

DAFTAR PUSTAKA

- Abclonal. (2025). ABScript Neo RT Master Mix for qPCR with gDNA Remover. <https://eu.abclonal.com/molecular-biology/ABScriptNeoRTMasterMixforqPCRwithgDNARemover/RK20433>
- Anzar, C., Joseph, M., Sundaram, R., Vadiraj, G., Prasad, C., & Eranimose, B. (2023). In Vitro Anti-Inflammatory Effect of *Andrographis Paniculata* (Andropure) Against LPS-Induced TNF- α , IL-6, And Nitric Oxide (NO) Generation in Activated Macrophage RAW 264.7 Cell Lines. *International Journal of Pharmaceutical Research and Applications*, 8(5), 632–636. <https://doi.org/10.35629/7781-0805632636>
- Ariesaka, K. M., Hidayati, Z., Nurhayati, S., Dewi, N. L., & Nuryady, M. M. (2025). The Potency of Polymeric Nanoparticles as New Drug Delivery System: A Narrative Review. *Pharmacology and Clinical Pharmacy Research*, 10(1), 7. <https://doi.org/10.15416/pcpr.v10i1.56782>
- Bae, J.-S., Kim, J.-H., Kim, E. H., & Mo, J.-H. (2017). The role of IL-17 in a lipopolysaccharide-induced rhinitis model. *Allergy, asthma & immunology research*, 9(2), 169–176. <https://doi.org/10.4168/aaair.2017.9.2.169>
- Bao, Z., Huang, Y., Chen, J., Wang, Z., Qian, J., Xu, J., & Zhao, Y. (2019). Validation of reference genes for gene expression normalization in RAW264. 7 cells under different conditions. *BioMed Research International*, 2019(1), 6131879. <https://doi.org/10.1155/2019/6131879>
- Brancewicz, J., Wójcik, N., Sarnowska, Z., Robak, J., & Król, M. (2025). The multifaceted role of macrophages in biology and diseases. *International Journal of Molecular Sciences*, 26(5), 2107. <https://doi.org/10.3390/ijms26052107>
- Casamonti, M., Risaliti, L., Vanti, G., Piazzini, V., Bergonzi, M. C., & Bilia, A. R. (2019). Andrographolide loaded in micro-and nano-formulations: improved bioavailability, target-tissue distribution, and efficacy of the “king of bitters”. *Engineering*, 5(1), 69–75. <https://doi.org/10.1016/j.eng.2018.12.004>
- Chavda, V. P., Feehan, J., & Apostolopoulos, V. (2024). Inflammation: The cause of all diseases. *Cells*, 13(22), 1906. <https://doi.org/10.3390/cells13221906>
- Chen, L., Pan, R., Xu, X., & Guo, J. (2025). Nanodrug Delivery Systems for Direct Clearance or Neutralization of LPS. *International journal of nanomedicine*, 8653–8673. <https://doi.org/10.2147/ijn.s510037>
- Chernyak, B. V., Lyamzaev, K. G., & Mulkidjanian, A. Y. (2021). Innate immunity as an executor of the programmed death of individual organisms for the benefit of the entire population. *International Journal of Molecular Sciences*, 22(24), 13480. <https://doi.org/10.3390/ijms222413480>
- Chojnacka, K., Owczarek, K., Caban, M., Sosnowska, D., Polka, D., Koziółkiewicz, M., Fichna, J., & Lewandowska, U. (2020). Japanese quince (*Chaenomeles japonica*) leaf phenol extract as modulator of the inflammatory response in lipopolysaccharide-triggered murine macrophage RAW 264.7 cells. *Journal of Physiology and Pharmacology*, 71(6). <https://doi.org/10.26402/jpp.2020.6.07>

