

DAFTAR PUSTAKA

- Adiningsih, W., Vifta, R., & Yuswantina, R. (2021). Uji Aktivitas Antibakteri Ekstrak Etanol 70% Dan Ekstrak Etanol 96% Buah Strawberry (*Fragaria X Ananassa*) Terhadap Bakteri *Propionibacterium Acnes*. *Generics: Journal of Research in Pharmacy*, 1(1), 1–9. <https://doi.org/10.14710/genres.v1i1.9835>
- Aini, R. N., Listyani, T. A., & Raharjo, D. (2023). Perbandingan Kadar Flavonoid Dan Aktivitas Antioksidan Ekstrak Etanol Dan Infusa Daun Rambutan (*Nephelium lappaceum L.*) Dengan Metode ABTS. *Jurnal Ilmiah Wahana Pendidikan*, 9(23), 665–680.
- Akinduti, P. A., Motayo, B., Idowu, O. M., Isibor, P. O., Olasehinde, G. I., Obafemi, Y. D., Ugboko, H. U., Oyewale, J. O., Oluwadun, A., & Adeyemi, G. A. (2019). Suitability of spectrophotometric assay for determination of honey microbial inhibition. *Journal of Physics: Conference Series*, 1299(1). <https://doi.org/10.1088/1742-6596/1299/1/012131>
- Alanazi, M. S., Hammad, S. M., & Mohamed, A. E. (2018). Prevalence and psychological impact of *Acne vulgaris* among female secondary school students in Arar city, Saudi Arabia, in 2018. *Electronic Physician*, 10(8), 7224. <https://doi.org/10.19082/7224>
- Alkilani, A. Z., McCrudden, M. T. C., & Donnelly, R. F. (2015). Transdermal Drug Delivery: Innovative Pharmaceutical Developments Based on Disruption of the Barrier Properties of the stratum corneum. *Pharmaceutics*, 7(4), 438. <https://doi.org/10.3390/PHARMACEUTICS7040438>
- Allen, L. V. (2009). *Handbook of Pharmaceutical Excipients 6th edition* (R. C. Rowe, P. J. Sheskey, & M. E. Quinn, Eds.). Pharmaceutical Press and American Pharmacist Association.
- American Academy of Dermatology Association (AAD). (2023). *Acne clinical guideline*. <https://www.aad.org/member/clinical-quality/guidelines/acne>
- Anggraeny, V., Febriyana, R., G, L., & I, M. (2021). Uji Aktivitas Ekstrak Daun Ketapang (*Terminalia Catappa L*) Terhadap Pertumbuhan Bakteri (*Propionibacterium Acnes*). *Java Health Journal*, 8(1). <https://doi.org/10.1210/JHJ.V8I1.407>
- Araviiskaia, E., Berardesca, E., Bieber, T., Gontijo, G., Sanchez Viera, M., Marrot, L., Chuberre, B., & Dreno, B. (2019). The Impact of Airborne Pollution on Skin. *Journal of the European Academy of Dermatology and Venereology*, 33(8), 1496–1505. <https://doi.org/10.1111/jdv.15583>
- Arifin, A., Sartini, & Marianti. (2019). Evaluasi Karakteristik Fisik Dan Uji Permeasi Pada Formula Patch Aspirin Menggunakan Kombinasi Etilselulosa Dengan Polivinilpirolidon. *Jurnal Sains Dan Kesehatan*, 2(1), 40–49. <https://doi.org/10.16285/j.rsm.2007.10.006>
- Balouiri, M., Sadiki, M., & Ibsouda, S. K. (2016). Methods for in vitro evaluating antimicrobial activity: A review. *Journal of Pharmaceutical Analysis*, 6(2), 71. <https://doi.org/10.1016/J.JPHA.2015.11.005>
- Bhandari, N., Raja, M. K. M. M., Singh, L. P., Kukreti, G., & Kaushik, S. (2022). A detailed overview on pharmaceutical dosage forms in treatment of acne.

- International Journal of Health Sciences*, 6(S4), 9916–9931.
<https://doi.org/10.53730/IJHS.V6NS4.10847>
- Bird, D., & Ravindra, N. M. (2020). Transdermal drug delivery and patches—An overview. *Medical Devices & Sensors*, 3(6), 1–15.
<https://doi.org/10.1002/mds3.10069>
- Borbolla-Jiménez, F. V., Peña-Corona, S. I., Farah, S. J., Jiménez-Valdés, M. T., Pineda-Pérez, E., Romero-Montero, A., Del Prado-Audelo, M. L., Bernal-Chávez, S. A., Magaña, J. J., & Leyva-Gómez, G. (2023). Films for Wound Healing Fabricated Using a Solvent Casting Technique. *Pharmaceutics* 2023, Vol. 15, Page 1914, 15(7), 1914.
