

DAFTAR PUSTAKA

1. Vasam M, Korutla S, Bohara RA. Acne vulgaris: A review of the pathophysiology, treatment, and recent nanotechnology based advances. *Biochem Biophys Reports*. 2023;36:1–8.
2. Tan JKL, Bhate K. A global perspective on the epidemiology of acne. *Br J Dermatol*. 2015;172:3–12.
3. Adianti M. Pengaruh Pemberian Masker Seledri (*Apium graveolens* L.) Terhadap Pengurangan Jumlah Lesi Jerawat. *J Ilmu Kefarmasian*. 2023;1(1):59–68.
4. Olutunmbi Y, Paley K, English JC. Adolescent Female Acne: Etiology and Management. *J Pediatr Adolesc Gynecol*. 2008;21(4):171–176.
5. Karodi RS, Mahendrakumar CB, Bhise K. Evaluation of anti-acne activity of hydroalcoholic extract of *Punica granatum* Linn. *J Pharmacogn Phyther*. 2013;5(9):160–163.
6. Šniepienė G, Jankauskienė R. Acne Prevalence, Awareness and Perception Among Young Population. *Proc CBU Med Pharm*. 2020;1:103–109.
7. Prasad SB, Kaur D, Want Y. Formulation of Topical Gel from Extract of *Berberis aristata* dc for Acne. *Int J Drug Deliv Technol*. 2019;9(1):104–108.
8. Kaur D, Prasad SB, Verma S. Formulation and Evaluation Gel from Extract of *Plumbago indica* for Acne. *Int J Drug Deliv Technol*. 2016;6(3):95–98.
9. Goodarzi A, Mozafarpour S, Bodaghabadi M, Mohamadi M. The Potential of Probiotics for Treating Acne Vulgaris: A Review of Literature on Acne and Microbiota. *Dermatol Ther*. 2020;33(3):1–6.
10. Kober MM, Bowe WP. The Effect of Probiotics on Immune Regulation, Acne, and Photoaging. *Int J Women's Dermatology*. 2015;1(2):85–89.
11. Rusmana I, Suwanto A, Nisa Rachmania Mubarik dan. Senyawa Antimikroba Yang Dihasilkan Oleh Bakteri Asam Laktat Asal Bekasam. *J Akuatika*. 2012;III(2):135–145.
12. Park HA, Seo H, Kim S, Haq AU, Bae SH, Lee HJ, et al. Clinical Effect of *Pediococcus acidilactici* PMC48 on Hyperpigmented Skin. *J Cosmet Dermatol*. 2024;23(1):215–226.
13. Ibadov RR, Akilov KA, Ibragimov SK. COVID-19-Induced Cardiovascular Complexities. *J Life Sci Biomed*. 2023;13(3):53–58.

14. De Almeida CV, Antiga E, Lulli M. Oral and Topical Probiotics and Postbiotics in Skincare and Dermatological Therapy: A Concise Review. *Microorganisms*. 2023;11(6):1025–1032.
15. Thorakkattu P, Khanashyam AC, Shah K, Babu KS, Mundanat AS, Deliephan A, et al. Postbiotics: Current Trends in Food and Pharmaceutical Industry. *Foods*. 2022;11(19):1–29.
16. Kho K, Kadar AD, Bani MD, Pramanda IT, Martin L, Chrisdianto M, et al. The Potential of *Pediococcus acidilactici* Cell-Free Supernatant as a Preservative in Food Packaging Materials. *Foods*. 2024;13(5):1–19.
17. Bae WY, Jung WH, Lee YJ, Shin SL, An YK, Kim TR, et al. Heat-treated *Pediococcus acidilactici* LM1013-Mediated Inhibition of Biofilm Formation by *Cutibacterium acnes* and its Application in Acne Vulgaris: A Single-Arm Clinical Trial. *J Cosmet Dermatol*. 2023;22(11):3125–3134.