- Danaei, M., Dehghankhold, M., Ataie, S., Hasanzadeh Davarani, F., Javanmard, R., Dokhani, A., Khorasani, S., & Mozafari, y. M. (2018). Impact of particle size and polydispersity index on the clinical applications of lipidic nanocarrier systems. *Pharmaceutics*, *10*(2), 57. <https://doi.org/10.3390/pharmaceutics10020057>
- Eissa, N., Hussein, H., Wang, H., Rabbi, M. F., Bernstein, C. N., & Ghia, J.-E. (2016). Stability of reference genes for messenger RNA quantification by real-time PCR in mouse dextran sodium sulfate experimental colitis. *PLoS one*, *11*(5), e0156289. <https://doi.org/10.1371/journal.pone.0156289>
- El-Hammadi, M. M., & Arias, J. L. (2022). Recent advances in the surface functionalization of PLGA-based nanomedicines. *Nanomaterials*, *12*(3), 354. <https://doi.org/10.3390/nano12030354>
- Facchin, B. M., Dos Reis, G. O., Vieira, G. N., Mohr, E. T. B., da Rosa, J. S., Kretzer, I. F., Demarchi, I. G., & Dalmarco, E. M. (2022). Inflammatory biomarkers on an LPS-induced RAW 264.7 cell model: A systematic review and meta-analysis. *Inflammation Research*, *71*(7), 741–758. <https://doi.org/10.1007/s00011-022-01584-0>
- Feltrin, d. S., Felipe, Agner, T., Sayer, C., & Lona, L. M. F. (2022). Curcumin encapsulation in functional PLGA nanoparticles: A promising strategy for cancer therapies. *Advances in Colloid and Interface Science*, *300*, 102582. <https://doi.org/10.1016/j.cis.2021.102582>
- Ferraz, F., & Fernandez, J. (2016). Selection and validation of reference house-keeping genes in the J774A1 macrophage cell line for quantitative real-time PCR. *Genet Mol Res*, *15*(1), 15017720. <https://doi.org/10.4238/gmr.15017720>
- Ghaly, H. S. A., Seyedasli, N., & Varamini, P. (2025). Enhanced nanoprecipitation method for the production of PLGA nanoparticles for oncology applications. *The AAPS Journal*, *27*(5), 113. <https://doi.org/10.1208/s12248-025-01096-9>
- Gulsun, T., Borna, S. E., Vural, I., & Sahin, S. (2018). Preparation and characterization of furosemide nanosuspensions. *Journal of Drug Delivery Science and Technology*, *45*, 93–100. <https://doi.org/10.1016/j.jddst.2018.03.005>
- Guo, X., Zuo, X., Zhou, Z., Gu, Y., Zheng, H., Wang, X., Wang, G., Xu, C., & Wang, F. (2023). PLGA-based micro/nanoparticles: an overview of their applications in respiratory diseases. *International Journal of Molecular Sciences*, *24*(5), 4333. <https://doi.org/10.3390/ijms24054333>
- Hassan, M., Abdelnabi, H. A., & Mohsin, S. (2024). Harnessing the potential of PLGA nanoparticles for enhanced bone regeneration. *Pharmaceutics*, *16*(2), 273. <https://doi.org/10.3390/pharmaceutics16020273>
- Herjan, T., Hong, L., Bubenik, J., Bulek, K., Qian, W., Liu, C., Li, X., Chen, X., Yang, H., & Ouyang, S. (2018). IL-17-receptor-associated adaptor Act1 directly stabilizes mRNAs to mediate IL-17 inflammatory signaling. *Nature immunology*, *19*(4), 354–365. <https://doi.org/10.1038/s41590-018-0071-9>
- Hernández-Giottonini, K. Y., Rodríguez-Córdova, R. J., Gutiérrez-Valenzuela, C. A., Peñuñuri-Miranda, O., Zavala-Rivera, P., Guerrero-Germán, P., & Lucero-Acuña, A. (2020). PLGA nanoparticle preparations by emulsification and nanoprecipitation techniques: Effects of formulation