<https://doi.org/10.3390/PHARMACEUTICS15071914>
- Cheng, L., Cheng, X., Deng, M., Deng, X., Du, Q., Ge, Y., Guo, Q., He, J., Jia, W., Kang, D., Kuang, Y., Li, C., Li, M., Li, Y., Liu, Y. L. C., Liu, X., Lu, C., Peng, X., & Zhu, W. Q. Z. (2015). Chapter 4 - Subgingival Microbes. In X. Zhou & Y. Li (Eds.), *Atlas of Oral Microbiology* (pp. 67–93). Academic Press.
<https://doi.org/https://doi.org/10.1016/B978-0-12-802234-4.00004-5>
- Das, S., Sarkar, P., & Majee, S. B. (2022). Polymers in Matrix Type Transdermal Patch. *International Journal of Pharmaceutical Sciences Review and Research*, 73(14), 77–86. <https://doi.org/10.47583/ijpsrr.2022.v73i01.014>
- Davis, J. L., & Papich, M. G. (2014). Antimicrobial Therapy. *Equine Infectious Diseases: Second Edition*, 571–584.e5. <https://doi.org/10.1016/B978-1-4557-0891-8.00065-8>
- DepKes RI. (2000). *Parameter Standar Umum Ekstrak Tumbuhan Obat*. Departemen Kesehatan RI.
- Deswita, W., Manalu, K., & Tambunan, E. P. S. (2021). Uji Efektivitas Antibakteri Ekstrak Umbi Lobak Putih (*Raphanus sativus* L) terhadap Pertumbuhan Bakteri *Propionibacterium acnes* dan *Staphylococcus epidermidis*. *KLOROFIL: Jurnal Ilmu Biologi Dan Terapan*, 5(2), 111.
<https://doi.org/10.30821/kfl:jibt.v5i2.10032>
- Diniatik. (2015). Penentuan Kadar Flavonoid Total Ekstrak Etanolik Daun Kepel (*Stelechocarpus burahol* (Bl.) Hook F. & Th.) Dengan Metode Spektrofotometri. *Kartika-Jurnal Ilmiah Farmasi*, 3(1), 1–5.
- Effendy, E. M., Taurhesia, S., & Purba, A. V. (2019). Pengembangan Krim Pewarna Rambut Permanen Mengandung Ekstrak Daun Ketapang (*Terminalia catappa* L) dan Ekstrak Daun Jambu Biji (*Psidium guajava* L). *PHARMACY: Jurnal Farmasi Indonesia (Pharmaceutical Journal of Indonesia)*, 16(2), 356.
<https://doi.org/10.30595/pharmacy.v16i2.5859>
- Elya, B., Kusuma, I. M., Jufri, M., & Handayani, R. (2016). Antibacterial tests against acne in vitro, the physical stability and patch test using cream containing ethyl p-methoxycinnamate extracted from *Kaempferia galanga* L., Rhizoma. *Research Journal of Medicinal Plant*, 10(8), 426–434.
<https://doi.org/10.3923/rjmp.2016.426.434>
- Ermawati, D. E., & Prilantari, H. U. (2019). Pengaruh Kombinasi Polimer Hidroksipropilmetilselulosa dan Natrium Karboksimetilselulosa terhadap Sifat Fisik Sediaan Matrix-based Patch Ibuprofen. *JPSCR: Journal of*

- Pharmaceutical Science and Clinical Research*, 4(2), 109. <https://doi.org/10.20961/jpscr.v4i2.34525>
- Fatwami, E. F., & Royani, S. (2023). Skrining Fitokimia dan Uji Antioksidan Ekstrak Daun Cabai Rawit (*Capsicum frutescens* L.). *Journal Syifa Sciences and Clinical Research*, 5(2). <https://doi.org/10.37311/jsscr.v5i2.20896>
- Fuziyanti, N., Najihudin, A., & Hindun, S. (2022). Pengaruh Kombinasi Polimer PVP:EC dan HPMC:EC Terhadap Sediaan Transdermal Pada Karakteristik Patch yang Baik : Review. *Pharmaceutical Journal of Indonesia*, 7(2), 147–152. <https://doi.org/10.21776/ub.pji.2022.007.02.10>
- Gajic, I., Kabic, J., Kekic, D., Jovicevic, M., Milenkovic, M., Mitic Culafic, D., Trudic, A., Ranin, L., & Opavski, N. (2022). Antimicrobial Susceptibility Testing: A Comprehensive Review of Currently Used Methods. *Antibiotics*, 11(4). <https://doi.org/10.3390/ANTIBIOTICS11040427>
- Gerung, W. H. P., Fatimawali, & Irma, A. (2021). Uji Aktivitas Antibakteri Ekstrak Daun Belimbing Botol (*Averrhoa bilimbi* L.) Terhadap Pertumbuhan Bakteri *Propionibacterium acnes* Penyebab Jerawat. *Pharmacon*, 10(4), 1087–1093.
- Gilaberte, Y., Prieto-Torres, L., Pastushenko, I., & Juarranz, Á. (2016). Anatomy and Function of the Skin. In *Nanoscience in Dermatology*. Elsevier Inc. <https://doi.org/10.1016/B978-0-12-802926-8.00001-X>
- Hafsi, W., Arnold, D. L., & Kassardjian, M. (2023). Acne Conglobata. *Journal of the Royal Society of Medicine*, 30(11), 1338–1341. <https://doi.org/10.1177/003591573703001110>
- Hajrin, W., Subaidah, W. A., Juliantoni, Y., & Wirasisya, D. G. (2021). Application of Simplex Lattice Design Method on The Optimisation of Deodorant Roll-on Formula of Ashitaba (*Angelica keiskei*). *Jurnal Biologi Tropis*, 21(2), 501–509. <https://doi.org/10.29303/jbt.v21i2.2717>
- Hamzah, S., Yanti, N. I., Isnaini, N., & Rahmi, N. (2023). Uji Stabilitas Fisik Formulasi Sediaan Patch Antiacne Kombinasi Ekstrak Etanol Buah Kurma Sukkari (*Phoenix dactylifera*) Dan Madu Murni (Honey Bee) : Physical Stability Test Formulation Of Antiacne Patch Preparations Combination Of Ethanol Extract Of Sukar. *Medical Sains : Jurnal Ilmiah Kefarmasian*, 8(3), 901–910.
- Hauk, L. (2017). Acne Vulgaris: Treatment Guidelines from the AAD. *American Family Physician*, 95(11), 740–741.
- Hidayat, I. R., Zuhrotun, A., & Sopyan, I. (2021). Design-Expert Sebagai Alat Optimasi Formulasi Sediaan Farmasi. *Majalah Farmaksetika*, 6(1), 99–120.
- Hofmann, E. ; Schwarz, A. ; Fink, J. ; Kamolz, L.-P. ; Kotzbeck, P., Hofmann, E., Schwarz, A., Fink, J., Kamolz, L.-P., & Kotzbeck, P. (2023). Modelling the Complexity of Human Skin In Vitro. *Biomedicines 2023, Vol. 11, Page 794*, 11(3), 794. <https://doi.org/10.3390/BIMEDICINES11030794>
- Huda, C., Putri, A. E., Sari, D. W., Putra, K. (2019). Uji Aktivitas Antibakteri Fraksi Dari Maserat *Zibethinus Folium* Terhadap *Escherichiacoli*. *Jurnal SainHealth*, 3(1).
