

DAFTAR PUSTAKA

- [BPOM] Badan Pengawas Obat dan Makanan. (2022). *Uji Toksisitas Praklinik secara In Vivo*.
- [FDA] Food and Drug Administration. (2022). *Allergens in Cosmetics*. <https://www.fda.gov/cosmetics/cosmetic-ingredients/allergens-cosmetics>
- [Kemenkes] Kementerian Kesehatan. (2017). *Farmakope Herbal Indonesia*.
- Abd, E., Yousuf, S., Pastore, M., Telaprolu, K., Mohammed, Y., Namjoshi, S., Grice, J., & Roberts, M. (2016). Skin models for the testing of transdermal drugs. *Clinical Pharmacology: Advances and Applications*, Volume 8, 163–176. <https://doi.org/10.2147/CPAA.S64788>
- Akiyama, Y., Maeda, D., Morikawa, T., Niimi, A., Nomiya, A., Yamada, Y., Igawa, Y., Goto, A., Fukayama, M., & Homma, Y. (2018). Digital quantitative analysis of mast cell infiltration in interstitial cystitis. *Neurourology and Urodynamics*, 37(2), 650–657. <https://doi.org/10.1002/nau.23365>
- Al-Otaibi, S. T., & Alqahtani, H. A. M. (2015). Management of contact dermatitis. *Journal of Dermatology & Dermatologic Surgery*, 19(2), 86–91. <https://doi.org/10.1016/j.jdds.2015.01.001>
- Almasyhuri, A., & Sundari, D. (2019). Uji Aktivitas Antiseptik Ekstrak Etanol Daun Sirih (*Piper betle Linn.*) dalam Obat Kumur terhadap *Staphylococcus aureus* secara in Vitro. *Jurnal Kefarmasian Indonesia*, 10–18. <https://doi.org/10.22435/jki.v9i1.351>
- Amaliah, A., Sobari, E., & Mukminah, N. (2019). Rendemen dan Karakteristik Fisik Ekstrak Oleoresin Daun Sirih Hijau (*Piper betle L.*) dengan Pelarut Heksan. *Industrial Research Workshop and National Seminar*.
- Arbab, S., Ullah, H., Weiwei, W., Wei, X., Ahmad, S. U., Wu, L., & Zhang, J. (2021). Comparative study of antimicrobial action of aloe vera and antibiotics against different bacterial isolates from skin infection. *Veterinary Medicine and Science*, 7(5), 2061–2067. <https://doi.org/10.1002/vms3.488>
- Arras, M., Becker, K., Bergadano, A., Durst, M., Eberspächer-Schweda, E., Fleischmann, T., Haberstroh, J., Jirkof, P., Sager, M., Spadavecchia, C., & Zahner, D. (2020). Pain Management for Laboratory Animals. *GV-SOLAS*.
- Azeem, M., Kader, H., Kerstan, A., Hetta, H. F., Serfling, E., Goebeler, M., & Muhammad, K. (2020). Intricate Relationship Between Adaptive and Innate Immune System in Allergic Contact Dermatitis. *The Yale Journal of Biology and Medicine*, 93(5), 699–709.
- Aziz, K., Imam Badruttamam, M., & Rikadyanti. (2023). Uji Efektifitas Ekstrak Daun Sirih Merah sebagai Insektisida pada Larva Nyamuk *Aedes aegypti*. *Jurnal Ilmiah Fitomedika Indonesia*, 1(2).
- Baehaki, A., Lestari, S. D., & Hildianti, D. F. (2019). Pemanfaatan Rumput Laut

- Eucheuma cottonii dalam Pembuatan Sabun Antiseptik dalam Pembuatan Sabun Antiseptik. *JPHPI* 2019, 22(1).
- Besung, I. N. K., Astawa, N. M., Suata, K., & Suwiti, N. K. (2016). Relationship between the Macrophage Activity with Interleukin-6 Levels and Titers of Antibodies against *Salmonella typhi*. *Jurnal Kedokteran Hewan - Indonesian Journal of Veterinary Sciences*, 10(1). <https://doi.org/10.21157/j.ked.hewan.v10i1.3359>
- Bidilah, S. A., Rumape, O., & Mohamad, E. (2017). Optimasi Waktu Pengadukan dan Volume KOH Sabun Cair Berbahan Dasar Minyak Jelantah. *Jurnal Entropi*, 12(1).
- Borriello, F., Granata, F., & Marone, G. (2014). Basophils and Skin Disorders. *Journal of Investigative Dermatology*, 134(5), 1202–1210. <https://doi.org/10.1038/jid.2014.16>
- Brys, A. K., Rodriguez-Homs, L. G., Suwanpradid, J., Atwater, A. R., & MacLeod, A. S. (2020). Shifting Paradigms in Allergic Contact Dermatitis: The Role of Innate Immunity. *Journal of Investigative Dermatology*, 140(1), 21–28. <https://doi.org/10.1016/j.jid.2019.03.1133>
- Bustanussalam, B., Apriasi, D., Suhardi, E., & Jaenudin, D. (2015). Efektivitas Antibakteri Ekstrak Daun Sirih (*Piper betle Linn*) terhadap *Staphylococcus aureus* ATCC 25923. *Fitofarmaka: Jurnal Ilmiah Farmasi*, 5(2), 58–64. <https://doi.org/10.33751/jf.v5i2.409>
- Carolia, N., & Noventi, W. (2016). Potensi Ekstrak Daun Sirih Hijau (*Piper betle L.*) sebagai Alternatif Terapi *Acne vulgaris*. *Majority*.
- Chen, L., Deng, H., Cui, H., Fang, J., Zuo, Z., Deng, J., Li, Y., Wang, X., & Zhao, L. (2018). Inflammatory responses and inflammation-associated diseases in organs. *Oncotarget*, 9(6), 7204–7218. www.impactjournals.com/oncotarget/
- Choi, E. H. (2019). Aging of the skin barrier. *Clinics in Dermatology*, 37(4), 336–345. <https://doi.org/10.1016/j.cldermatol.2019.04.009>
- Dewi, D. W., Khotimah, S., & Liana, D. F. (2016). Pemanfaatan Infusa Lidah Buaya (*Aloe vera L*) sebagai Antiseptik Pembersih Tangan terhadap Jumlah Koloni Kuman. *Jurnal Cerebellum*, 2(3).
- Dewi, L. K., Hendra Sarosa, A., Wahyu, C., Hayati, N., Parasu, R., & Amalia, E. (2021). Pengaruh Jenis Pelarut Terhadap Daya Antibakteri Hasil Ekstraksi Daun Sirih Hijau (*Piper Betle L.*) pada Aktivitas *Staphylococcus Epidermidis*. *Journal of Innovation and Applied Technology*, 7(1), 1161–1165. <https://doi.org/10.21776/ub.jiat.2021.007.01.6>
- Dimpudus, S. A., Yamlean, P. V. Y., & Yudistira, A. (2017). Formulasi Sediaan Sabun Cair Antiseptik Ekstrak Etanol Bunga Pacar Air (*Impatiens balsamina L.*) dan Uji Efektivitasnya Terhadap Bakteri *Staphylococcus aureus* secara In Vitro. *Pharmacon*, 6(3).
- Dispenza, M. C. (2019). Classification of hypersensitivity reactions. *Allergy and*

- Asthma Proceedings*, 40(6), 470–473.
<https://doi.org/10.2500/aap.2019.40.4274>
- Dudeck, J., Kotrba, J., Immler, R., Hoffmann, A., Voss, M., Alexaki, V. I., Morton, L., Jahn, S. R., Katsoulis-Dimitriou, K., Winzer, S., Kollias, G., Fischer, T., Nedospasov, S. A., Dunay, I. R., Chavakis, T., Müller, A. J., Schraven, B., Sperandio, M., & Dudeck, A. (2021). Directional mast cell degranulation of tumor necrosis factor into blood vessels primes neutrophil extravasation. *Immunity*, 54(3), 468–483.e5. <https://doi.org/10.1016/j.jimmuni.2020.12.017>
- Dwita, L. P., Ladeska, V., Ramadhani, A., Augusta, D. R., & Saufia, R. T. (2020). Manfaat Ekstrak Etanol Daun Remek Daging (*Hemigraphis colorata* W. Bull) terhadap Luka Bakar pada Tikus. *Jurnal Tumbuhan Obat Indonesia*, 13(1), 32–41. <https://doi.org/10.22435/jtoi.v13i1.2823>
- Elidasari, M., Arrishy, I. M. J., Arsy, A. K. S., & Anugraha, G. (2022). Antimicrobial Effectiveness of Betel Leaf Extract (*Piper betle* Linn) compared to Triclosan, Chlorhexidine gluconate, on *Staphylococcus aureus* and *Streptococcus pyogenes* as Hand Washing Soap. *Teikyo Medical Journal*, 45(6).
- Estevão-Silva, C. F., Kummer, R., Fachini-Queiroz, F. C., Grespan, R., Nogueira de Melo, G. A., Baroni, S., Cuman, R. K. N., & Bersani-Amado, C. A. (2014). Anethole and eugenol reduce in vitro and in vivo leukocyte migration induced by fMLP, LTB4, and carrageenan. *Journal of Natural Medicines*, 68(3), 567–575. <https://doi.org/10.1007/s11418-014-0839-7>
- Fatimatuzzahro, N., Prasetya, R. C., & Puri, S. (2021). Potensi ekstrak sutra laba-laba *Argiope modesta* 5% sebagai bahan anti inflamasi pada luka gingiva tikus Wistar. *Padjadjaran Journal of Dental Researchers and Students*, 5(2), 133. <https://doi.org/10.24198/pjdrs.v5i2.34419>
- Febrina, W., & Sirlyana. (2019). Optimasi Proses Reaksi Saponifikasi pada Pembuatan Sabun dari Minyak Kelapa Sawit. *Seminar Nasional Peranan Iptek Menuju Industri Masa Depan (PIMIMD-5)*. <https://doi.org/10.21063/PIMIMD5.2019.21>
- Federer, W. (1963). *Experimental Design Theory and Application*. Oxford and Lbh Publish Hinco.
- Felgueiras, H. P. (2021). An Insight into Biomolecules for the Treatment of Skin Infectious Diseases. *Pharmaceutics*, 13(7), 1012. <https://doi.org/10.3390/pharmaceutics13071012>
- Filon, F. L. (2018). Penetration of Metals Through the Skin Barrier. In *Metal Allergy* (pp. 67–74). Springer International Publishing. https://doi.org/10.1007/978-3-319-58503-1_7
- Fong, M., & Crane, J. S. (2023). Histology, Mast Cells. *NCBI*. <https://www.ncbi.nlm.nih.gov/books/NBK499904/>
- Garibyan, L., Rheingold, C. G., & Lerner, E. A. (2013). Understanding the pathophysiology of itch. *Dermatologic Therapy*, 26(2), 84–91.