- parameters. *RSC advances*, *10*(8), 4218–4231. <https://doi.org/10.1039/C9RA10857B>
- Huang, K.-L., Yang, M.-C., Wu, Y.-K., Wei, M.-J., Kang, H.-F., Liu, G.-T., Kuo, C.-Y., Tzeng, I.-S., Hsieh, P.-C., & Lan, C.-C. (2025). Anti-inflammatory and polarization-modulating effects of *Houttuynia cordata* in LPS-stimulated RAW264.7 macrophages. *Journal of Traditional and Complementary Medicine*. <https://doi.org/10.1016/j.jtcme.2025.05.001>
- Ibrahim Khan, K. S., & Khan, I. (2019). Nanoparticles: Properties, applications and toxicities. *Arabian journal of chemistry*, *12*(7), 908–931. <https://doi.org/10.1016/j.arabjc.2017.05.011>
- Jang, M., Hwang, I., Hwang, B., & Kim, G. (2020). Anti-inflammatory effect of *Antirrhinum majus* extract in lipopolysaccharide-stimulated RAW 264.7 macrophages. *Food Science & Nutrition*, *8*(9), 5063–5070. <https://doi.org/10.1002/fsn3.1805>
- Kembuan, C., Oliveira, H., & Graf, C. (2021). Effect of different silica coatings on the toxicity of upconversion nanoparticles on RAW 264.7 macrophage cells. *Beilstein Journal of Nanotechnology*, *12*(1), 35–48. <https://doi.org/10.3762/bjnano.12.3>
- Kemenkes, R. (2017). *Farmakope Herbal Indonesia*. Jakarta: Kementerian Kesehatan Republik Indonesia.
- Kumar, L., Kukreti, G., Rana, R., Chaurasia, H., Sharma, A., Sharma, N., & Komal. (2023). Poly (lactic-co-glycolic) Acid (PLGA) nanoparticles and transdermal drug delivery: an overview. *Current pharmaceutical design*, *29*(37), 2940–2953. <https://doi.org/10.2174/0113816128275385231027054743>
- Kurniawan, D. W., Gumilas, N. S. A., Arramel, Hartati, S., & Novrial, D. T. (2024). Preparation, Characterization, and Toxicity Study of *Andrographis paniculata* Ethanol Extract Poly-Lactic-co-Glycolic Acid (PLGA) Nanoparticles in Raw 264.7 Cells. *Int J App Pharm*, *16*(4), 78–83. <https://doi.org/10.22159/ijap.2024v16i4.50798>
- Kurniawan, D. W., Jajoriya, A. K., Dhawan, G., Mishra, D., Argemi, J., Bataller, R., Storm, G., Mishra, D. P., Prakash, J., & Bansal, R. (2018). Therapeutic inhibition of spleen tyrosine kinase in inflammatory macrophages using PLGA nanoparticles for the treatment of non-alcoholic steatohepatitis. *Journal of controlled release*, *288*, 227–238. <https://doi.org/10.1016/j.jconrel.2018.09.004>
- Kuwabara, T., Ishikawa, F., Kondo, M., & Kakiuchi, T. (2017). The role of IL-17 and related cytokines in inflammatory autoimmune diseases. *Mediators of inflammation*, *2017*(1), 3908061. <https://doi.org/10.1155/2017/3908061>
- Lely, N., Arifin, H., Aldi, Y., & Sri Wahyuni, F. (2021). Anti-Inflammatory Effects of Methanol Extract, Hexane, Ethyl Acetate, and Butanol Fraction of *Piper crocatum* Ruiz & Pav Leaves on Lipopolysaccharide-Induced RAW 264.7 Cells. *Pharmacognosy Journal*, *13*(6), 1341–1346. <https://doi.org/10.5530/pj.2021.13.169>
- Li, X., Yuan, W., Wu, J., Zhen, J., Sun, Q., & Yu, M. (2022). Andrographolide, a natural anti-inflammatory agent: An Update. *Frontiers in pharmacology*, *13*, 920435. <https://doi.org/10.3389/fphar.2022.920435>

