicinal Chemistry Letters*, 18(4), 1525–1529. <https://doi.org/10.1016/j.bmcl.2007.12.068>
- Liang, G., Liu, Z., Wang, Z., Zhang, Y., Xiao, B., Fang, Q., Zhao, C., He, W., & Yang, S. (2014). Discovery and evaluation of asymmetrical monocarbonyl analogs of curcumin as anti-inflammatory agents. *Drug Design, Development and Therapy*, 373. <https://doi.org/10.2147/DDDT.S58168>
- Liang, G., Yang, S., Zhou, H., Shao, L., Huang, K., Xiao, J., Huang, Z., & Li, X. (2009). Synthesis, crystal structure and anti-inflammatory properties of curcumin analogues. *European Journal of Medicinal Chemistry*, 44(2), 915–919. <https://doi.org/10.1016/j.ejmech.2008.01.031>
- Lipsky, P. E. (1999). The clinical potential of cyclooxygenase-2-specific inhibitors. *The American Journal of Medicine*, 106(5), 51S–57S. [https://doi.org/10.1016/S0002-9343\(99\)00117-5](https://doi.org/10.1016/S0002-9343(99)00117-5)

- Liu, F., Ma, D., Luo, X., Zhang, Z., He, L., Gao, Y., & McClements, D. J. (2018). Fabrication and characterization of protein-phenolic conjugate nanoparticles for co-delivery of curcumin and resveratrol. *Food Hydrocolloids*, 79, 450–461. <https://doi.org/10.1016/j.foodhyd.2018.01.017>
- Mangan, P. R., Harrington, L. E., O'Quinn, D. B., Helms, W. S., Bullard, D. C., Elson, C. O., Hatton, R. D., Wahl, S. M., Schoeb, T. R., & Weaver, C. T. (2006). Transforming growth factor- β induces development of the TH17 lineage. *Nature*, 441(7090), 231–234. <https://doi.org/10.1038/nature04754>
- Medzhitov, R. (2008). Origin and physiological roles of inflammation. *Nature*, 454(7203), 428–435. <https://doi.org/10.1038/nature07201>
- Mohd Aluwi, M. F. F., Rullah, K., Yamin, B. M., Leong, S. W., Abdul Bahari, M. N., Lim, S. J., Mohd Faudzi, S. M., Jalil, J., Abas, F., Mohd Fauzi, N., Ismail, N. H., Jantan, I., & Lam, K. W. (2016). Synthesis of unsymmetrical monocarbonyl curcumin analogues with potent inhibition on prostaglandin E2 production in LPS-induced murine and human macrophages cell lines. *Bioorganic & Medicinal Chemistry Letters*, 26(10), 2531–2538. <https://doi.org/10.1016/j.bmcl.2016.03.092>
- Morris, C. J. (t.t.). Carrageenan-Induced Paw Edema in the Rat and Mouse. Dalam *Inflammation Protocols* (hlm. 115–122). Humana Press. <https://doi.org/10.1385/1-59259-374-7:115>
- Nacife, V. P., Soeiro, M. de N. C., Gomes, R. N., D'Avila, H., Neto, H. C. C.-F., & Meirelles, M. de N. L. (2004). Morphological and Biochemical Characterization of Macrophages Activated by Carrageenan and Lipopolysaccharide In Vivo. *Cell Structure and Function*, 29(2), 27–34. <https://doi.org/10.1247/csf.29.27>
- Nakajima, T., Kinoshita, S., Sasagawa, T., Sasaki, K., Naruto, M., Kishimoto, T., & Akira, S. (1993). Phosphorylation at threonine-235 by a ras-dependent mitogen-activated protein kinase cascade is essential for transcription factor NF-IL6. *Proceedings of the National Academy of Sciences*, 90(6), 2207–2211. <https://doi.org/10.1073/pnas.90.6.2207>
- Nathan, C., & Ding, A. (2010). Nonresolving Inflammation. *Cell*, 140(6), 871–882. <https://doi.org/10.1016/j.cell.2010.02.029>
- Necas, J., & Bartosikova, L. (2013). Carrageenan: a review. *Veterinárni medicína*, 58(4), 187–205. <https://doi.org/10.17221/6758-VETMED>
- Neurath, M. F., & Finotto, S. (2011). IL-6 signaling in autoimmunity, chronic inflammation and inflammation-associated cancer. *Cytokine & Growth Factor Reviews*, 22(2), 83–89. <https://doi.org/10.1016/j.cytogfr.2011.02.003>
- Olivera, A., Moore, T. W., Hu, F., Brown, A. P., Sun, A., Liotta, D. C., Snyder, J. P., Yoon, Y., Shim, H., Marcus, A. I., Miller, A. H., & Pace, T. W. W. (2012). Inhibition of the NF- κ B signaling pathway by the curcumin analog, 3,5-Bis(2-pyridinylmethylidene)-4-piperidone (EF31): Anti-inflammatory and anti-cancer properties. *International Immunopharmacology*, 12(2), 368–377. <https://doi.org/10.1016/j.intimp.2011.12.009>
- Pantsar, T., & Poso, A. (2018). Binding Affinity via Docking: Fact and Fiction. *Molecules*, 23(8), 1899. <https://doi.org/10.3390/molecules23081899>