- Iijima, S., & Tsunoda, T. (2019). Twenty cases of allergic contact dermatitis due to benzoyl peroxide in acne patients in Japan. *Journal of Cutaneous Immunology and Allergy*, 2(4), 108–112. <https://doi.org/10.1002/CIA2.12069>

- Inayah, S., Febrina, L., Tobing, N. E. K. P., & Fadraersada, J. (2018). Formulasi dan Evaluasi Sediaan Patch Bukal Mukoadhesif Celecoxib. *Proceeding of Mulawarman Pharmaceuticals Conferences*, 8, 177–183. <https://doi.org/10.25026/mpc.v8i1.321>
- IQAir. (2022). *Indonesia Air Quality Index (AQI) and Air Pollution information | IQAir*. <https://www.iqair.com/indonesia>
- ITIS. (2023). *Report: Terminalia catappa L.* https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=27762#null
- Jaggi Rao. (2020). *Acne Vulgaris Treatment & Management*. Medscape. <https://emedicine.medscape.com/article/1069804-treatment?form=fpf>
- Johnson, W., Bergfeld, W. F., Belsito, D. V., Hill, R. A., Klaassen, C. D., Liebler, D. C., Marks, J. G., Shank, R. C., Slaga, T. J., Snyder, P. W., & Andersen, F. A. (2017). Safety Assessment of Benzyl Alcohol, Benzoic Acid and its Salts, and Benzyl Benzoate. *International Journal of Toxicology*, 36(3_suppl), 5S-30S. <https://doi.org/10.1177/1091581817728996>
- Karavas, E., Georgarakis, E., & Bikiaris, D. (2006). Application of PVP/HPMC miscible blends with enhanced mucoadhesive properties for adjusting drug release in predictable pulsatile chronotherapeutics. *European Journal of Pharmaceutics and Biopharmaceutics*, 64(1), 115–126. <https://doi.org/10.1016/j.ejpb.2005.12.013>
- Kathe, K., & Kathpalia, H. (2017). Film forming systems for topical and transdermal drug delivery. *Asian Journal of Pharmaceutical Sciences*, 12(6), 487–497. <https://doi.org/10.1016/j.ajps.2017.07.004>
- Katiki, L. M., Gomes, A. C. P., Barbieri, A. M. E., Pacheco, P. A., Rodrigues, L., Veríssimo, C. J., Gutmanis, G., Piza, A. M., Louvandini, H., & Ferreira, J. F. S. (2017). *Terminalia catappa: Chemical composition, in vitro and in vivo effects on Haemonchus contortus*. <https://doi.org/10.1016/j.vetpar.2017.09.006>
- Kemenkes RI. (2017). *Farmakope Herbal Indonesia Edisi II*. Kementerian Kesehatan RI.
- Kharisma, A., Tjahjaningsih, W., & Sigit, S. (2020). Determination of minimum inhibitory and minimum bactericidal concentration of ketapang (*Terminalia catappa*) leaves extract against *Vibrio harveyi*. *IOP Conference Series: Earth and Environmental Science*, 441(1). <https://doi.org/10.1088/1755-1315/441/1/012012>
- Koeth, L. M., King, A., Knight, H., May, J., Miller, L. A., Phillips, I., & Poupard, J. A. (2000). Comparison of cation-adjusted Mueller-Hinton with Iso-Sensitest broth for the NCCLS broth microdilution method. *Journal of Antimicrobial Chemotherapy*, 46(3), 369–376. <https://doi.org/10.1093/jac/46.3.369>
- Kuo, C. W., Chiu, Y. F., Wu, M. H., Li, M. H., Wu, C. N., Chen, W. S., & Huang, C. H. (2021). Gelatin/chitosan bilayer patches loaded with cortex phellodendron amurense/centella asiatica extracts for anti-acne application. *Polymers*, 13(4), 1–15. <https://doi.org/10.3390/polym13040579>
- Kurnia, D., Akbar, H. A., & Suhardiman, A. (2022). Aktivitas Antibakteri Ekstrak Dan Fraksi Makroalga *Eucheuma cottonii* Terdelignifikasi Terhadap Bakteri

- Penyebab Jerawat. *Indonesia Natural Research Pharmaceutical Journal*, 7(2), 77–90. <https://doi.org/10.52447/inrpj.v7i2.6476>
- Kurniawati, E. (2015). Daya Antibakteri Ekstrak Etanol Tunas Bambu Apus Terhadap Bakteri *Escherichia coli* dan *Staphylococcus aureus* Secara In Vitro. *Jurnal Wiyata*, 2(2), 193–199.
