

DAFTAR PUSTAKA

- Abofila, M. T. M., Azab, E. A., Shebani, A. M. A. Al, & Bshena, A. N. (2021). Stem Cells: Insights into Niche, Classification, Identification, Characterization, Mechanisms of Regeneration by Using Stem Cells, and Applications in Joint Disease Remedy. *Biotechnology and Bioprocessing*, 2(1), 01–07. <https://doi.org/10.31579/2766-2314/024>
- Agu, P. C., Afiukwa, C. A., Orji, O. U., Ezech, E. M., Ofoke, I. H., Ogbu, C. O., Ugwuja, E. I., & Aja, P. M. (2023). Molecular Docking as a Tool for the Discovery of Molecular Targets of Nutraceuticals in Diseases Management. *Scientific Reports*, 13(1), 1–18. <https://doi.org/10.1038/s41598-023-40160-2>
- Aguirre-Ramírez, M., Silva-Jiménez, H., Banat, I. M., & Díaz De Rienzo, M. A. (2021). Surfactants: Physicochemical Interactions with Biological Macromolecules. *Biotechnology Letters*, 43(3), 523–535. <https://doi.org/10.1007/s10529-020-03054-1>
- Ahire, E. D., & Kshirsagar, S. J. (2023). *In Silico Investigation of Surfactants as Potential Permeation Glycoprotein Advances in Bioresearch In Silico Investigation of Surfactants as Potential Permeation Glycoprotein Inhibitors for Formulation Development*. October. <https://doi.org/10.15515/abr.0976-4585.14.4.115120>
- Akbari, S., & Nour, A. H. (2018). Emulsion Types, Stability Mechanisms and Rheology: A Review. *International Journal of Innovative Research and Scientific Studies*, 1(1), 11–17. <https://doi.org/10.53894/ijirss.v1i1.4>
- Alam, M. S., Ali, M. S., Alam, M. I., Anwer, T., & Safhi, M. M. A. (2015). Stability Testing of Beclomethasone Dipropionate Nanoemulsion. *Tropical Journal of Pharmaceutical Research*, 14(1), 15–20. <https://doi.org/10.4314/tjpr.v14i1.3>
- Alfaridz, F., & Musfiroh, I. (2020). Interaksi Antara Zat Aktif dan Eksipien dalam Sediaan Farmasi. *Majalah Farmasetika*, 5(1), 23–31. <https://doi.org/10.24198/mfarmasetika.v5i1.25755>
- Amarullah, I. H., Sucipto, T. H., & Churrotin, S. (2021). *Buku Panduan Isolasi dan Deteksi Virus Dengue*. Universitas Airlangga.
- Amirkhani, M. A., Shoaie-Hassani, A., Soleimani, M., Hejazi, S., Ghalichi, L., & Nilforoushzadeh, M. A. (2016). Rejuvenation of Facial Skin and Improvement in the Dermal Architecture by Transplantation of Autologous Stromal Vascular Fraction: A Clinical Study. *BioImpacts*, 6(3), 149–154. <https://doi.org/10.15171/bi.2016.21>

- Amirthalingam, M., Bhat, S., Dighe, P. A., & Seetharam, R. N. (2019). Human Mesenchymal Stromal Cells-Derived Conditioned Medium Based Formulation for Advanced Skin Care. *Journal of Stem Cells Research, Development & Therapy*, 5, 1–9. <https://doi.org/10.24966/srdt-2060/100012>
- Andiana, M., Rachmawati, Y., & Andayani, S. S. (2017). Kultur Sel Baby Hamster Kidney (BHK) Menggunakan Media Dulbecco's Modified Eagle Medium (DMEM). *Biotropic : The Journal of Tropical Biology*, 1(1), 10–17. <https://doi.org/10.29080/biotropic.2017.1.1.1-8>
- Anonim. (2020). *Farmakope Indonesia* (Anonim (ed.); VI). Departemen Kesehatan Republik Indonesia.
- Araújo, R. De, Lôbo, M., Trindade, K., Silva, D. F., & Pereira, N. (2019). Fibroblast Growth Factors: A Controlling Mechanism of Skin Aging. *Skin Pharmacology and Physiology*, 32(5), 275–282. <https://doi.org/10.1159/000501145>
- Aydin, S. (2015). A Short History, Principles, and Types of ELISA, and Our Laboratory Experience with Peptide/Protein Analyses Using ELISA. *Peptides*, 72, 4–15. <https://doi.org/10.1016/j.peptides.2015.04.012>
- Aydin, S., Emre, E., Ugur, K., Aydin, M. A., Sahin, İ., Cinar, V., & Akbulut, T. (2025). An Overview of ELISA: a Review and Update on Best Laboratory Practices for Quantifying Peptides and Proteins in Biological Fluids. *Journal of International Medical Research*, 53(2), 1–18. <https://doi.org/10.1177/03000605251315913>
- Bajaj, S., Sakhuja, N., & Singla, D. (2012). Stability Testing of Pharmaceutical Products. *Journal of Applied Pharmaceutical Science*, 02(03), 129–138. <https://doi.org/10.1142/8514>
- Bartold, M., & Ivanovski, S. (2021). Stem Cell Applications in Periodontal Regeneration. *Dental Clinics of North America*, 1–22. <https://doi.org/10.1016/j.cden.2021.06.002>
- Benington, L. R., Rajan, G., Locher, C., & Lim, L. Y. (2021). Stabilisation of Recombinant Human Basic Fibroblast Growth Factor (FGF-2) Against Stressors Encountered in Medicinal Product Processing and Evaluation. *Pharmaceutics*, 13, 1–18. <https://doi.org/10.3390/pharmaceutics13111762>
- Benington, L., