

## DAFTAR PUSTAKA

- Abdullah, S., Ananta Kusuna, W., & Hartono Wijaya, S. (2022). Prediksi interaksi protein-protein berbasis sekvens protein menggunakan fitur autocorrelation dan machine learning Sequence-based prediction of protein-protein interaction using autocorrelation features and machine learning. *Jurnal Teknologi Dan Sistem Komputer*, 10(1), 1–11. <https://doi.org/10.14710/jtsiskom.2022.13984>
- Adcock, I. M., & Mumby, S. (2016). Glucocorticoids. In *Handbook of Experimental Pharmacology* (Vol. 237, pp. 171–196). Springer New York LLC. [https://doi.org/10.1007/164\\_2016\\_98](https://doi.org/10.1007/164_2016_98)
- Afendi, F. M., Okada, T., Yamazaki, M., Hirai-Morita, A., Nakamura, Y., Nakamura, K., Ikeda, S., Takahashi, H., Altaf-Ul-Amin, M., Darusman, L. K., Saito, K., & Kanaya, S. (2012). KNAPSAck family databases: Integrated metabolite-plant species databases for multifaceted plant research. *Plant and Cell Physiology*, 53(2). <https://doi.org/10.1093/pcp/pcr165>
- Ali, H. J., Kadhim, H. M., & Al-Fahad, A. Q. (2022). Influence of Leukotriene Pathway Polymorphisms (Arachidonate 5-lipoxygenase ALOX5,Cysteinyl Leukotriene Receptor CysLTR1) On Response to Montelukast in A sample of Asthmatic Iraqi Patients. *Journal of Pharmaceutical Negative Results*, 13(4), 193–198. <https://doi.org/10.47750/pnr.2022.13.04.024>
- Amanulloh, M., & Krisdayanti, E. (n.d.). *Jintan Hitam Sebagai Imunomodulator Dan Anti Inflamasi Pada Pasien Asma*. <http://jurnal.globalhealthsciencegroup.com/index.php/JPPP>
- Athari, S. S. (2019). Targeting cell signaling in allergic asthma. In *Signal Transduction and Targeted Therapy* (Vol. 4, Issue 1). Springer Nature. <https://doi.org/10.1038/s41392-019-0079-0>
- Ayuso, P., Plaza-Serón, M. D. C., Blanca-López, N., Doña, I., Campo, P., Canto, G., Laguna, J. J., Bartra, J., Soriano-Gomis, V., Blanca, M., Cornejo-García, J. A., & Perkins, J. R. (2015). Genetic variants in arachidonic acid pathway genes associated with NSAID-exacerbated respiratory disease. *Pharmacogenomics*, 16(8), 825–839. <https://doi.org/10.2217/pgs.15.43>

- Bardin, P., Kanniess, F., Gauvreau, G., Bredenbröker, D., & Rabe, K. F. (2015). Roflumilast for asthma: Efficacy findings in mechanism of action studies. *Pulmonary Pharmacology and Therapeutics*, 35, S4–S10. <https://doi.org/10.1016/j.pupt.2015.08.006>
- Bart N. Lambrecht, Hamida Hammad, & John V. Fahy. (2019). The Cytokines of Asthma. *Immunity*, 50(4), 975–991.
- Berger, W., De Chandt, M. T. M., & Cairns, C. B. (2007). Zileuton: Clinical implications of 5-Lipoxygenase inhibition in severe airway disease. In *International Journal of Clinical Practice* (Vol. 61, Issue 4, pp. 663–676). <https://doi.org/10.1111/j.1742-1241.2007.01320.x>
- Bhaskar, S., Sudhakaran, P. R., & Helen, A. (2016). Quercetin attenuates atherosclerotic inflammation and adhesion molecule expression by modulating TLR-NF-κB signaling pathway. *Cellular Immunology*, 310, 131–140. <https://doi.org/10.1016/j.cellimm.2016.08.011>
- Bi, J., Lin, Y., Sun, Y., Zhang, M., Chen, Q., Miu, X., Tang, L., Liu, J., Zhu, L., Ni, Z., & Wang, X. (2021). Investigation of the active ingredients and mechanism of polygonum cuspidatum in asthma based on network pharmacology and experimental verification. *Drug Design, Development and Therapy*, 15, 1075–1089. <https://doi.org/10.2147/DDDT.S275228>
- Bian Boyang. (2010). Evaluating Safety of Long-Acting Beta Agonists (LABAs) in Patients with Asthma. *Current Drug Safety*, 5(3), 245–250.
- Billington, C. K., & Hall, I. P. (2011). *Novel cAMP signalling paradigms: therapeutic implications for airway disease* LINKED ARTICLES. <https://doi.org/10.1111/bph.2012.166.issue-2>
- Bruno, F., Spaziano, G., Liparulo, A., Roviezzo, F., Nabavi, S. M., Sureda, A., Filosa, R., & D'Agostino, B. (2018). Recent advances in the search for novel 5-lipoxygenase inhibitors for the treatment of asthma. *European Journal of Medicinal Chemistry*, 153, 65–72. <https://doi.org/10.1016/j.ejmech.2017.10.020>
- Chen, Y., Chi, L., Liang, X., Shi, Y., Wu, T., Ye, M., Han, P., Lin, L., Zhang, L., Xu, P., & Du, Z. (2020). Essential Oils of Cedrus deodara Leaves Exerting Anti-inflammation on TPA-induced Ear