- <https://doi.org/10.1111/dth.12025>
- Gaspari, A. A., Katz, S. I., & Martin, S. F. (2016). Contact Hypersensitivity. *Current Protocols in Immunology*, 113(1). <https://doi.org/10.1002/0471142735.im0402s113>
- González-Muñoz, P., Conde-Salazar, L., & Vañó-Galván, S. (2014). Dermatitis alérgica de contacto a cosméticos. *Actas Dermo-Sifiliográficas*, 105(9), 822–832. <https://doi.org/10.1016/j.ad.2013.12.018>
- Goossens, A. (2016). Cosmetic Contact Allergens. *Cosmetics*, 3(1), 5. <https://doi.org/10.3390/cosmetics3010005>
- Gunawan, S. A., Berata, I. K., & Wirata, I. W. (2019). Histopatologi Kulit pada Kesembuhan Luka Insisi Tikus Putih Pasca Pemberian Extracellular Matrix (ECM) yang Berasal dari Vesica Urinaria Babi. *Indonesia Medicus Veterinus*, 8(3), 2477–6637. <https://doi.org/10.19087/imv.2019.8.3.313>
- Gusviputri, A., Meliana, N. P. S., Aylianawati, & Indraswati, N. (2013). Pembuatan Sabun dengan Lidah Buaya (Aloe Vera) Sebagai Antiseptik Alami. *Widya Teknik*, 12(1).
- Hachem, C. El, Marschall, P., Hener, P., Karnam, A., Bonam, S. R., Meyer, P., Flatter, E., Birling, M. C., Bayry, J., & Li, M. (2023). IL-3 produced by T cells is crucial for basophil extravasation in hapten-induced allergic contact dermatitis. *Frontiers in Immunology*, 14. <https://doi.org/10.3389/fimmu.2023.1151468>
- Hakim, R., Wrasiati, L. P., & Arnata, I. W. (2021). Karakteristik Minyak Jelantah Hasil dari Proses Pemurnian dengan Ampas Tebu pada berbagai Variasi Suhu dan Waktu Pengadukan. *Jurnal Rekayasa Dan Manajemen Agroindustri*, 9(4), 427. <https://doi.org/10.24843/JRMA.2021.v09.i04.p01>
- Handajani, J., Fatimah, S., Asih, R., & Latif, A. (2015). Penurunan Kadar IL-1 β Makrofag Terpapar Agregat Bakteri Actinomycetemcomitans setelah Pemberian Minyak Atsiri Temu Putih. *Majalah Kedokteran Gigi Indonesia*, 20(2), 130. <https://doi.org/10.22146/majkedgiind.10158>
- Handayani, G. N. (2019). Uji Aktivitas Ekstrak Etanol Daun Lidah Buaya (Aloe Vera) Terhadap Penghambatan Pertumbuhan Staphylococcus aureus Dan Candida albicans. *Biosel: Biology Science and Education*, 8(1), 1. <https://doi.org/10.33477/bs.v8i1.841>
- Hashimoto, T., Rosen, J. D., Sanders, K. M., & Yosipovitch, G. (2018). Possible role of neutrophils in itch. *Itch*, 3(4), e17–e17. <https://doi.org/10.1097/itx.0000000000000017>
- Heeb, L. E. M., Egholm, C., Impellizzieri, D., Ridder, F., & Boyman, O. (2018). Regulation of neutrophils in type 2 immune responses. *Current Opinion in Immunology*, 54, 115–122. <https://doi.org/10.1016/j.co.2018.06.009>
- Hekmatpou, D., Mehrabi, F., Rahzani, K., & Aminiyan, A. (2019). The Effect of Aloe Vera Clinical Trials on Prevention and Healing of Skin Wound: A

- Systematic Review. *Iranian Journal of Medical Sciences*, 44(1), 1–9.
- Hien, T. T., Ngan, T. T. K., Nhan, N. P. T., Anh, P. N. Q., & Nhan, L. T. H. (2022). Evaluate the properties of body wash from coconut oil in Ben Tre province. 060009. <https://doi.org/10.1063/5.0100844>
- Ilyas, M., Jabbar, A., Bafadal, M., Malaka, M. H., Firdayanti, F., & Sahidin, I. (2020). Aktivitas Imunomodulator Ekstrak Etanol Spons Callyspongia sp. terhadap Fagositosis Makrofag pada Mencit Jantan BALB/C. *Jurnal Ilmiah Ibnu Sina (JIIS): Ilmu Farmasi Dan Kesehatan*, 5(1), 44–55. <https://doi.org/10.36387/jiis.v5i1.377>
- Isdadiyanto, S., Pratiwi, A. R., & Mardiati, S. M. (2022). Indeks Hepatosomatic Rattus norvegicus Hiperlipidemia Setelah Paparan Ekstrak Etanol Daun Azadirachta Indica. *Buletin Anatomi Dan Fisiologi*, 7(2), 110–119. <https://doi.org/10.14710/baf.7.2.2022.110-119>
- Iwashita, K., Etani, R., Kai, M., & Ojima, M. (2023). Effect of standard skin care treatments on skin barrier function in X-irradiated hairless mice. *Asia-Pacific Journal of Oncology Nursing*, 10(1), 100149. <https://doi.org/10.1016/j.apjon.2022.100149>
- Iype, J., & Fux, M. (2021). Basophils Orchestrating Eosinophils' Chemotaxis and Function in Allergic Inflammation. *Cells*, 10(4), 895. <https://doi.org/10.3390/cells10040895>
- Jack, A., Norris, P., & Storrs, F. (2013). Allergic Contact Dermatitis to Plant Extracts in Cosmetics. *Seminars in Cutaneous Medicine and Surgery*, 32(3), 140–146. <https://doi.org/10.12788/j.sder.0019>
- Jo, S. Y., Kim, M. H., Lee, H., Lee, S. H., & Yang, W. M. (2020). Ameliorative and Synergic Effects of Derma-H, a New Herbal Formula, on Allergic Contact Dermatitis. *Frontiers in Pharmacology*, 11. <https://doi.org/10.3389/fphar.2020.01019>
- Kamata, R., Okawa, Y., Hamaguchi, Y., Tabata, S., Terasaki, M., & Takeda, K. (2022). Observation of hapten-induced sensitization responses for the development of a mouse skin sensitization test, including the elicitation phase. *Scientific Reports*, 12(1), 19898. <https://doi.org/10.1038/s41598-022-24547-1>
- Karasuyama, H., Miyake, K., Yoshikawa, S., & Yamanishi, Y. (2018). Multifaceted roles of basophils in health and disease. *Journal of Allergy and Clinical Immunology*, 142(2), 370–380. <https://doi.org/10.1016/j.jaci.2017.10.042>
- Kasman, M., Hadrah, H., Suraya, S., & Andika, B. (2023). Analisis Pemanfaatan Minyak Jelantah Menjadi Gliserol Dengan Metode Hidrolisis. *Jurnal Daur Lingkungan*, 6(1), 8. <https://doi.org/10.33087/daurling.v6i1.218>
- Kendall, A. C., & Nicolaou, A. (2013). Bioactive lipid mediators in skin inflammation and immunity. *Progress in Lipid Research*, 52(1), 141–164. <https://doi.org/10.1016/j.plipres.2012.10.003>
- Kobayashi, Y., Narita, K., Chiba, K., Morita, M., Morishita, K., & Takemoto, H.