18. Bhandari N, Raja MKMM, Singh LP, Kukreti G, Kaushik S. Detailed Overview on Pharmaceutical Dosage Forms in Treatment of Acne. *Int J Health Sci (Qassim)*. 2022;6:9916–9931.
19. Kriplani P, Guarve K, Singh Baghel U. Formulation Optimization and Characterization of Transdermal Film of Curcumin by Response Surface Methodology. *Chinese Herb Med*. 2021;13(2):274–285.
20. Qothrunnadaa T, Hasanah AN. Patches for Acne Treatment: an Update on the Formulation and Stability Test. *Int J Appl Pharm*. 2021;13(4):21–26.
21. Setiawan D, Setiawan I. Optimasi Polimer PVP K-30 dan HPMC Dalam Sediaan Transdermal Patch Ekstrak Daun Kumis Kucing (*Orthosiphon aristatus*) Dengan Metode Simplex Lattice Design. *J Farm IKIFA*. 2024;3(2):1–17.
22. Kraft J, Freiman A. Management of acne. *Can Med Assoc J*. 2011;183(7):430–435.
23. Sifatullah N, Zulkarnain. Jerawat (Acne vulgaris): Review Penyakit Infeksi Pada Kulit. *Pros Biol Achiev Sustain Dev Goals*. 2021;19–23.
24. Permatasari KD, Ratnawati D. Hubungan Pengetahuan dan Sikap dengan Konsep Diri Remaja yang Mengalami Acne Vulgaris di SMA Negeri 8 Kota Bogor. *J JKFT Univ Muhammadiyah Tangerang*. 2019;4(1):21–28.
25. Yan HM, Zhao HJ, Guo DY, Zhu PQ, Zhang CL, Jiang W. Gut microbiota alterations in moderate to severe acne vulgaris patients. *J Dermatol*. 2018;45(10):1166–71.
26. Bhate K, Williams HC. Epidemiology of Acne Vulgaris. *Br J Dermatol*. 2013;168(3):474–485.

27. Kementrian Kesehatan Republik Indonesia. Peran Clascoterone pada Tatalaksana Akne vulgaris. Jakarta: Kementerian Kesehatan Republik Indonesia; 2024.
28. Byrd AL, Belkaid Y, Segre JA. The Human Skin Microbiome. *Nat Rev Microbiol.* 2018;16(3):143–155.
29. Mayslich C, Grange PA, Dupin N. *Cutibacterium acnes* as an Opportunistic Pathogen: An Update of its Virulence-Associated Factors. *Microorganisms.* 2021;9(2):1–21.
30. Rusli R, Amalia F, Dwyana Z. Potensi Bakteri *Lactobacillus Acidophilus* sebagai Antidiare dan Imunomodulator. *Bioma J Biol Makassar.* 2018;3(2):25–30.
31. Susanto M. Peran Probiotik pada Terapi Akne Vulgaris. *Cermin Dunia Kedokt.* 2023;50(7):383–386.
32. Dapkevicius I, Romualdo V, Marques AC, Lopes CM, Amaral MH. Acne Vulgaris Topical Therapies: Application of Probiotics as a New Prevention Strategy. *Cosmetics.* 2023;10(3):1–17.
33. Leksono GM, Bestari AN, Purwanto P. Narrative Review : Probiotik Sebagai Antijerawat Dalam Sediaan Topikal. *Maj Farm.* 2022;18(3):351.
34. Melia S, Purwati E, Kurnia YF, Pratama DR. Antimicrobial Potential of *Pediococcus acidilactici* from Bekasam, Fermentation of Sepat Rawa Fish (*Tricopodus trichopterus*) from Banyuasin, South Sumatra, Indonesia. *Biodiversitas.* 2019;20(12):3532–3538.
35. Desniar, Rusmana I, Suwanto A, Mubarik DNR. Characterization of Lactic Acid Bacteria Isolated from an Indonesian fermented Fish (Bekasam) and Their Antimicrobial Activity Against Pathogenic Bacteria. *Emirates J Food Agric.* 2013;25(6):489–494.