- Edema by Inhibiting COX-2/TNF- $\alpha$ /NF- $\kappa$ B Activation. *Journal of Essential Oil-Bearing Plants*, 12–21. <https://doi.org/10.1080/0972060X.2020.1756427>
- Crosara, K. T. B., Moffa, E. B., Xiao, Y., & Siqueira, W. L. (2018). Merging in-silico and in vitro salivary protein complex partners using the STRING database: A tutorial. In *Journal of Proteomics* (Vol. 171, pp. 87–94). Elsevier B.V. <https://doi.org/10.1016/j.jprot.2017.08.002>
- Chung, K. F. (2015). Targeting the interleukin pathway in the treatment of asthma. *The Lancet*, 386(9998), 1086–1096.
- D'Attis, S., Massari, S., Mazzei, F., Maio, D., Vergallo, I., Mauro, S., Minelli, M., & Bozzetti, M. P. (2019). Assessment of CYP2C9, CYP2C19, and CYP2D6 polymorphisms in allergic patients with chemical sensitivity. *International Archives of Allergy and Immunology*, 179(3), 173–186. <https://doi.org/10.1159/000497322>
- de Christo Scherer, M. M., Marques, F. M., Figueira, M. M., Peisino, M. C. O., Schmitt, E. F. P., Kondratyuk, T. P., Endringer, D. C., Scherer, R., & Fronza, M. (2019). Wound healing activity of terpinolene and  $\alpha$ -phellandrene by attenuating inflammation and oxidative stress in vitro. *Journal of Tissue Viability*, 28(2), 94–99. <https://doi.org/10.1016/j.jtv.2019.02.003>
- de Las Rivas, J., & Fontanillo, C. (2010). Protein-protein interactions essentials: Key concepts to building and analyzing interactome networks. *PLoS Computational Biology*, 6(6), 1–8. <https://doi.org/10.1371/journal.pcbi.1000807>
- Dempsey, O. J. (2000). Leukotriene receptor antagonist therapy. *Postgraduate Medical Journal*, 76(902), 767–773. <https://doi.org/10.1136/pgmj.76.902.767>
- Dubo, B. A., Dawud, F. A., Umar, I. A., & Alex, E. (2019). *Lauric Acid Alleviates Inflammation and Structural Changes in the Lungs of Type II Diabetic Male Wistar Rats*. <http://www.jaaps.aapsnet.org>
- Faroby, M. H. Z. A., Helisyh, N. F., Fikri, H. S. 2022. Identifikasi Interaksi Protein-Protein Meningitis Menggunakan ClusterONE dan Analisis Jaringan. *Journal of Advances in Information and Industrial Technology*. 4 (1): 17-28