- (2014). Effects of L-citrulline diet on stress-induced cold hypersensitivity in mice. *Pharmacognosy Research*, 6(4), 297. <https://doi.org/10.4103/0974-8490.138269>
- Kubota, K., Kakishita, A., Okasaka, M., Tokunaga, Y., & Takata, S. (2020). Effect of Alkyl Structure (Straight Chain/Branched Chain/Unsaturation) of C18 Fatty Acid Sodium Soap on Skin Barrier Function. *Applied Sciences*, 10(12), 4310. <https://doi.org/10.3390/app10124310>
- Kumar, P., & Paulose, R. (2014). Patch Testing in Suspected Allergic Contact Dermatitis to Cosmetics. *Dermatology Research and Practice*, 2014, 1–5. <https://doi.org/10.1155/2014/695387>
- Lamawuran, W. W. (2018). Peningkatan Polymorphonuclear (PMN) Dalam Cairan Nasal Lavage Operator Penggilingan Padi Yang Terpajan Endotoksin Lipopolisakarida (LPS). *Jurnal Info Kesehatan*, 16(1), 96–105. <https://doi.org/10.31965/infokes.vol16.iss1.175>
- Li, W., Ding, F., Zhai, Y., Tao, W., Bi, J., Fan, H., Yin, N., & Wang, Z. (2020). IL-37 is protective in allergic contact dermatitis through mast cell inhibition. *International Immunopharmacology*, 83, 106476. <https://doi.org/10.1016/j.intimp.2020.106476>
- Litchman, G., Nair, P. A., Atwater, A. R., & Bhutta, B. S. (2023). Contact Dermatitis. *NCBI*. <https://www.ncbi.nlm.nih.gov/books/NBK459230/>
- Liu, F.-W., Liu, F.-C., Wang, Y.-R., Tsai, H.-I., & Yu, H.-P. (2015). Aloin Protects Skin Fibroblasts from Heat Stress-Induced Oxidative Stress Damage by Regulating the Oxidative Defense System. *Plos One*, 10(12), e0143528. <https://doi.org/10.1371/journal.pone.0143528>
- Lopes, A. de A., da Fonseca, F. N., Rocha, T. M., de Freitas, L. B., Araújo, E. V. O., Wong, D. V. T., Lima Júnior, R. C. P., & Leal, L. K. A. M. (2018). Eugenol as a Promising Molecule for the Treatment of Dermatitis: Antioxidant and Anti-inflammatory Activities and Its Nanoformulation. *Oxidative Medicine and Cellular Longevity*, 2018, 1–13. <https://doi.org/10.1155/2018/8194849>
- Madhumita, M., Guha, P., & Nag, A. (2019). Optimization of the exhaustive hydrodistillation method in the recovery of essential oil from fresh and cured betel leaves (*Piper betle* L.) using the Box–Behnken design. *Journal of Food Processing and Preservation*, 43(11). <https://doi.org/10.1111/jfpp.14196>
- Maheswari, L. M. S., Ganeswari, P. A. D., & Wardhana, M. (2021). Tinjauan pustaka: respon imunologi pada dermatitis kontak iritan. *Medicina*, 52(3), 133–139. <https://doi.org/10.15562/medicina.v52i3.1079>
- Malissen, B., Tamoutounour, S., & Henri, S. (2014). The origins and functions of dendritic cells and macrophages in the skin. *Nature Reviews Immunology*, 14(6), 417–428. <https://doi.org/10.1038/nri3683>
- Maotsela, T., Danha, G., & Muzenda, E. (2019). Utilization of Waste Cooking Oil and Tallow for Production of Toilet “Bath” Soap. *Procedia Manufacturing*, 35, 541–545. <https://doi.org/10.1016/j.promfg.2019.07.008>

- Mardiana, S., Mulyasih, R., Tamara, R., & Sururi, A. (2020). Pemanfaatan Limbah Rumah Tangga Minyak Jelantah Dengan Ekstrak Jeruk Dalam Perspektif Komunikasi Lingkungan Di Kelurahan Kaligandu. *Jurnal Solma*, 9(1), 92–101. <https://doi.org/10.29405/solma.v9i1.4800>
- Marsono, Y., Triwitono, P., Arianti, E. D., Gunawan, H., & Indrawanto, R. (2020). Pengaruh Bubur Pisang Isomaltosa-oligosakarida dan Fibercreme terhadap Kadar Glukosa dan Lipida Darah serta Profil Digesta Tikus Diabetes. *Agritech*, 40(3), 190. <https://doi.org/10.22146/agritech.43742>
- Marwa, K., & Kondamudi, N. P. (2022). Type IV Hypersensitivity Reaction. *NCBI*. https://www.ncbi.nlm.nih.gov/books/NBK562228/#_NBK562228_pubdet_
- Megawati, M., & Muhartono. (2019). Konsumsi Minyak Jelantah dan Pengaruhnya terhadap Kesehatan. *Majority*, 8(2).