36. Wu J jing, Du R ping, Gao M, Sui Y qiang, Wang X. Identification and Characterization of Lactic Acid Bacteria Isolated from Tomato Pomace. *Ann Microbiol.* 2014;64(4):1849–1855.
37. Melia S, Juliyarsi I, Kurnia YF, Pratama YE, Pratama DR. Characteristics of Antibacterial Activity Stability of Crude Bacteriocin *Pediococcus acidilactici* BK01. *IOP Conf Ser Earth Environ Sci.* 2021;782(3).
38. Pribadhi AN, Mastuti S, Purwaningrum E. Aktivitas Antibakteri dari Bakteri Probiotik dalam Melawan *Propionibacterium acnes* dan *Staphylococcus epidermidis*. *Indobiosains.* 2023;5(1):1–7.
39. Garcia HS. Postbiotics : An evolving term within the functional foods fi eld. *Trends Food Sci Technol.* 2018;75:105–114.

40. Maddeppungeng NM, Tahir KA, Nurdin NC, Wahyuni S. 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. *J Mandala Pharmacon Indones*. 2023;9(2):621–631.
41. Kesarwani A, Yadav AK, Singh S, Gautam H, Singh HN, Sharma A, et al. Theoretical Aspects of Transdermal Drug Delivery System. *Bull Pharm Res*. 2013;3(2):78–89.
42. Khatu P, Torne D, Pardeshi PV. A Comprehensive Review of Transdermal Patch Delivery Systems. *Int J Adv Res Sci Commun Technol*. 2024;4(1):1–12.
43. Baharudin A, Maesaroh I. Formulasi Sediaan Patch Transdermal dari Ekstrak Bonggol Pohon Pisang Ambon (*Musa paradisiaca* var. sapientum) untuk Penyembuhan Luka Sayat. *J Herbs Farmacol*. 2020;2(2):55–62.
44. Prabhakar M, H MS, B GR, P PA, Shekhar J. A Review on Transdermal Patches. *Int J Res Publ Rev*. 2022;3(8):1504–1516.
45. Valeveti SK, Pashikanti S. Design, Development, and Evaluation of Transdermal Patches Containing Memantine Hydrochloride. *Int J Appl Pharm*. 2023;15(5):181–197.
46. Simanullang G, Ramadhani UKS, Suprahman NY, Maretta G, Syafitri DR, Saeli PM, et al. Utilization of Gaharu Leaf Ethanol Extract as an Anti-Acne Herbal Patch. *Atlantis Press International BV*; 2024. 22–34.
47. Rifqiani A, Desnita R, Luliana S. Pengaruh Penggunaan PEG 400 Dan Gliserol Sebagai *Plasticizer* Terhadap Sifat Fisik Sediaan *Patch* Ekstrak Etanol Herba Pegagan. *J Mhs Farm Fak Kedokt UNTAN*. 2019;4(1):1–10.
48. C RR, J SP, E QM. Handbook of Pharmaceutical Excipients. In: *Handbook of Pharmaceutical Excipients*. 6th ed. London: Pharmaceutical Press; 2009.
49. Vijaya R, Pratheeba C, Anuzvi A, Sanoj V, Kumar J. Study of The Hydroxy Propyl Methyl Cellulose (HPMC) Combinations In The Development Of Transdermal Film For Amitriptyline Hcl And Their Invitro Characterization. *IJPCBS*. 2015;5(3):548–556.
50. Monton C, Thinchalong W, Assawawongsawat K, Prasomkij J, Pichayakorn W, Suksaeree J. Design of Experiments for Preparation of Polyvinyl Alcohol-Based Optimized Films for Nicotine Transdermal Delivery. *J Southwest Jiaotong Univ*. 2022;57(2):97–112.
51. Departemen Kesehatan Republik Indonesia. *Farmakope Indonesia*. VI. Departemen Kesehatan Republik Indonesia. Jakarta: Kementerian Kesehatan Republik Indonesia; 2020.