- Ghorani, V., Alavinezhad, A., Rajabi, O., & Boskabady, M. H. (2021). Carvacrol improves pulmonary function tests, oxidant/antioxidant parameters and cytokine levels in asthmatic patients: A randomized, double-blind, clinical trial. *Phytomedicine*, 85. <https://doi.org/10.1016/j.phymed.2021.153539>
- Ginoga, M. F. A. H., Trisminingsih, R., & Kusuma, W. A. (2020, September 16). Drug-target visualization on IJAH analytics using sankey diagram. *2020 International Conference on Computer Science and Its Application in Agriculture, ICOSICA 2020*. <https://doi.org/10.1109/ICOSICA49951.2020.9243285>
- Gu, S., & Lai, L. hua. (2020). Associating 197 Chinese herbal medicine with drug targets and diseases using the similarity ensemble approach. *Acta Pharmacologica Sinica*, 41(3), 432–438. <https://doi.org/10.1038/s41401-019-0306-9>
- Gunalan, G., Rathinamala, R., & Rajendra Kumar, A. (2019). Gas chromatography-mass spectroscopy fingerprinting and in silico molecular docking analysis of secondary metabolites from Anethum graveolens L. seeds for anti-inflammatory activity. In *Drug Invention Today* | (Vol. 13). <http://www.acdlabs.com>
- Gyles, S., Xue, L., & Townsend, E. (2006). A dominant role for chemoattractant receptor-homologous molecule expressed on T helper type 2 (Th2) cells (CRTH2) in mediating chemotaxis of CRTH2? CD4? Th2 lymphocytes in response to mast cells supernatants. *Immunology*, 8.
- Hartono Wijaya, S., Tanaka, Y., Altaf-Ul-Amin, M., Morita, A. H., Afendi, F. M., Batubara, I., Ono, N., Darusman, L. K., & Kanaya, S. (2016). Utilization of KNAPSAcK Family Databases for Developing Herbal Medicine Systems. *Journal of Computer Aided Chemistry*, 17, 1–7.
- Hasanah, A. 2018. Analisis Interaksi Senyawa Aktif Jahe (Zingiber Officinale) Yang Berpotensi Sebagai Antioksidan Pada Stress Oksidasi Yang Diinduksi Oleh Timbal (Pb<sup>2+</sup>). *Skripsi*. Universitas Islam Negeri Maulana Malik Ibrahim. Malang.
- Huang, X. F., Cheng, W. Bin, Jiang, Y., Liu, Q., Liu, X. H., Xu, W. F., & Huang, H. T. (2020). A network pharmacology-based strategy for predicting anti-inflammatory targets of ephedra in treating

- asthma. *International Immunopharmacology*, 83. <https://doi.org/10.1016/j.intimp.2020.106423>
- Ika Dharmayanti, Dwi Hapsari, & Khadijah Azhar. (2015). Asma pada Anak di Indonesia: Penyebab dan Pencetus. *Jurnal Kesehatan Masyarakat Nasional*, 9(4), 320–326.
- John V Fahy. (2015). Type 2 inflammation in asthma--present in most, absent in many. *Nat Rev Immunol*, 15(1), 57–65.
- Jones, S., & Thornton, J. M. (1996). *Review Principles of protein-protein interactions* (Vol. 93).
- Junemann, M. & L. S. (1998). *Three Great Healing Herbs, Tea Tree St. Johns Wort and Black Cumin*. Lotus Light Publications.
- Kanaoka, Y., & Boyce, J. A. (2004). IMMUNOLOGY Cysteinyl Leukotrienes and Their Receptors: Cellular Distribution and Function in Immune and Inflammatory Responses 1. In *The Journal of Immunology* (Vol. 173). <http://journals.aai.org/jimmunol/article-pdf/173/3/1503/1186911/1503.pdf>
- Kanehisa, M., Sato, Y., Kawashima, M., Furumichi, M., & Tanabe, M. (2016). KEGG as a reference resource for gene and protein annotation. *Nucleic Acids Research*, 44(D1), D457–D462. <https://doi.org/10.1093/nar/gkv1070>
- Kardan, M., Rafiei, A., Ghaffari, J., Valadan, R., Morsaljahan, Z., & Hajghorbani, S. T. (2019). Effect of ginger extract on expression of GATA3, T-bet and ROR- $\gamma$ t in peripheral blood mononuclear cells of patients with Allergic Asthma. *Allergologia et Immunopathologia*, 47(4), 378–385. <https://doi.org/10.1016/j.aller.2018.12.003>
- Kaveh, M., Eftekhari, N., & Boskabady, M. H. (2019). The effect of alpha linolenic acid on tracheal responsiveness, lung inflammation and immune markers in sensitized rats. *Iranian Journal of Basic Medical Sciences*, 22(3), 255–261. <https://doi.org/10.22038/ijbms.2019.27381.6684>
- Kian Fan Chung, (2014). International ERS/ATS guidelines on definition, evaluation and treatment of severe asthma. *European Respiratory Journal*, 43, 343–347.