- Mulangsri, D. A. K. (2018). Aktivitas Antibakteri Ekstrak Etanol Daun Muda dan Daun Tua Sirih Hijau (*Piper Betle L.*) terhadap Bakteri *Staphylococcus aureus*. *Jurnal Ilmiah Cendekia Eksakta*.
- Mutia, S., Fauziah, & Thomy, Z. (2018). Pengaruh Pemberian Ekstrak Etanol Daun Andong (*Cordyline fruticosa* (L.) A. Chev) Terhadap Kadar Kolesterol Total dan Trigliserida Darah Tikus Putih (*Rattus norvegicus*) Hipercolesterolemia. *Jurnal Bioleuser*, 2(2), 29–35.
- Nahak, M. M. (2013). Shock Anafilaksis akibat Anastesi Lokal menggunakan Lidocaine. *Jurnal Kesehatan Gigi*.
- Nakai, K. (2021). Multiple roles of macrophage in skin. *Journal of Dermatological Science*, 104(1), 2–10. <https://doi.org/10.1016/j.jdermsci.2021.08.008>
- Ningtias, A. F., Asyiah, I. N., & Pujiastuti. (2014). Manfaat Daun Sirih (*Piper betle L.*) Sebagai Obat Tradisional Penyakit Dalam di Kecamatan Kaliangget Kabupaten Sumenep Madura. *Artikel Ilmiah Hasil Penelitian Mahasiswa*.
- Nisa, F. U. (2022). Karakterisasi dan Uji Aktivitas Antibakteri Sabun Antiseptik Minyak Jelantah Dengan Ekstrak Lidah Buaya (*Aloe vera*) dan Daun Sirih (*Piper betle L.*). [Skripsi, Universitas Negeri Jakarta].
- Nisyak, K., Hisbiyah, A., & Haqqa, A. (2022). Aktivitas Antibakteri Ekstrak Etanol dan Minyak Atsiri Sirih Hijau Terhadap Methicillin Resistant *Staphylococcus aureus*. *Journal of Pharmaceutical Care Anwar Medika* , 5(1).
- Novita, A., Darusman, F., & Priani, S. E. (2021). Kajian Pustaka Sabun Mandi Cair Antiseptik Mengandung Bahan Alami. *Prosiding Farmasi*, 7(2). <https://doi.org/10.29313/v0i0.28937>
- Novyana, R. M., & Susanti. (2016). Lidah Buaya (*Aloe vera*) untuk Penyembuhan Luka. *Majority*, 5(4).
- Nugroho, S. W., Fauziyah, K. R., Sajuthi, D., & Darusman, H. S. (2018). Profil Tekanan Darah Normal Tikus Putih (*Rattus norvegicus*) Galur Wistar dan Sprague-Dawley. *Acta Veterinaria Indonesiana*, 6(2), 32–37. <https://doi.org/10.29244/avi.6.2.32-37>

- Oktaviandari, P. R., Sudira, I. W., & Berata, I. K. (2020). Infiltrasi Sel-sel Radang pada Histopatologi Usus Halus Ayam Kampung yang Diberikan Jamu Daun Ashitaba dan Divaksinasi Tetelo. *Indonesia Medicus Veterinus*, 9(5), 716–726. <https://doi.org/10.19087/imv.2020.9.5.716>
- Ollu, S. R. W., Pandarangga, P., & Ndaong, N. A. (2019). Persembuhan luka incisi kulit mencit (*Mus musculus*) dengan pemberian ekstrak etanol teripang getah (*Holothuria leucospilota*). *Jurnal Veteriner Nusantara*, 2(1). <http://ejurnal.undana.ac.id/JVN>
- Permata, F. S., & Febrianto, A. (2019). Salep Ekstrak Kulit Buah Naga (*Hylicereus costaricensis*) Menurunkan Ekspresi Interleukin-2 (IL-2) dan Jumlah Sel Radang Mononuklear terhadap Luka Terbuka di Kulit Tikus Strain Wistar. *Vet Bio Clin J*, 1(2), 24–34.
- Phensri, P., Thummasema, K., Sukatta, U., Morand, S., & Pruksakorn, C. (2022). In Vitro Antimicrobial Activity of Piper betle Leaf Extract and Some Topical Agents against Methicillin-Resistant and Methicillin-Susceptible *Staphylococcus* Strains from Canine Pyoderma. *Animals*, 12(22), 3203. <https://doi.org/10.3390/ani12223203>
- Pratiwi, N. P. R. K., & Muderawan, I. W. (2016). Analisis Kandungan Kimia Ekstrak Daun Sirih Hijau (*Piper betle* L) dengan GC-MS. *Prosiding Seminar Nasional MIPA*.