- Li, Y., He, S., Tang, J., Ding, N., Chu, X., Cheng, L., Ding, X., Liang, T., Feng, S., & Rahman, S. U. (2017). Andrographolide inhibits inflammatory cytokines secretion in LPS-stimulated RAW264. 7 cells through suppression of NF- κ B/MAPK signaling pathway. *Evidence-Based Complementary and Alternative Medicine*, 2017(1), 8248142. <https://doi.org/10.1155/2017/8248142>
- Liu, Y.-T., Chen, H.-W., Lii, C.-K., Jhuang, J.-H., Huang, C.-S., Li, M.-L., & Yao, H.-T. (2020). A diterpenoid, 14-deoxy-11, 12-didehydroandrographolide, in andrographis paniculata reduces steatohepatitis and liver injury in mice fed a high-fat and high-cholesterol diet. *Nutrients*, 12(2), 523. <https://doi.org/10.3390/nu12020523>
- Lu, B., Lv, X., & Le, Y. (2019). Chitosan-modified PLGA nanoparticles for control-released drug delivery. *Polymers*, 11(2), 304. <https://doi.org/10.3390/polym11020304>
- Lu, Z., Xie, P., Zhang, D., Sun, P., Yang, H., Ye, J., Cao, H., Huo, C., Zhou, H., & Chen, Y. (2018). 3-Dehydroandrographolide protects against lipopolysaccharide-induced inflammation through the cholinergic anti-inflammatory pathway. *Biochemical Pharmacology*, 158, 305–317. <https://doi.org/10.1016/j.bcp.2018.10.034>
- Lucy, T. T., Mamun-Or-Rashid, A., Yagi, M., & Yonei, Y. (2022). Serial passaging of RAW 264.7 cells modulates intracellular AGE formation and downregulates RANKL-induced in vitro osteoclastogenesis. *International Journal of Molecular Sciences*, 23(4), 2371. <https://doi.org/10.3390/ijms23042371>
- Mallakpour, S., & Behranvand, V. (2016). Polymeric nanoparticles: Recent development in synthesis and application. *Express Polymer Letters*, 10(11), 895. <https://doi.org/10.3144/expresspolymlett.2016.84a>
- McGeachy, M. J., Cua, D. J., & Gaffen, S. L. (2019). The IL-17 family of cytokines in health and disease. *Immunity*, 50(4), 892–906. <https://doi.org/10.1016/j.immuni.2019.03.021>
- Murao, A., Aziz, M., Wang, H., Brenner, M., & Wang, P. (2021). Release mechanisms of major DAMPs. *Apoptosis*, 26(3), 152–162. <https://doi.org/10.1007/s10495-021-01663-3>
- Németh, Z., Csóka, I., Semnani Jazani, R., Sipos, B., Haspel, H., Kozma, G., Kónya, Z., & Dobó, D. G. (2022). Quality by design-driven zeta potential optimisation study of liposomes with charge imparting membrane additives. *Pharmaceutics*, 14(9), 1798. <https://doi.org/10.3390/pharmaceutics14091798>
- Nofi, C. P., Wang, P., & Aziz, M. (2022). Chromatin-associated molecular patterns (CAMPs) in sepsis. *Cell Death & Disease*, 13(8), 700. <https://doi.org/10.1038/s41419-022-05155-3>
- Page, M. J., Kell, D. B., & Pretorius, E. (2022). The role of lipopolysaccharide-induced cell signalling in chronic inflammation. *Chronic Stress*, 6, 24705470221076390. <https://doi.org/10.1177/24705470221076390>
- Rai, V., Mathews, G., & Agrawal, D. K. (2022). Translational and clinical significance of DAMPs, PAMPs, and PRRs in trauma-induced inflammation. *Archives of clinical and biomedical research*, 6(5), 673. <https://doi.org/10.26502/acbr.50170279>