- Leung, A. K. C., Barankin, B., Lam, J. M., Leong, K. F., & Hon, K. L. (2021). Dermatology: how to manage acne vulgaris. *Drugs in Context*, 10. <https://doi.org/10.7573/DIC.2021-8-6>
- Lopes, P. P., Tanabe, E. H., & Bertuol, D. A. (2020). Chitosan as biomaterial in drug delivery and tissue engineering. In *Handbook of Chitin and Chitosan: Volume 3: Chitin- and Chitosan-based Polymer Materials for Various Applications* (pp. 407–431). <https://doi.org/10.1016/B978-0-12-817966-6.00013-3>
- Lucut, S., & Smith, M. R. (2016). Dermatological tracking of chronic acne treatment effectiveness. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS, 2016-October*, 5421–5426. <https://doi.org/10.1109/EMBC.2016.7591953>
- Maddeppungeng, N. M., Tahir, K. A., Nurdin, N. C., & Wahyuni, S. (2023). Formulasi dan Evaluasi Dermal Patch Ekstrak Metanol Rimpang Lempuyang Gajah (*Zingibe zerumbet L.*) Sebagai Antibakteri Terhadap Bakteri *Staphylococcus aureus* Secara In Vitro dan In Vivo. *Jurnal Mandala Pharmacon Indonesia*, 9(2), 621–631. <https://doi.org/10.35311/jmpi.v9i2.425>
- Maharadingga, M., Pahriyani, A., & Arista, D. (2021). Uji Aktivitas Ekstrak Etanol 70% Daun Ketapang (*Terminalia catappa L.*) Pada Hamster Syrian Jantan Hiperqlikemia Dan Hiperkolesterolemia Dengan Parameter Pengukuran Kolesterol Total Dan LDL. *Lambung Farmasi: Jurnal Ilmu Kefarmasian*, 2(2), 80. <https://doi.org/10.31764/lf.v2i2.5488>
- Mandal, A., Clegg, J. R., Anselmo, A. C., & Mitragotri, S. (2020). Hydrogels in the clinic. *Bioengineering & Translational Medicine*, 5(2). <https://doi.org/10.1002/BTM2.10158>
- Mazzeo, L., Bianchi, M., Cocchi, M., & Piemonte, V. (2018). Drug delivery with membranes systems. In *Current Trends and Future Developments on (Bio-) Membranes: Membrane Processes in the Pharmaceutical and Biotechnological Field*. Elsevier Inc. <https://doi.org/10.1016/B978-0-12-813606-5.00010-5>
- Medscape. (2024). *Cleocin T, Clindagel (clindamycin topical) dosing, indications, interactions, adverse effects, and more*. <https://reference.medscape.com/drug/cleocin-t-clindagel-clindamycin-topical-343467>
- Mikusanti, Herlina, Fithri, A. N., & Ferlinahayati. (2019). Properties of Ethanolysis Product from Ketapang Seed Oil (*Terminalia Catappa Linn*) Incorporated in Mucoadhesive Patch Film. *IOP Conference Series: Earth and Environmental Science*, 347(1). <https://doi.org/10.1088/1755-1315/347/1/012034>
- Nada, F. arah A. Q., Rahayu, T., & Hayati, A. (2021). Analisis Skrining Fitokimia dan Aktivitas Antioksidan Ekstrak Biji Sangrai Kopi Robusta (*Coffea*

- canephora) dari Tanaman Hasil Pemupukan Organik dan Anorganik. *Jurnal Ilmiah SAINS ALAMI (Known Nature)*, 3(2), 31–39.
- Najib, A., Malik, A., Ahmad, A. R., Handayani, V., Syarif, R. A., & Waris, R. (2018). Standardisasi Ekstrak Air Daun Jati Belanda dan Daun Jati Hijau. *Jurnal Fitofarmaka Indonesia*, 4(2), 241–245.
- Narayanaswamy, R., & Torchilin, V. P. (2019). Hydrogels and their applications in targeted drug delivery. *Molecules*, 24(3). <https://doi.org/10.3390/MOLECULES24030603>
- Nast, A., Dréno, B., Bettoli, V., Bukvic Mokos, Z., Degitz, K., Dressler, C., Finlay, A. Y., Haedersdal, M., Lambert, J., Layton, A., Lomholt, H. B., López-Estebanz, J. L., Ochsendorf, F., Oprica, C., Rosumeck, S., Simonart, T., Werner, R. N., & Gollnick, H. (2016a). European evidence-based (S3) guideline for the treatment of acne – update 2016 – short version. *Journal of the European Academy of Dermatology and Venereology*, 30(8), 1261–1268. <https://doi.org/10.1111/jdv.13776>
- Nast, A., Dréno, B., Bettoli, V., Bukvic Mokos, Z., Degitz, K., Dressler, C., Finlay, A. Y., Haedersdal, M., Lambert, J., Layton, A., Lomholt, H. B., López-Estebanz, J. L., Ochsendorf, F., Oprica, C., Rosumeck, S., Simonart, T., Werner, R. N., & Gollnick, H. (2016b). *European Evidence-based (S3) Guideline for the Treatment of Acne Update 2016 Long version*. European Dermatology Forum. <https://www.guidelines.edf.one/uploads/attachments/cl262t0fy006olajnx74ske02-acne-2016-gl.pdf>
- National Center for Biotechnology Information. (2024a). *Flavone* | C15H10O2 | CID 10680 - PubChem. PubChem. <https://pubchem.ncbi.nlm.nih.gov/compound/Flavone>
- National Center for Biotechnology Information. (2024b). *Flavonol(1-)* | C15H9O3- | CID 25201487 - PubChem. PubChem. https://pubchem.ncbi.nlm.nih.gov/compound/Flavonol_1
- National Center for Biotechnology Information. (2024c). *Phenol* | C6H5OH | CID 996 - PubChem. PubChem. <https://pubchem.ncbi.nlm.nih.gov/compound/Phenol>
- National Center for Biotechnology Information. (2024d). *Triterpenoids* | C29H44O5 | CID 78126908 - PubChem. PubChem. <https://pubchem.ncbi.nlm.nih.gov/compound/Triterpenoids>
- Nomer, N. M. G. R., Duniaji, A. S., & Nociantri, K. A. (2019). Kandungan Senyawa Flavonoid Dan Antosianin Ekstrak Kayu Secang (*Caesalpinia sappan* L.) Serta Aktivitas Antibakteri Terhadap *Vibrio cholerae*. *Jurnal Ilmu Dan Teknologi Pangan (ITEPA)*, 8(2), 216. <https://doi.org/10.24843/itepa.2019.v08.i02.p12>
- Novitri, S. A., & Kurniati, N. F. (2018). Jurnal Kesehatan Medika Saintika. *Jurnal Kesehatan Medika Saintika Volume*, 10(2), 11–24.