- Predianto, H., Momuat, L. I., & Sangi, M. S. (2017). Produksi Sabun Mandi Cair Berbahan Baku VCO yang Ditambahkan dengan Ekstrak Wortel (*Daucus carota*). *Chem. Prog.*, 10(1). <https://doi.org/10.35799/cp.10.1.2017.27741>
- Prihanto, A., & Irawan, B. (2018). Pemanfaatan Minyak Goreng Bekas Menjadi Sabun Mandi. *Metana*, 14(2), 55. <https://doi.org/10.14710/metana.v14i2.11341>
- Proksch, E., & Brasch, J. (2012). Abnormal epidermal barrier in the pathogenesis of contact dermatitis. *Clinics in Dermatology*, 30(3), 335–344. <https://doi.org/10.1016/j.clindermatol.2011.08.019>
- Putri, D. E., Supiyani, A., Putri, A. N. P., & Mushonnifah, E. (2021). Malondialdehyde (MDA) Levels on Mice Atopic Dermatitis Treated with Pearl Grass (*Hedyotis corymbosa* (L.) Lamk) Extract Cream. *Malaysian Journal of Medicine and Health Sciences*, 17(SUPP2), 2636–9346.
- Radonjic-Hoesli, S., Brüggen, M.-C., Feldmeyer, L., Simon, H.-U., & Simon, D. (2021). Eosinophils in skin diseases. *Seminars in Immunopathology*, 43(3), 393–409. <https://doi.org/10.1007/s00281-021-00868-7>
- Rahadianti, D., & Herlinawati. (2022). Sistem Imunitas Alamiah dan Sistem Imunitas Adaptif. *Nusantara Hasana Journal*, 2(3).
- Rahayu, S., Pujiono, F., Dewi, M., & Prasetyo, A. (2019). Bagasse charcoal optimization based on different concentration and immersing time to stabilize quality of cooking oil. *Journal of Physics: Conference Series*, 1402(5), 055025. <https://doi.org/10.1088/1742-6596/1402/5/055025>

- Rahayu, S., Supiyani, A., Darmansyah, R., & Amalia, R. (2022). Pre Treatment Minyak Jelantah dengan Karbon Aktif Ampas Tebu Menurunkan Resiko Hepatotoksisitas Tikus (Sprague Dawley). *Bioma*, 18(2). [https://doi.org/10.21009/Bioma18\(2\).5](https://doi.org/10.21009/Bioma18(2).5)
- Rahayu, S., Supriyatn, & Bintari, A. (2018). *Activated carbon-based bio-adsorbent for reducing free fatty acid number of cooking oil*. 050004. <https://doi.org/10.1063/1.5061897>
- Rizzo, K., & Nassiri, M. (2012). Diagnostic Workup of Small B Cell Lymphomas: A Laboratory Perspective. *Lymphoma*, 2012, 1–15. <https://doi.org/10.1155/2012/346084>
- Rosmainar, L. (2021). Formulasi dan Evaluasi Sediaan Sabun Cair dari Ekstrak Daun Jeruk Purut (*Citrus hystrix*) dan Kopi Robusta (*Coffea canephora*) serta Uji Cemaran Mikroba. *Jurnal Kimia Riset*, 6(1), 58. <https://doi.org/10.20473/jkr.v6i1.25554>
- Rubins, A., Romanova, A., Septe, M., Maddukuri, S., Schwartz, R. A., & Rubins, S. (2020). Contact dermatitis: etiologies of the allergic and irritant type. *Acta Dermatovenerologica Alpina Pannonica et Adriatica*, 29(4). <https://doi.org/10.15570/actaapa.2020.37>
- Rustemeyer, T. (2022). Immunological Mechanisms in Allergic Contact Dermatitis. *Current Treatment Options in Allergy*, 9(2), 67–75. <https://doi.org/10.1007/s40521-022-00299-1>
- Rustiani, E., Rahminiwati, M., & Mutiara, T. (2017). Perbandingan Potensi Analgetik Ekstrak Etanol dan Air Umbi Rumput Teki (*Cyperus rotundus L.*) terhadap Tikus Sprague Dawley. *Ekologia*, 17(2).
- Sadiyah, H. H., Cahyadi, A. I., & Windria, S. (2022). Kajian Daun Sirih Hijau (*Piper betle L.*) Sebagai Antibakteri. *Jurnal Sain Veteriner*, 40(2), 128. <https://doi.org/10.22146/jsv.58745>
- Sakai, H., Ishida, T., Sato, K., Mandokoro, K., Yabe, S., Sato, F., Chiba, Y., Kon, R., Ikarashi, N., & Kamei, J. (2019). Interference of Skin Scratching Attenuates Accumulation of Neutrophils in Murine Allergic Contact Dermatitis Model. *Inflammation*, 42(6), 2226–2235. <https://doi.org/10.1007/s10753-019-01086-y>
- Sánchez, M., González-Burgos, E., Iglesias, I., & Gómez-Serramillos, M. P. (2020). Pharmacological Update Properties of Aloe Vera and its Major Active Constituents. *Molecules*, 25(6), 1324. <https://doi.org/10.3390/molecules25061324>
- Scheinman, P. L., Vocanson, M., Thyssen, J. P., Johansen, J. D., Nixon, R. L., Dear, K., Botto, N. C., Morot, J., & Goldminz, A. M. (2021). Contact dermatitis. *Nature Reviews Disease Primers*, 7(1), 38. <https://doi.org/10.1038/s41572-021-00271-4>
- Septiawan, A. N., Emelda, E., & Husein, S. (2021). Aktivitas Antioksidan Kombinasi Ekstrak Etanol Lidah Buaya (Aloe vera L.) dan Ganggang Hijau

- (*Ulva lactuca L.*). *Inpharnmed Journal (Indonesian Pharmacy and Natural Medicine Journal)*, 4(1), 11. <https://doi.org/10.21927/inpharnmed.v4i1.1601>
- Setiawan, A. N., Wijayanti, S. N., & Makrufi, A. D. (2021). Pendampingan Pengembangan Lidah Buaya menjadi Berbagai Olahan dan Produk Kesehatan sebagai Branding Keunggulan SMK Muhammadiyah 2 Turi. *Jurnal Warta LPM*, 24(4), 603–613. <http://journals.ums.ac.id/index.php/warta>
- Setiawati, I., & Ariani, A. (2020). Kajian pH dan Kadar Air dalam SNI Sabun Mandi Padat di Jabedebog. *Prosiding PPIS 2020*.