- Patil, K. R., Mahajan, U. B., Unger, B. S., Goyal, S. N., Belemkar, S., Surana, S. J., Ojha, S., & Patil, C. R. (2019a). Animal Models of Inflammation for Screening of Anti-inflammatory Drugs: Implications for the Discovery and Development of Phytopharmaceuticals. *International Journal of Molecular Sciences*, 20(18), 4367. <https://doi.org/10.3390/ijms20184367>

- Patil, K. R., Mahajan, U. B., Unger, B. S., Goyal, S. N., Belemkar, S., Surana, S. J., Ojha, S., & Patil, C. R. (2019b). Animal Models of Inflammation for Screening of Anti-inflammatory Drugs: Implications for the Discovery and Development of Phytopharmaceuticals. *International Journal of Molecular Sciences*, 20(18), 4367. <https://doi.org/10.3390/ijms20184367>
- Perianayagam, J. B., Sharma, S. K., & Pillai, K. K. (2006). Anti-inflammatory activity of *Trichodesma indicum* root extract in experimental animals. *Journal of Ethnopharmacology*, 104(3), 410–414. <https://doi.org/10.1016/j.jep.2005.08.077>
- Priyadarsini, K. (2014). The Chemistry of Curcumin: From Extraction to Therapeutic Agent. *Molecules*, 19(12), 20091–20112. <https://doi.org/10.3390/molecules191220091>
- Qing, H., Desrouleaux, R., Israni-Winger, K., Mineur, Y. S., Fogelman, N., Zhang, C., Rashed, S., Palm, N. W., Sinha, R., Picciotto, M. R., Perry, R. J., & Wang, A. (2020). Origin and Function of Stress-Induced IL-6 in Murine Models. *Cell*, 182(2), 372–387.e14. <https://doi.org/10.1016/j.cell.2020.05.054>
- Roome, T., Dar, A., Naqvi, S., Ali, S., & Choudhary, M. I. (2008). *Aegiceras corniculatum* extract suppresses initial and late phases of inflammation in rat paw and attenuates the production of eicosanoids in rat neutrophils and human platelets. *Journal of Ethnopharmacology*, 120(2), 248–254. <https://doi.org/10.1016/j.jep.2008.08.025>
- Rosa, M. Di, & Willoughby, D. A. (2011). Screens for anti-inflammatory drugs. *Journal of Pharmacy and Pharmacology*, 23(4), 297–298. <https://doi.org/10.1111/j.2042-7158.1971.tb08661.x>
- Roy, P., Amdekar, S., Kumar, A., & Singh, V. (2011). Preliminary study of the antioxidant properties of flowers and roots of *Pyrostegia venusta* (Ker Gawl) Miers. *BMC Complementary and Alternative Medicine*, 11(1), 69. <https://doi.org/10.1186/1472-6882-11-69>
- Safayhi, H., & Sailer, E.-R. (1997). Anti-Inflammatory Actions of Pentacyclic Triterpenes. *Planta Medica*, 63(06), 487–493. <https://doi.org/10.1055/s-2006-957748>
- Sahlan, M., Devina, A., Pratami, D. K., Situmorang, H., Farida, S., Munim, A., Kusumoputro, B., Yohda, M., Faried, A., Gozan, M., & Ledyawati, M. (2019). Anti-inflammatory activity of *Tetragronula* species from Indonesia. *Saudi Journal of Biological Sciences*, 26(7), 1531–1538. <https://doi.org/10.1016/j.sjbs.2018.12.008>
- Sakamoto, S., Putalun, W., Vimolmangkang, S., Phoolcharoen, W., Shoyama, Y., Tanaka, H., & Morimoto, S. (2018). Enzyme-linked immunosorbent assay for the quantitative/qualitative analysis of plant secondary metabolites. *Journal of Natural Medicines*, 72(1), 32–42. <https://doi.org/10.1007/s11418-017-1144-z>
- Salsabila, S. A., & Sudiono, J. (2022). Efek Antiinflamasi Ekstrak Kulit Tamarillo: Pemeriksaan Kadar IL-6 Tikus Pasca Induksi Karagenin. *Jurnal Biomedika dan Kesehatan*, 5(2), 75–81. <https://doi.org/10.18051/JBiomedKes.2022.v5.75-81>
- Sanchis, P., Fernández-Gayol, O., Comes, G., Aguilar, K., Escrig, A., Giralt, M., Palmiter, R. D., & Hidalgo, J. (2020). A new mouse model to study restoration of interleukin-6 (IL-6) expression in a Cre-dependent manner: microglial IL-6 regulation of experimental autoimmune encephalomyelitis. *Journal of Neuroinflammation*, 17(1), 304. <https://doi.org/10.1186/s12974-020-01969-0>
- Saraiva, M., & O'Garra, A. (2010). The regulation of IL-10 production by immune cells. *Nature Reviews Immunology*, 10(3), 170–181. <https://doi.org/10.1038/nri2711>
- Sarkhel, S. (2016). Evaluation of the anti-inflammatory activities of *Quillaja saponaria* Mol.