52. Balouiri M, Sadiki M, Ibnsouda SK. Methods for In Vitro Evaluating Antimicrobial Activity: A review. *J Pharm Anal.* 2016;6(2):71–79.
53. Pajan SA, Waworuntu O, Leman MA. Potensi Antibakteri Air Perasan Bawang Putih(*Allium sativum* L) Terhadap Pertumbuhan *Staphylococcus aureus*. *J Ilm Farm.* 2016;5(4):77–81.
54. Veiga A, Toledo M da GT, Rossa LS, Mengarda M, Stofella NCF, Oliveira LJ, et al. Colorimetric Microdilution Assay: Validation of a Standard Method for Determination of MIC, IC50%, and IC90% of Antimicrobial Compounds. *J Microbiol Methods.* 2019;162:50–61.
55. Dréno B, Pécastaings S, Corvec S, Veraldi S, Khammari A, Roques C. *Cutibacterium acnes* (*Propionibacterium acnes*) and Acne Vulgaris. *J Eur Acad Dermatology Venereol.* 2018;32:5–14.
56. Castillo DE, Nanda S, Keri JE. *Propionibacterium* (*Cutibacterium*) *acnes* Bacteriophage Therapy in Acne: Current Evidence and Future Perspectives. *Dermatol Ther (Heidelb).* 2019;9(1):19–31.
57. Rianda D. *Beauty Undercover for Muslimah.* Jakarta: Elex Media Komputindo; 2017.
58. Yusmaniar, Wardiyah, Nisa K. *Mikrobiologi dan Parasitologi.* Jakarta: Kementerian Kesehatan Republik Indonesia; 2017. 1–78.
59. Yang E, Fan L, Jiang Y, Doucette C, Fillmore S. Antimicrobial Activity of Bacteriocin-Producing Lactic Acid Bacteria Isolated from Cheeses and Yogurts. *AMB Express.* 2012;2(1):1–12.
60. Amin SS, Ghazali TZ, Efendi MRS. Identifikasi Bakteri dari Telapak Tangan dengan Pewarnaan Gram. *Chemviro J Kim dan Ilmu Lingkung.* 2023;1(1):30–35.
61. Alouw G, Fatimawali F, Lebang JS. Uji Aktivitas Antibakteri Ekstrak Etanol Daun Kersen (*Muntingia calabura* L.) Terhadap Bakteri *Staphylococcus Aureus* dan *Pseudomonas Aeruginosa* Dengan Metode Difusi Sumuran. *J Farm Medica/Pharmacy Med J.* 2022;5(1):36.
62. Simanullang G, Kartika U, Ramadhani S, Suprahman NY, Maretta G, Syafitri DR, et al. Uji Stabilitas dan Aktivitas Sediaan Patch Herbal Anti-Acne Ekstrak Etanol Daun Gaharu (*Aquilaria malaccensis* L.). *J Mandala Pharmacon Indones.* 2024;10(1):1–14.
63. Sasebohe VY, Prakasita VC, Aditiyarini D. Aktivitas Antibakteri Ekstrak Etanol Daun Binahong Terhadap *Staphylococcus aureus* dan *Propionibacterium acnes* Penyebab Jerawat. *Sciscitatio.* 2023;4(1):1–14.

64. Sriram G, Teja KV, Vasundhara KA. Antimicrobial Efficacy of Novel Ethanolic Extract of *Morinda citrifolia* Against *Enterococcus faecalis* by Agar Well Diffusion and Broth Dilution Methods - An Invitro Study. *Brazilian Dent Sci.* 2019;22(3):365–370.
65. Nurpriatna CO, Rizkuloh LR, Susanti. Uji Aktivitas Antibakteri Sediaan Acne Patch Ekstrak Daun Jambu Biji terhadap Bakteri *Propionibacterium acnes*. *Perjuangan Nat Pharm Conf.* 2024;1(1):153–169.
66. ASTM. Standard test methods for tensile properties of thin plastic sheeting, method D882-10. *Annu B ASTM Stand.* 2010;87:1–10.