- Sewta, C. A., Mambo, C., & Wuisan, J. (2015). Uji Efek Ekstrak Daun Lidah Buaya (*Aloe vera L.*) Terhadap Penyembuhan Luka Insisi Kulit Kelinci (*Oryctolagus cuniculus*). *Jurnal E-Biomedik (EBm)*, 3(1).
- Shah, H., Eisenbarth, S., Tormey, C. A., & Siddon, A. J. (2021). Behind the scenes with basophils: an emerging therapeutic target. *Immunotherapy Advances*, 1(1). <https://doi.org/10.1093/imadv/ltab008>
- Silsia, D., Susanti, L., & Reko, A. (2017). Pengaruh Konsentrasi KOH terhadap Karakteristik Sabun Cair Beraroma Jeruk Kalamansi dari Minyak Goreng Bekas. *Jurnal Agroindustri*, 7, 11–19.
- Suarantika, F., Patricia, V. M., & Rahma, H. (2023). Optimasi Proses Ekstraksi Daun Sirih Hijau (*Piper betle L.*) yang Memiliki Aktivitas Antioksidan Berdasarkan Penggunaan secara Empiris. *Jurnal Ilmiah Medicamento*, 9(1), 16–21. <https://doi.org/10.36733/medicamento.v9i1.5253>
- Sugiharta, S., Yuniarisih, N., & Ridwanuloh, D. (2021). Evaluasi Pemurnian Minyak Jelantah Menggunakan Carbon Active Resin Coated Powder Berdasarkan Kadar Asam Lemak Bebas. In *Jurnal Buana Farma* (Vol. 1).
- Suhaimi, Indrawati, T., & Kumala, S. (2019). Formulasi Gel Kombinasi Ekstrak Kering Lidah Buaya (*Aloe vera*. (L) brum. f) dan Ekstrak Kental Daun Sirih Merah (*Piper crocatum ruiz & pav*) untuk Antibakteri Penyebab Jerawat. *Medical Sains : Jurnal Ilmiah Kefarmasian*, 3(2), 139–152. <https://doi.org/10.37874/ms.v3i2.67>
- Sukeksi, L., Sidabutar, A. J., & Sitorus, C. (2017). Pembuatan Sabun dengan Menggunakan Kulit Buah Kapuk (*Ceiba petandra*) sebagai Sumber Alkali. *Jurnal Teknik Kimia USU*, 6(3), 8–13. <https://doi.org/10.32734/jtk.v6i3.1583>
- Susilawaty, A., Ibrahim, H., & Ugi, N. T. (2017). Pemanfaatan Minyak Jelantah dengan Tambahan Ekstrak Daun Cengkeh (*Zyzygium aromaticum*) Sebagai Sabun Antiseptik dalam Menurunkan Jumlah Kuman pada Telapak Tangan. *Higiene*, 3(1).
- Suzuki, K., Meguro, K., Nakagomi, D., & Nakajima, H. (2017). Roles of alternatively activated M2 macrophages in allergic contact dermatitis. *Allergology International*, 66(3), 392–397. <https://doi.org/10.1016/j.alit.2017.02.015>
- Syamsun, A., Harahap, I. L., & Herlina, L. (2022). Efek Submersion di Air Laut

- dan Air Tawar Terhadap Perubahan Histopatologis Organ Tikus Wistar. *Journal of Classroom Action Research*, 4, 87–91. <https://doi.org/10.29303/jcar.v4i3.2703>
- Takayama, E., & Yoshioka, A. (2021). A case of leukoderma probably caused by a soap containing neem oil. *Journal of Cutaneous Immunology and Allergy*, 4(6), 175–177. <https://doi.org/10.1002/cia2.12192>
- Tamaka, K., Seike, M., Hagiwara, T., Sato, A., & Ohtsu, H. (2015). Histamine suppresses regulatory T cells mediated by TGF- β in murine chronic allergic contact dermatitis. *Experimental Dermatology*, 24(4), 280–284. <https://doi.org/10.1111/exd.12644>
- Tammannavar, P., Pushpalatha, C., & Jain, S. (2013). An unexpected positive hypersensitive reaction to eugenol. *Case Reports*, 2013(sep18 1), bcr2013009464–bcr2013009464. <https://doi.org/10.1136/bcr-2013-009464>
- Tigner, A., Ibrahim, S. A., & Murray, I. V. (2023). Histology, White Blood Cell. NCBI. <https://www.ncbi.nlm.nih.gov/books/NBK563148/>
- Tran, S., Haque, I., Dhatrak, D., & Dolan, P. (2021). Lympho eosinophilic cholecystitis: A rare cause of acalculous cholecystitis in immunocompetent patients – A case report. *International Journal of Surgery Case Reports*, 80, 105608. <https://doi.org/10.1016/j.ijscr.2021.01.102>
- Tran, V. T., Nguyen, T. B., Nguyen, H. C., Do, N. H. N., & Le, P. K. (2023). Recent applications of natural bioactive compounds from Piper betle (L.) leaves in food preservation. *Food Control*, 154, 110026. <https://doi.org/10.1016/j.foodcont.2023.110026>
- Turnelle, A. S., Ellison, J. A., Mendonça, M. T., & McCracken, G. F. (2010). Histological assessment of cellular immune response to the phytohemagglutinin skin test in Brazilian free-tailed bats (*Tadarida brasiliensis*). *Journal of Comparative Physiology B*, 180(8), 1155–1164. <https://doi.org/10.1007/s00360-010-0486-6>