- Raman, S., Murugaiyah, V., & Parumasivam, T. (2022). Andrographis paniculata dosage forms and advances in nanoparticulate delivery systems: An overview. *Molecules*, 27(19), 6164. <https://doi.org/10.3390/molecules27196164>
- Rohama, R., Dari, K. W., Elieser, M., Kristina, I. D., & Puspita, M. D. (2024). Comprehensive Review of Sambiloto (Andrographis Paniculata). *PROMOTOR*, 7(4), 540–546. <https://doi.org/10.32832/pro.v7i4.797>
- Ruytinx, P., Proost, P., Van Damme, J., & Struyf, S. (2018). Chemokine-induced macrophage polarization in inflammatory conditions. *Frontiers in Immunology*, 9, 1930. <https://doi.org/10.3389/fimmu.2018.01930>
- Saad, L., & Hassan, S. (2024). Alternative treatments for nsaids: a comprehensive review. *Indian J. Appl. Research*, 14, 5–7. <https://doi.org/10.36106/ijar>
- Sabourian, P., Yazdani, G., Ashraf, S. S., Frounchi, M., Mashayekhan, S., Kiani, S., & Kakkar, A. (2020). Effect of physico-chemical properties of nanoparticles on their intracellular uptake. *International Journal of Molecular Sciences*, 21(21), 8019. <https://doi.org/10.3390/ijms21218019>
- SensiFAST. (2025). SensiFAST SYBR® No-ROX Kit. https://www.bioline.com/mwdownloads/download/link/id/2754/sensifast_sybr_no_rox_kit_manual.pdf
- Servicebio. (2025). Animal Tissue& Cell RNA Extraction Kit. <https://www.whservicebio.com/molecular-biology-reagent/nucleic-acid-extraction-reagents/animal-tissue-cell-rna-extraction-kit.html>
- Shariati, A., Chegini, Z., Ghaznavi-Rad, E., Zare, E. N., & Hosseini, S. M. (2022). PLGA-based nanoplatforms in drug delivery for inhibition and destruction of microbial biofilm. *Frontiers in Cellular and Infection Microbiology*, 12, 926363. <https://doi.org/10.3389/fcimb.2022.926363>
- Singh, N., Baby, D., Rajguru, J. P., Patil, P. B., Thakkannavar, S. S., & Pujari, V. B. (2019). Inflammation and cancer. *Annals of African medicine*, 18(3), 121–126. https://doi.org/10.4103/aam.aam_56_18
- Soleha, M., Isnawati, A., Fitri, N., Adelina, R., Soblia, H. T., & Winarsih, W. (2018). Profil penggunaan obat antiinflamasi nonstereoid di Indonesia. *Jurnal Kefarmasian Indonesia*, 109–117. <https://doi.org/10.22435/jki.v8i2.316>
- Srisai, P., Suriyaprom, S., Khacha-Ananda, S., Panya, A., Bäumlner, H., & Tragoolpua, Y. (2025). Inhibition of free radicals and inflammation on RAW264. 7 macrophage cell line by Arthrospira platensis extract. *Scientific Reports*, 15(1), 43349. <https://doi.org/10.1038/s41598-025-27372-4>
- Sumiwi, S. A., Halimah, E., Saptarini, N. M., Levita, J., Nawawi, A. a., Mutalib, A., & Ibrahim, S. (2016). Inhibitory Activity of Andrographolide and Andrograpanin on the Rate of PGH2 Formation. *Pharmacology and Clinical Pharmacy Research*, 1(3), 79–83. <https://doi.org/10.15416/pcpr.2016.1.3.80>
- Sun, L., Wang, L., Moore, B. B., Zhang, S., Xiao, P., Decker, A. M., & Wang, H.-L. (2023). IL-17: balancing protective immunity and pathogenesis. *Journal of Immunology Research*, 2023(1), 3360310. <https://doi.org/10.1155/2023/3360310>