- NParks. (2023). *NParks* | *Terminalia catappa* L. <https://www.nparks.gov.sg/florafaunaweb/flora/3/1/3181>
- Nugroho, R. A., Utami, D., Aryani, R., Nur, F. M., Sari, Y. P., & Manurung, H. (2019). In vivo wound healing activity of ethanolic extract of *Terminalia*

- catappa L. leaves in mice (*Mus musculus*) . *Journal of Physics: Conference Series*, 1277(1), 1–6. <https://doi.org/10.1088/1742-6596/1277/1/012031>
- Nurhamidah, R., & Nurrochman, A. (2022). Karakterisasi Polimer Alami Sebagai Perekat Sediaan Transdermal Patch dengan Metode Pencampuran. *Jurnal Riset Farmasi*, 125–132. <https://doi.org/10.29313/jrf.v2i2.1449>
- Oktaviana, M., & Yenny, S. W. (2019). Perkembangan Penggunaan Kosmeseutikal Herbal Pada Terapi Melasma. *Jurnal Kesehatan Andalas*, 8(3), 717. <https://doi.org/10.25077/JKA.V8I3.1061>
- Oliveira, R., Ferreira, J., Azevedo, L. F., & Almeida, I. F. (2023). An Overview of Methods to Characterize Skin Type: Focus on Visual Rating Scales and Self-Report Instruments. *Cosmetics 2023*, Vol. 10, Page 14, 10(1), 14. <https://doi.org/10.3390/COSMETICS10010014>
- Ozsoy, Y. (2012). *Plasticizers in Transdermal Drug Delivery Systems*. March.
- Pamudi, B. F., Munira, M., Saha, R. A., & Nasir, M. (2021). Pengaruh lama maserasi daun ketapang merah (*Terminalia Catappa L.*) terhadap daya hambat *Staphylococcus aureus* dan *Escherichia coli*. *Jurnal SAGO Gizi Dan Kesehatan*, 2(2), 158. <https://doi.org/10.30867/gikes.v2i2.664>
- Prapapan, O., Chatchavarn, C. C., Suvanprakorn, P., Neumann, H. A. M., Knobler, R., Prombandankul, A., & Siriapaipun, K. (2020). Proposal for a 4-type Classification of Acne: An Evidence-Based Review of the Literature. *The Open Dermatology Journal*, 14(1), 38–43. <https://doi.org/10.2174/1874372202014010038>
- Pratiwi, G., Susanti, S., & Shiyan, S. (2020). Application of Factorial Design for Optimization of PVC-HPMC Polymers in Matrix Film Ibuprofen Patch-Transdermal Drug Delivery System. *Indonesian Journal of Chemometrics and Pharmaceutical Analysis*, 1(1), 11. <https://doi.org/10.22146/ijcpa.486>
- Priyanka, Kumar, K., & Teotia, D. (2019). A Comprehensive Review on Pharmaceutical Oral Dissolving Films. *Journal of Drug Delivery and Therapeutics*, 9(5-s), 170–174. <https://doi.org/10.22270/JDDT.V9I5-S.3641>
- Purwaningsih, N. S., Utami, sheila meitania, & Apriandini, W. (2020). Uji Efektivitas Antibakteri Dari Ekstrak Daun Kipait (*Tithonia diversifolia* (Hemsl.) A. Gray) Terhadap Bakteri *Propionibacterium Acnes*. *Edu Masda Journal*, 4(1), 76–88.