- Kim, E., Jang, S., Yi, J., Kim, H., Kwon, H., Im, H., Huang, H., Zhang, H., Cho, N., Sung, Y., Kim, S.-H., Choi, Y., Li, S., Ryoo, Z., & Kim, M. (2021). Ginger-derived compounds exert in vivo and in vitro anti-asthmatic effects by inhibiting the T-helper 2 cell-mediated allergic response *Experimental and Therapeutic Medicine*, 23(1). <https://doi.org/10.3892/etm.2021.10971>
- Kim, H. R., Noh, E. M., & Kim, S. Y. (2023). Anti-inflammatory effect and signaling mechanism of 8-shogaol and 10-shogaol in a dextran sodium sulfate-induced colitis mouse model. *Heliyon*, 9(1). <https://doi.org/10.1016/j.heliyon.2022.e12778>
- Kim, S. H., Hong, J. H., Yang, W. K., Kim, H. J., An, H. J., & Lee, Y. C. (2021). Cryptotympana pustulata extract and its main active component, oleic acid, inhibit ovalbumin-induced allergic airway inflammation through inhibition of th2/gata-3 and interleukin-17/roryt signaling pathways in asthmatic mice. *Molecules*, 26(7). <https://doi.org/10.3390/molecules26071854>
- Kim, T., Song, B., Cho, K. S., & Lee, I. S. (2020). Therapeutic potential of volatile terpenes and terpenoids from forests for inflammatory diseases. *International Journal of Molecular Sciences*, 21(6). <https://doi.org/10.3390/ijms21062187>
- Kleniewska, P., & Pawliczak, R. (2017). The participation of oxidative stress in the pathogenesis of bronchial asthma. In *Biomedicine and Pharmacotherapy* (Vol. 94, pp. 100–108). Elsevier Masson SAS. <https://doi.org/10.1016/j.bioph.2017.07.066>
- Kunnumakkara, A. B., Sailo, B. L., Banik, K., Harsha, C., Prasad, S., Gupta, S. C., Bharti, A. C., & Aggarwal, B. B. (2018). Chronic diseases, inflammation, and spices: How are they linked? In *Journal of Translational Medicine* (Vol. 16, Issue 1). BioMed Central Ltd. <https://doi.org/10.1186/s12967-018-1381-2>
- Kupczyk, M., & Kuna, P. (2017). Targeting the PGD2/CRTH2/DP1 Signaling Pathway in Asthma and Allergic Disease: Current Status and Future Perspectives. *Drugs*, 77(12), 1281–1294. <https://doi.org/10.1007/s40265-017-0777-2>
- Kwang Seok Ahn, & Bharat B. Aggarwal. (2006). Transcription Factor NF-κB: A Sensor for Smoke and Stress Signals. *Annals of the New York Academy of Sciences*, 1056(1), 218–233.