67. Davis WW, Stout TR. Disc Plate Method of Microbiological Antibiotic Assay. I. Factors Influencing Variability And Error. *Appl Microbiol.* 1971;22(4):659–665.
68. Schnürer J, Magnusson J. Antifungal Lactic Acid Bacteria as Biopreservatives. *Trends Food Sci Technol.* 2005;16(1–3):70–78.
69. Prakasita VC, Ilham J, Amarantini C. Aktivitas Antibakteri Ekstrak Temulawak (*Curcuma xanthorrhiza*) dan Bakteriosin *Bifidobacterium longum* terhadap *Salmonella typhi*. *Sciscitatio.* 2024;5(1):28–39.
70. Falakh F, Astri T. Uji Potensi Isolat Bakteri Asam Laktat dari Nira Siwalan (*Borassus flabellifer* L.) sebagai Antimikroba terhadap Salmonella. *LenteraBio.* 2022;18(1):40–45.
71. Reis J, Paula A, Penna A. lactic Acid Bacteria Antimicrobial Compounds: Characteristic and Applications. *Food Eng Rev.* 2012;4(1):123–140.
72. Makolit J, Waworuntu OA, Leman MA. Uji Konsentrasi Hambat Minimum (KHM) Ekstrak Buah Mengkudu (*Morinda citrifolia* L.) terhadap Pertumbuhan *Streptococcus mutans*. *e-GIGI.* 2017;5(2).
73. A N, Pamudji W G, Diyah Ikasari E. Optimasi Emulgel Minyak Atsiri Adas (*Foeniculum vulgare* Mill.) sebagai Anti Jerawat. *Media Farm Indones.* 2021;16(1):1632–1642.
74. Song DH, Lee JM, Chung KH, An JH. Penicillin Binding Protein from *Pediococcus acidilactici* Isolated from Nuruk for Food Biopreservative. *Iran J Public Health.* 2018;47(11):1653–1659.
75. Febriyenti, Fitria N. Honey Gel and Film for Burn Wound. *Int J Drug Deliv.* 2015;6(1):1–6.
76. Suwandecha T, Changklang P. Formulation Development and Characterization of a Transdermal Patch Containing *Crinum asiaticum* Leaves Extract. *J Appl Pharm Sci.* 2023;13(12):207–213.

77. Ermawati DE, Surya AP, Setyawati R, Niswah SU. The Effect of Glycerin and Polyethylene Glycol 400 as Humectant on Stability and Antibacterial Activity of Nanosilver Biosynthetic Peel-off Mask. *J Appl Pharm Sci*. 2022;12(4):80–89.
78. Yang L, Paulson AT. Effects of Lipids on Mechanical and Moisture Barrier Properties of Edible Gellan Film. *Food Res Int*. 2000;33(7):571–578.
79. Febriyenti F, Nofita R, Khalidazia K. Formulation of Eel (*Monopterus albus*) Extract Membranes for Wound Dressing using Plasticizers. *J Sains Farm Klin*. 2020;7(1):1–4.
80. Oesterling TO. Aqueous Stability of Clindamycin. *J Pharm Sci*. 1970;59(1):63–67.
81. Stukalin EB, Douglas JF, Freed KF. Plasticization and Antiplasticization of Polymer Melts Diluted by Low Molar Mass Species. *J Chem Phys*. 2010;132(8).
82. Shabbir M, Ali S, Raza M, Sharif A, Akhtar MF, Manan A, et al. Effect of Hydrophilic and Hydrophobic Polymer on In Vitro Dissolution and Permeation of Bisoprolol Fumarate Through Transdermal Patch. *Acta Pol Pharm - Drug Res*. 2017;74(1):187–197.
83. Pamela VY, Syarief R, Iriani ES, Suyatma NE. Alkohol dengan Penambahan Nanopartikel ZnO dan Asam Stearat untuk Kemasan Multilayer. *J Penelit Pascapanen Pertan*. 2016;13(2):63–73.