- Putri, D. A., Rejeki, E. S., & Aisyah, S. (2023). Uji Formulasi Sediaan Krim Antioksidan Ekstrak Metanol Kulit Buah Pisang Raja (*Musa paradisiaca L.*). *EduNaturalia*, 4(1), 41–51.
- Qothrunnadaa, T., & Hasanah, A. N. (2021). Patches for Acne Treatment: an Update on the Formulation and Stability Test. *International Journal of Applied Pharmaceutics*, 13(Special Issue 4), 21–26. <https://doi.org/10.22159/IJAP.2021.V13S4.43812>
- Rahmawati, N., Sudjarwo, E., & Widodo, E. (2014). Uji Aktivitas Antibakteri Ekstrak Herbal Terhadap Bakteri *Escherichia coli*. *Jurnal Ilmu-Ilmu Peternakan*, 24(3), 24–31. <http://jiip.ub.ac.id/>
- Roberts, W. (2021). Air Pollution and Skin Disorders. *International Journal of Women's Dermatology*, 7(1), 91–97. <https://doi.org/10.1016/j.ijwd.2020.11.001>

- Rori, B. N. D., Khoman, J. A., & Supit, A. S. R. (2018). Uji Konsentrasi Hambat Minimum Ekstrak Daun Gedi (*Abelmoschus manihot* L. Medik) terhadap Pertumbuhan *Streptococcus mutans*. *E-GIGI*, 6(2). <https://doi.org/10.35790/eg.6.2.2018.20200>
- Sa'adah, H., Supomo, S., & Musaenah, M. (2020). Aktivitas Antibakteri Ekstrak Air Kulit Bawang Merah (*Allium cepa* L.) Terhadap Bakteri *Propionibacterium acnes*. *Jurnal Riset Kefarmasian Indonesia*, 2(2), 80–88. <https://doi.org/10.33759/jrki.v2i2.73>
- Sakul, G., Simbala, H., & Rundengan, G. (2020). Uji Daya Hambat Ekstrak Etanol Daun Pangi (*Pangium edule* Reinw. Ex Blume) Terhadap Bakteri *Staphylococcus aureus*, *Escherichia coli* DAN *Pseudomonas aeruginosa*. *PHARMACON*, 9(2), 275–283.
- Septiani, V., Choirunnisa, A., & Syam, A. K. (2017). Uji Aktivitas Antimikroba Ekstrak Etanol Daun Karuk (*Piper sarmentosum* Roxb.) terhadap *Streptococcus mutans* dan *Candida albicans*. *Kartika Jurnal Ilmiah Farmasi*, 5(1), 7–14. <https://doi.org/10.26874/kjif.v5i1.87>
- Setyawan, E. I., Warditiani, N. K., & Dewi, S. M. (2015). Pengaruh Penggunaan Propilenglikol dan Mentol Terhadap Matrik Patch Transdermal Ekstrak Air Herba Sambiloto (*Andrographis paniculata* (Burm. F.) Nees). *Jurnal Farmasi Udayana*, 4(2), 60–65.
- Silva, L. P., De Angelis, C. D., Bonamin, F., Kushima, H., José Mininel, F., Dos Santos, L. C., Delella, F. K., Felisbino, S. L., Vilegas, W., MacHado Da Rocha, L. R., Dos Santos Ramos, M. A., Bauab, T. M., Toma, W., & Hiruma-Lima, C. A. (2015). *Terminalia catappa* L.: A medicinal plant from the Caribbean pharmacopeia with anti-*Helicobacter pylori* and antiulcer action in experimental rodent models. *Journal of Ethnopharmacology*, 159, 285–295. <https://doi.org/10.1016/j.jep.2014.11.025>
- Sinaga, C. R., Kreckhoff, R. L., Salindeho, I. R. N., Ngangi, E. L. A., Mudeng, J. D., & Rompas, R. M. (2022). Uji efektivitas senyawa antibakteri penyebab ice-ice dari daun ketapang *Terminalia catappa* L dengan metode ekstraksi berbeda. *Budidaya Perairan*, 10(1), 59–65.