- saponin extract in mice. *Toxicology Reports*, 3, 1–3. <https://doi.org/10.1016/j.toxrep.2015.11.006>
- Scheller, J., Chalaris, A., Schmidt-Arras, D., & Rose-John, S. (2011). The pro- and anti-inflammatory properties of the cytokine interleukin-6. *Biochimica et Biophysica Acta (BBA) - Molecular Cell Research*, 1813(5), 878–888. <https://doi.org/10.1016/j.bbamcr.2011.01.034>
- Schüchen, R. H., Mücke, M., Marinova, M., Kravchenko, D., Häuser, W., Radbruch, L., & Conrad, R. (2018). Systematic review and meta-analysis on non-opioid analgesics in palliative medicine. *Journal of Cachexia, Sarcopenia and Muscle*, 9(7), 1235–1254. <https://doi.org/10.1002/jcsm.12352>
- Seibert, K., & Masferrer, J. L. (1994). Role of inducible cyclooxygenase (COX-2) in inflammation. *Receptor*, 4(1), 17–23.
- Selvam, C., Jachak, S. M., Thilagavathi, R., & Chakraborti, Asit. K. (2005). Design, synthesis, biological evaluation and molecular docking of curcumin analogues as antioxidant, cyclooxygenase inhibitory and anti-inflammatory agents. *Bioorganic & Medicinal Chemistry Letters*, 15(7), 1793–1797. <https://doi.org/10.1016/j.bmcl.2005.02.039>
- Shamma, M. (1997). Selection, Preparation and Pharmacological Evaluation of Plant Material By Elizabeth M. Williamson, David T. Okpako, and Fred J. Evans. John Wiley & Sons, Chichester, U.K. 1996. ix + 228 pp. 15.5 × 23.5 cm. ISBN 0-471-94217-0. \$39.95 (pbk). *Journal of Medicinal Chemistry*, 40(10), 1559–1559. <https://doi.org/10.1021/jm9607109>
- Sharma, R., Jadav, S. S., Yasmin, S., Bhatia, S., Khalilullah, H., & Ahsan, M. J. (2015). Simple, efficient, and improved synthesis of Biginelli-type compounds of curcumin as anticancer agents. *Medicinal Chemistry Research*, 24(2), 636–644. <https://doi.org/10.1007/s00044-014-1146-2>
- Shehzad, A., Rehman, G., & Lee, Y. S. (2013). Curcumin in inflammatory diseases. *BioFactors*, 39(1), 69–77. <https://doi.org/10.1002/biof.1066>
- Shi, J.-X., Su, X., Xu, J., Zhang, W.-Y., & Shi, Y. (2012). MK2 posttranscriptionally regulates TNF- α -induced expression of ICAM-1 and IL-8 via tristetraprolin in human pulmonary microvascular endothelial cells. *American Journal of Physiology-Lung Cellular and Molecular Physiology*, 302(8), L793–L799. <https://doi.org/10.1152/ajplung.00339.2011>
- Simmons, D. L. (2006). What makes a good anti-inflammatory drug target? *Drug Discovery Today*, 11(5–6), 210–219. [https://doi.org/10.1016/S1359-6446\(05\)03721-9](https://doi.org/10.1016/S1359-6446(05)03721-9)
- Sofidiya, M. O., Imeh, E., Ezeani, C., Aigbe, F. R., & Akindele, A. J. (2014). Antinociceptive and anti-inflammatory activities of ethanolic extract of *Alafia barteri*. *Revista Brasileira de Farmacognosia*, 24(3), 348–354. <https://doi.org/10.1016/j.bjp.2014.07.013>
- Solanki, H. K., Shah, D. A., Maheriya, P. M., & Patel, C. A. (2015). Evaluation of anti-inflammatory activity of probiotic on carrageenan-induced paw edema in Wistar rats. *International Journal of Biological Macromolecules*, 72, 1277–1282. <https://doi.org/10.1016/j.ijbiomac.2014.09.059>
- Stables, M. J., & Gilroy, D. W. (2011). Old and new generation lipid mediators in acute inflammation and resolution. *Progress in Lipid Research*, 50(1), 35–51. <https://doi.org/10.1016/j.plipres.2010.07.005>
- Strimpakos, A. S., & Sharma, R. A. (2008). Curcumin: Preventive and Therapeutic Properties in Laboratory Studies and Clinical Trials. *Antioxidants & Redox Signaling*, 10(3), 511–546. <https://doi.org/10.1089/ars.2007.1769>

- Su, J.-Y., Li, Q.-C., & Zhu, L. (2011). Evaluation of the in vivo anti-inflammatory activity of a flavone glycoside from *Cancrinia discoidea* (Ledeb.) Poljak. *EXCLI journal*, 10, 110–116.