- Lee, K., Lee, C.-M., Jung, I.-D., Jeong, Y.-I., Chun, S.-H., Park, H.-J., Choi, I.-W., Ahn, S.-C., Shin, Y.-K., Lee, S.-Y., Yeom, S.-R., Kim, J.-S., & Park, Y.-M. (2007). GATA-3 is a Key Factor for Th1/Th2 Balance Regulation by Myristicin in a Murine Model of Asthma. *Journal of Life Science*, 17(8), 1090–1099. <https://doi.org/10.5352/jls.2007.17.8.1090>
- Lutfiyati, H., & Wiedyaningsih, C. (n.d.). *Efek Samping Penggunaan Terapi Oral Pada Pasien Asma*.
- Mahmoud Mansour, & Susanne Tornhamre. (2004). Inhibition of 5-lipoxygenase and Leukotriene C4 Synthase in Human Blood Cells by Thymoquinone. *Journal of Enzyme Inhibition and Medicinal Chemistry*, 19(5), 431–436.
- Mangprayool, T., Kupittayanant, S., & Chudapongse, N. (2013). Participation of citral in the bronchodilatory effect of ginger oil and possible mechanism of action. *Fitoterapia*, 89(1), 68–73. <https://doi.org/10.1016/j.fitote.2013.05.012>
- Mims, J. W. (2015). Asthma: Definitions and pathophysiology. *International Forum of Allergy and Rhinology*, 5, S2–S6. <https://doi.org/10.1002/alr.21609>
- Mohammadi, A., Mahjoub, S., Ghafarzadegan, K., & Nouri, H. R. (2018). Immunomodulatory effects of Thymol through modulation of redox status and trace element content in experimental model of asthma. *Biomedicine and Pharmacotherapy*, 105, 856–861. <https://doi.org/10.1016/j.biopha.2018.05.154>
- Morina, N., Boçari, G., Iljazi, A., Hyseini, K., & Halac, G. (2016). Maximum time of the effect of antileukotriene- Zileuton in treatment of patients with bronchial asthma. *Acta Informatica Medica*, 24(1), 16–19. <https://doi.org/10.5455/aim.2016.24.16-19>
- Munthe-Kaas, M. C., Gerritsen, J., Carlsen, K. H., Undlien, D., Egeland, T., Skinningsrud, B., Tørres, T., & Carlsen, K. L. (2007). Eosinophil cationic protein (ECP) polymorphisms and association with asthma, s-ECP levels and related phenotypes. *Allergy: European Journal of Allergy and Clinical Immunology*, 62(4), 429–436. <https://doi.org/10.1111/j.1398-9952.2007.01327.x>

- Nikfarjam, B. A., Hajiali, F., Adineh, M., & Nassiri-Asl, M. (2017). Anti-inflammatory effects of quercetin and vitexin on activated human peripheral blood neutrophils - The effects of quercetin and vitexin on human neutrophils. *Journal of Pharmacopuncture*, 20(2), 127–131. <https://doi.org/10.3831/KPI.2017.20.017>
- Palupi, D. A., Freistianti, E., & Apriliani, V. E. (n.d.). *Aktifitas Antiasma Ekstrak Jahe Merah (Zingiber Officinale Var Rubrum) Terhadap Jumlah Eosinofil Dan Sel Mast Yang Tidak Terdegranulasi*. <http://cjp.jurnal.stikesendekiautamakudus.ac.id>
- Parulekar, A. D., Kao, C. C., DIamant, Z., & Hanania, N. A. (2018). Targeting the interleukin-4 and interleukin-13 pathways in severe asthma: Current knowledge and future needs. In *Current Opinion in Pulmonary Medicine* (Vol. 24, Issue 1, pp. 50–55). Lippincott Williams and Wilkins. <https://doi.org/10.1097/MCP.0000000000000436>
- Pečivová, J., Mačičková, T., Svitková, K., & Nosál, R. (2012). Quercetin inhibits degranulation and superoxide generation in PMA stimulated neutrophils. *Interdisciplinary Toxicology*, 5(2), 81–83. <https://doi.org/10.2478/v10102-012-0014-5>
- Pelaia, C., Calabrese, C., Terracciano, R., de Blasio, F., Varella, A., & Pelaia, G. (2018). Omalizumab, the first available antibody for biological treatment of severe asthma: more than a decade of real-life effectiveness. In *Therapeutic Advances in Respiratory Disease* (Vol. 12). SAGE Publications Ltd. <https://doi.org/10.1177/1753466618810192>
- Rizki, M. I. (2015). *Tanaman dengan Aktivitas Anti-Asma Formulasi Self-Nano Emulsifying Drug Delivery System Kandidat Obat Rheumatoid Arthritis : Karakterisasi Surfaktan View project Evaluasi Kinerja Luaran Penelitian View project*. <https://www.researchgate.net/publication/283730498>
- Rodriguez-Perez, N., Schiavi, E., Frei, R., Ferstl, R., Wawrzyniak, P., Smolinska, S., Sokolowska, M., Sievi, N. A., Kohler, M., Schmid-Grendelmeier, P., Michalovich, D., Simpson, K. D., Hessel, E. M., Jutel, M., Martin-Fontech, M., Palomares, O., Akdis, C. A., & O'Mahony, L. (2017). Altered fatty acid metabolism and reduced stearoyl-coenzyme a desaturase activity in asthma. *Allergy: European Journal of Allergy and Clinical*