- Taciak, B., Białasek, M., Braniewska, A., Sas, Z., Sawicka, P., Kiraga, Ł., Rygiel, T., & Król, M. (2018). Evaluation of phenotypic and functional stability of

- RAW 264.7 cell line through serial passages. *PloS one*, 13(6), e0198943. <https://doi.org/10.1371/journal.pone.0198943>
- Tucureanu, M. M., Rebleanu, D., Constantinescu, C. A., Deleanu, M., Voicu, G., Butoi, E., Calin, M., & Manduteanu, I. (2018). Lipopolysaccharide-induced inflammation in monocytes/macrophages is blocked by liposomal delivery of Gi-protein inhibitor. *International journal of nanomedicine*, 63–76. <https://doi.org/10.2147/ijn.s150918>
- Wang, J.-Y., Chen, X.-J., Zhang, L., Pan, Y.-Y., Gu, Z.-X., & Yuan, Y. (2019). Anti-inflammatory effects of *Eucommia ulmoides* Oliv. male flower extract on lipopolysaccharide-induced inflammation. *Chinese Medical Journal*, 132(03), 319–328. <https://doi.org/10.1097/CM9.0000000000000066>
- Widdrington, J. D., Gomez-Duran, A., Pyle, A., Ruchaud-Sparagano, M.-H., Scott, J., Baudouin, S. V., Rostron, A. J., Lovat, P. E., Chinnery, P. F., & Simpson, A. J. (2018). Exposure of monocytic cells to lipopolysaccharide induces coordinated endotoxin tolerance, mitochondrial biogenesis, mitophagy, and antioxidant defenses. *Frontiers in immunology*, 9, 2217. <https://doi.org/10.3389/fimmu.2018.02217>
- Wong, S. K., Chin, K.-Y., & Ima-Nirwana, S. (2021). A review on the molecular basis underlying the protective effects of *Andrographis paniculata* and andrographolide against myocardial injury. *Drug Design, Development and Therapy*, 4615–4632. <https://doi.org/10.2147/DDDT.S331027>
- Zhao, H., Wu, L., Yan, G., Chen, Y., Zhou, M., Wu, Y., & Li, Y. (2021). Inflammation and tumor progression: signaling pathways and targeted intervention. *Signal transduction and targeted therapy*, 6(1), 263. <https://doi.org/10.1038/s41392-021-00658-5>
- Zhou, M., Aziz, M., & Wang, P. (2021). Damage-associated molecular patterns as double-edged swords in sepsis. *Antioxidants & Redox Signaling*, 35(15), 1308–1323. <https://doi.org/10.1089/ars.2021.0008>
- Zhou, X., Münch, G., Wohlmuth, H., Afzal, S., Kao, M.-H., Al-Khazaleh, A., Low, M., Leach, D., & Li, C. G. (2022). Synergistic inhibition of pro-inflammatory pathways by ginger and turmeric extracts in RAW 264.7 cells. *Frontiers in pharmacology*, 13, 818166. <https://doi.org/10.3389/fphar.2022.818166>
- Zhu, J., Wei, J., Lin, Y., Tang, Y., Su, Z., Li, L., Liu, B., & Cai, X. (2024). Inhibition of IL-17 signaling in macrophages underlies the anti-arthritic effects of halofuginone hydrobromide: Network pharmacology, molecular docking, and experimental validation. *BMC Complementary Medicine and Therapies*, 24(1), 105. <https://doi.org/10.1186/s12906-024-04397-2>
- Zielińska, A., Carreiró, F., Oliveira, A. M., Neves, A., Pires, B., Venkatesh, D. N., Durazzo, A., Lucarini, M., Eder, P., & Silva, A. M. (2020). Polymeric nanoparticles: production, characterization, toxicology and ecotoxicology. *Molecules*, 25(16), 3731. <https://doi.org/10.3390/molecules25163731>