- Sueth-Santiago, V., Mendes-Silva, G. P., Decoté-Ricardo, D., & Lima, M. E. F. de. (2015). CURCUMIN, THE GOLDEN POWDER FROM TURMERIC: INSIGHTS INTO CHEMICAL AND BIOLOGICAL ACTIVITIES. *Química Nova*. <https://doi.org/10.5935/0100-4042.20150035>
- Surjit, M., Ganti, K. P., Mukherji, A., Ye, T., Hua, G., Metzger, D., Li, M., & Chambon, P. (2011). Widespread Negative Response Elements Mediate Direct Repression by Agonist-Liganded Glucocorticoid Receptor. *Cell*, 145(2), 224–241. <https://doi.org/10.1016/j.cell.2011.03.027>
- Tiwari, M. (2017). The role of serratiopeptidase in the resolution of inflammation. *Asian Journal of Pharmaceutical Sciences*, 12(3), 209–215. <https://doi.org/10.1016/j.ajps.2017.01.003>
- Tsutsumi, S., Gotoh, T., Tomisato, W., Mima, S., Hoshino, T., Hwang, H.-J., Takenaka, H., Tsuchiya, T., Mori, M., & Mizushima, T. (2004). Endoplasmic reticulum stress response is involved in nonsteroidal anti-inflammatory drug-induced apoptosis. *Cell Death & Differentiation*, 11(9), 1009–1016. <https://doi.org/10.1038/sj.cdd.4401436>
- Vinegar, R., Schreiber, W., & Hugo, R. (1969). Biphasic development of carrageenin edema in rats. *The Journal of pharmacology and experimental therapeutics*, 166(1), 96–103.
- Walters, K. M., & Woessner, K. M. (2016). An Overview of Nonsteroidal Antiinflammatory Drug Reactions. *Immunology and Allergy Clinics of North America*, 36(4), 625–641. <https://doi.org/10.1016/j.iac.2016.06.001>
- Wang, X., Yang, G., Feng, Y., Ren, G., & Han, X. (2012). Optimizing feeding composition and carbon–nitrogen ratios for improved methane yield during anaerobic co-digestion of dairy, chicken manure and wheat straw. *Bioresource Technology*, 120, 78–83. <https://doi.org/10.1016/j.biortech.2012.06.058>
- Wanidworanun, C., & Strober, W. (1993). Predominant role of tumor necrosis factor-alpha in human monocyte IL-10 synthesis. *The Journal of Immunology*, 151(12), 6853–6861. <https://doi.org/10.4049/jimmunol.151.12.6853>
- Wilke, C. M., Wei, S., Wang, L., Kryczek, I., Kao, J., & Zou, W. (2011). Dual biological effects of the cytokines interleukin-10 and interferon- γ . *Cancer Immunology, Immunotherapy*, 60(11), 1529–1541. <https://doi.org/10.1007/s00262-011-1104-5>
- Winter, C. A., Risley, E. A., & Nuss, G. W. (1962). Carrageenin-Induced Edema in Hind Paw of the Rat as an Assay for Antiinflammatory Drugs. *Experimental Biology and Medicine*, 111(3), 544–547. <https://doi.org/10.3181/00379727-111-27849>
- Xiong, X., He, Y., Feng, B., Pan, Y., Zhang, H., Ke, X., Zhang, Y., Yang, M., Han, L., & Zhang, D. (2018). Screening for the anti-inflammation quality markers of Xiaojin Pills based on HPLC-MS/MS method, COX-2 inhibition test and protein interaction network. *Scientific Reports*, 8(1), 7454. <https://doi.org/10.1038/s41598-018-25582-7>
- Yu, S., Wang, X., He, X., Wang, Y., Gao, S., Ren, L., & Shi, Y. (2016). Curcumin exerts anti-inflammatory and antioxidative properties in 1-methyl-4-phenylpyridinium ion (MPP+)-stimulated mesencephalic astrocytes by interference with TLR4 and downstream signaling pathway. *Cell Stress and Chaperones*, 21(4), 697–705. <https://doi.org/10.1007/s12192-016-0695-3>