*Immunology*, 72(11), 1744–1752.  
<https://doi.org/10.1111/all.13180>

Saggini, A., Maccauro, G., Tripodi, D., De Lutiis, M. A., Conti, F., Felaco, P., ... & Shaik-Dasthagirisahab, Y. B. (2011). Allergic inflammation: role of cytokines with special emphasis on IL-4. *International Journal of Immunopathology and Pharmacology*, 24(2), 305-311.

Sanak, M. (2016). Eicosanoid Mediators in the Airway Inflammation of Asthmatic Patients: What is New. *Allergy Asthma Immunol Res*, 8(6), 481–490.

Savitri, L., Kasimo, E. R., Farendra, L. P., & Muslikha, I. D. (2020). Uji Potensi Epigallocatechin Gallate Kulit Pisang Raja (*Musa paradisiaca* var. *Raja*) terhadap Caspase 3 melalui Granzyme B Pathway pada Mencit (*Mus musculus*) Model Sepsis Berbasis in Silico. *Jurnal Ilmiah Universitas Batanghari Jambi*, 20(3), 807. <https://doi.org/10.33087/jiubj.v20i3.1023>

Sharma Sandeep, Hashmi Muhammad F., & Chakraborty Rebanta K. (2022). *Asthma Medications*. StatPearls Publishing.

Shawky, E. (2019). Prediction of potential cancer-related molecular targets of North African plants constituents using network pharmacology-based analysis. *Journal of Ethnopharmacology*, 238. <https://doi.org/10.1016/j.jep.2019.111826>

Sinha, S., Doble, M., & Manju, S. L. (2019). 5-Lipoxygenase as a drug target: A review on trends in inhibitors structural design, SAR and mechanism based approach. In *Bioorganic and Medicinal Chemistry* (Vol. 27, Issue 17, pp. 3745–3759). Elsevier Ltd. <https://doi.org/10.1016/j.bmc.2019.06.040>

Smoot, M. E., Ono, K., Ruscheinski, J., Wang, P. L., & Ideker, T. (2011). Cytoscape 2.8: New features for data integration and network visualization. *Bioinformatics*, 27(3), 431–432. <https://doi.org/10.1093/bioinformatics/btq675>

Song, Q. Q., Xie, W. Y., Tang, Y. J., Zhang, J., & Liu, J. (2017). Genetic variation in the glucocorticoid pathway involved in interindividual differences in the glucocorticoid treatment. In *Pharmacogenomics* (Vol. 18, Issue 3, pp. 293–316). Future Medicine Ltd. <https://doi.org/10.2217/pgs-2016-0151>