- Sowmiya, M., Malathi, J., Swarnali, S., Priya, J. P., Therese, K. L., & Madhavan, H. N. (2015). A study on the characterization of *Propionibacterium acnes* isolated from ocular clinical specimens. *The Indian Journal of Medical Research*, 142(4), 438. <https://doi.org/10.4103/0971-5916.169209>
- Supriningrum, R., Sundu, R., Sentat, T., Niah, R., & Kumalasari, E. (2021). KARAKTERISASI SIMPLISIA DAN EKSTRAK KULIT BATANG SEKILANG (*Embelia borneensis* Scheff.). *Jurnal Ilmiah Ibnu Sina (JIIS): Ilmu Farmasi Dan Kesehatan*, 6(2), 196–205. <https://doi.org/10.36387/jiis.v6i2.677>
- Tenover, F. C. (2019). Antimicrobial susceptibility testing. *Encyclopedia of Microbiology*, 166–175. <https://doi.org/10.1016/B978-0-12-801238-3.02486-7>
- Terças, A. G., Monteiro, A. de S., Moffa, E. B., dos Santos, J. R. A., de Sousa, E. M., Pinto, A. R. B., Costa, P. C. da S., Borges, A. C. R., Torres, L. M. B., Barros Filho, A. K. D., Fernandes, E. S., & Monteiro, C. de A. (2017).

- Phytochemical characterization of *Terminalia catappa* Linn. extracts and their antifungal activities against *Candida* spp. *Frontiers in Microbiology*, 8(APR), 1–13. <https://doi.org/10.3389/fmicb.2017.00595>
- Tiwari, S., Nizet, O., & Dillon, N. (2023). Development of a high-throughput minimum inhibitory concentration (HT-MIC) testing workflow. *Frontiers in Microbiology*, 14. <https://doi.org/10.3389/fmicb.2023.1079033>
- Utami, Y. P. (2020). Pengukuran Parameter Simplisia Dan Ekstrak Etanol Daun Patikala (*Etlingera Elatior* (Jack) R.M. Sm) Asal Kabupaten Enrekang Sulawesi Selatan. *Majalah Farmasi Dan Farmakologi*, 24(1), 6–10. <https://doi.org/10.20956/mff.v24i1.9831>
- Wardani, V. K., & Saryanti, D. (2021). Formulasi Transdermal Patch Ekstrak Etanol Biji Pepaya (*Carica papaya* L.) dengan Basis Hydroxypropil Metilcellulose (HPMC). *Smart Medical Journal*, 4(1), 38. <https://doi.org/10.13057/smj.v4i1.43613>
- Warnis, M., Rulianti, M. R., & Salsabila, J. (2021). Pemeriksaan Rendemen, Kadar Sari Larut Air, Dan Kadar Sari Larut Etanol Dari Ekstrak Batang Brotowali. *JKPharm Jurnal Kesehatan Farmasi*, 3(2), 118–123. <https://doi.org/10.36086/jkpharm.v3i2.1086>
- WHO. (2017). *Air pollution*. https://www.who.int/health-topics/air-pollution#tab=tab_1
- Winastri, N. L. A. P., Muliastri, H., & Hidayati, E. (2020). Aktivitas Antibakteri Air Perasan Dan Rebusan Daun Calincing (*Oxalis corniculata* L.) Terhadap *Streptococcus mutans*. *Berita Biologi*, 19(1), 223–230. https://biologyjournal.brin.go.id/index.php/berita_biologi/article/view/3786
- Yousef, H., Alhajj, M., & Sharma, S. (2022). *Anatomy, Skin (Integument), Epidermis*. StatPearls Publishing.
- Yulianti, T., Puspitasari, D., & Wahyudi, D. (2021). Optimasi Formula Patch Dan Uji Aktivitas Antibakteri Ekstrak Etanol Biji Pepaya (*Carica papaya* L.) Dengan Kombinasi Matriks HPMC Dan PEG 400 Terhadap *Staphylococcus aureus*. *Jurnal Insan Farmasi Indonesia*, 4(2), 256–264. <https://doi.org/10.36387/jifi.v4i2.756>
- Zaenglein, A. L., Pathy, A. L., Schlosser, B. J., Alikhan, A., Baldwin, H. E., Berson, D. S., Bowe, W. P., Graber, E. M., Harper, J. C., Kang, S., Keri, J. E., Leyden, J. J., Reynolds, R. V., Silverberg, N. B., Stein Gold, L. F., Tollefson, M. M., Weiss, J. S., Dolan, N. C., Sagan, A. A., ... Bhushan, R. (2016). Guidelines of care for the management of acne vulgaris. *Journal of the American Academy of Dermatology*, 74(5), 945-973.e33. <https://doi.org/10.1016/J.JAAD.2015.12.037>
- Zhang, Y., Feng, P., Yu, J., Yang, J., Zhao, J., Wang, J., Shen, Q., & Gu, Z. (2018). ROS-Responsive Microneedle Patch for Acne Vulgaris Treatment. *Advanced Therapeutics*, 1(3), 1800035. <https://doi.org/10.1002/ADTP.201800035>