- Utami, S. M., & Denanti, I. R. (2018). Uji Efektivitas Antibakteri Sediaan Sabun Cair Cuci Tangan Dari Lendir Lidah Buaya (*Aloe barbadensis Miller*) Terhadap Escherichia coli dan Staphylococcus aureus. *Edu Masda Journal*, 2(2), 63. <https://doi.org/10.52118/edumasda.v2i2.14>
- Voss, M., Kotrba, J., Gaffal, E., Katsoulis-Dimitriou, K., & Dudeck, A. (2021). Mast Cells in the Skin: Defenders of Integrity or Offenders in Inflammation? *International Journal of Molecular Sciences*, 22(9), 4589. <https://doi.org/10.3390/ijms22094589>
- Wang, F., Liu, J., An, Q., Wang, Y., Yang, Y., Huo, T., Yang, S., Ju, R., & Quan, Q. (2023). Aloe Extracts Inhibit Skin Inflammatory Responses by Regulating NF- κ B, ERK, and JNK Signaling Pathways in an LPS-Induced RAW264.7 Macrophages Model. *Clinical, Cosmetic and Investigational Dermatology*, Volume 16, 267–278. <https://doi.org/10.2147/CCID.S391741>
- Wano, N., Sanguanrungsirikul, S., Keelawat, S., & Somboonwong, J. (2021). The

- effects of whole-body vibration on wound healing in a mouse pressure ulcer model. *Heliyon*, 7(4), e06893. <https://doi.org/10.1016/j.heliyon.2021.e06893>
- Wardhani, D. P., Setyaningsih, E., & Widyaningrum, P. W. (2022). Pengolahan Limbah Minyak Jelantah Menjadi Sabun Pada Karang Taruna Bakti Manunggal. *Jurnal Abdimasa Pengabdian Masyarakat*, 5(1).
- Wati, W., Balqis, U., & Iskandar, C. D. (2020). Identifikasi dan Jumlah Sel Radang pada Luka Sayat Mencit (*Mus musculus*) yang Diberi Ekstrak Daun Binahong (Anredera cordifolia (Tenore) Steenis). *Jurnal Ilmiah Mahasiswa Veteriner*, 4(4).
- Weber, F. C., Németh, T., Csepregi, J. Z., Dudeck, A., Roers, A., Ozsvári, B., Oswald, E., Puskás, L. G., Jakob, T., Mócsai, A., & Martin, S. F. (2015). Neutrophils are required for both the sensitization and elicitation phase of contact hypersensitivity. *Journal of Experimental Medicine*, 212(1), 15–22. <https://doi.org/10.1084/jem.20130062>
- Widyasanti, A., Faridani, C. L., & Rohdiana, D. (2016). Pembuatan Sabun Padat Transparan menggunakan Minyak Kelapa Sawit (Palm Oil) dengan Penambahan Bahan Aktif Ekstrak Teh Putih (*Camellia sinensis*). *Jurnal Teknik Pertanian Lampung*, 5(3), 125–136.
- Widyasanti, A., Qurratu’ain, Y., & Nurjanah, S. (2017). Pembuatan Sabun Mandi Cair Berbasis Minyak Kelapa Murni (VCO) dengan Penambahan Minyak Biji Kelor (*Moringa oleifera* Lam). *Chimica et Natura Acta*, 5(2), 77. <https://doi.org/10.24198/cna.v5.n2.14691>
- Wijaya, R. A., Latifah, & Pratjojo, W. (2013). Formulasi Krim Ekstrak Lidah Buaya (*Aloe vera*) sebagai Alternatif Penyembuh Luka Bakar. *Journal of Chemical Science*, 2(3). <http://journal.unnes.ac.id/sju/index.php/ijcs>
- Woo, W. (2019). Skin Structure and Biology. In *Imaging Technologies and Transdermal Delivery in Skin Disorders* (pp. 1–14). Wiley. <https://doi.org/10.1002/9783527814633.ch1>
- Xu, J., Xiong, H., Zhao, Z., Luo, M., Ju, Y., Yang, G., & Mei, Z. (2021). Genistein suppresses allergic contact dermatitis through regulating the MAP2K2/ERK pathway. *Food & Function*, 12(10), 4556–4569. <https://doi.org/10.1039/DFO03238G>
- Yamaguchi, H. L., Yamaguchi, Y., & Peeva, E. (2023). Role of Innate Immunity in Allergic Contact Dermatitis: An Update. *International Journal of Molecular Sciences*, 24(16), 12975. <https://doi.org/10.3390/ijms241612975>
- Yin, C., Zhao, J., & Zhu, X. (2022). Anti-pruritic and anti-inflammatory effects of dihydromyricetin in a mouse model of allergic contact dermatitis. <https://doi.org/10.21203/rs.3.rs-2282667/v1>
- Yuza, F., Wahyudi, I. A., & Larnani, S. (2014). Efek Pemberian Ekstrak Lidah Buaya (*Aloe Barbadensis Miller*) pada Soket Gigi terhadap Kepadatan Serabut Kolagen Pasca Ekstraksi Gigi Marmut (*Cavia Porcellus*). *Majalah Kedokteran Gigi Indonesia*, 21(2), 127. <https://doi.org/10.22146/majkedgiind.8743>

Zulfikri, Nasution, P. R., & Dianti, C. (2023). Aktivitas Antibakteri Ekstrak Etanol Daun Sirih Hijau (*Piper betle Linn.*) terhadap Bakteri *Escherichia coli*. *Sains Medisina*, 1(5).