- Stockmann, C., Fassl, B., Gaedigk, R., Nkoy, F., Uchida, D. A., Monson, S., Reilly, C. A., Leeder, J. S., Yost, G. S., & Ward, R. M. (2013). Fluticasone propionate pharmacogenetics: CYP3A4\*22 polymorphism and pediatric asthma control. *Journal of Pediatrics*, 162(6). <https://doi.org/10.1016/j.jpeds.2012.11.031>
- Su, X., Ren, Y., Yu, N., Kong, L., & Kang, J. (2016). Thymoquinone inhibits inflammation, neoangiogenesis and vascular remodeling in asthma mice. *International Immunopharmacology*, 38, 70–80. <https://doi.org/10.1016/j.intimp.2016.05.018>
- Supinda Bunyavanich MD, & Eric E. Schadt. (2015). Systems biology of asthma and allergic diseases: A multiscale approach. *Journal of Allergy and Clinical Immunology*, 135(1), 31–42.
- Susanti, R., Biologi, J., & Negeri Semarang Jl Raya Sekaran, U. (n.d.). IDENTIFIKASI SENYAWA BIOAKTIF TANAMAN *Syzygium aromaticum* SEBAGAI IMUNOSTIMULAN MELALUI TOLL-LIKE RECEPTOR SIGNALING PATHWAY BERDASARKAN INTERAKSI SENYAWA-PROTEIN SECARA IN SILICO. <https://phytochem.nal.usda.gov/phytochem/search>.
- Thalanayar Muthukrishnan, P., Nouraie, M., Parikh, A., & Holguin, F. (2020). Zileuton use and phenotypic features in asthma. *Pulmonary Pharmacology and Therapeutics*, 60. <https://doi.org/10.1016/j.pupt.2019.101872>
- The Global Asthma Report 2022. (2022). *The International Journal of Tuberculosis and Lung Disease : The Official Journal of the International Union against Tuberculosis and Lung Disease*, 26(1), 1–104. <https://doi.org/10.5588/ijtld.22.1010>
- Thomas Scow, D., Luttermoser, G. K., & Scott Dickerson, K. (2007). *Leukotriene Inhibitors in the Treatment of Allergy and Asthma*. [www.aafp.org/afp](http://www.aafp.org/afp).
- Thomson, N. C. (2016). Novel approaches to the management of noneosinophilic asthma. In *Therapeutic Advances in Respiratory Disease* (Vol. 10, Issue 3, pp. 211–234). SAGE Publications Ltd. <https://doi.org/10.1177/1753465816632638>
- Wu, A. Y., Sur, S., Grant, J. A., & Tripple, J. W. (2019). Interleukin-4/interleukin-13 versus interleukin-5: A comparison of molecular targets in biologic therapy for the treatment of severe asthma. In

*Current Opinion in Allergy and Clinical Immunology* (Vol. 19, Issue 1, pp. 30–37). Lippincott Williams and Wilkins. <https://doi.org/10.1097/ACI.0000000000000490>

Yocum, G. T., Hwang, J. J., Mikami, M., Danielsson, J., Kuforiji, A. S., & Emala, C. W. (2020). Ginger and its bioactive component 6-shogaol mitigate lung inflammation in a murine asthma model. *Am J Physiol Lung Cell Mol Physiol*, 318, 296–303. <https://doi.org/10.1152/ajplung.00249.2019>.-Asthma

Yucesoy, B., Kashon, M. L., Johnson, V. J., Lummus, Z. L., Fluharty, K., Gautrin, D., Cartier, A., Boulet, L. P., Sastre, J., Quirce, S., Tarlo, S. M., Cruz, M. J., Munoz, X., Luster, M. I., & Bernstein, D. I. (2016). Genetic variants in TNF, TGFB1, PTGS1 and PTGS2 genes are associated with diisocyanate-induced asthma. *Journal of Immunotoxicology*, 13(1), 119–126. <https://doi.org/10.3109/1547691X.2015.1017061>

Yudhawati, R., Putu, D., & Krisdanti, A. (2017). *Imunopatogenesis Asma* (Vol. 3, Issue 1).

Zaman, K., Hanigan, M., Smith, A., Vaughan, J., Macdonald, T., Jones, D., Hunt, J., & Gaston, B. (2006). Endogenous S-nitrosoglutathione modifies 5-lipoxygenase expression in airway epithelial cells. *Am J Respir Cell Mol Biol*, 34(4), 481–490.

Zhang, R., Zhu, X., Bai, H., & Ning, K. (2019). Network pharmacology databases for traditional Chinese medicine: Review and assessment. In *Frontiers in Pharmacology* (Vol. 10, Issue February). Frontiers Media S.A. <https://doi.org/10.3389/fphar.2019.00123>

Zhao, J. V., & Schooling, C. M. (2019). The role of linoleic acid in asthma and inflammatory markers: A Mendelian randomization study. *American Journal of Clinical Nutrition*, 110(3), 685–690. <https://doi.org/10.1093/ajcn/nqz130>

Zhou, X., Afzal, S., Wohlmuth, H., Münch, G., Leach, D., Low, M., & Li, C. G. (2022). Synergistic Anti-Inflammatory Activity of Ginger and Turmeric Extracts in Inhibiting Lipopolysaccharide and Interferon- $\gamma$ -Induced Proinflammatory Mediators. *Molecules*, 27(12). <https://doi.org/10.3390/molecules27123877>

Zullies Ikawati. (2018). *Farmakologi Molekuler Target Aksi Obat dan Mekanisme Molekulernya*. Gadjah Mada University Press.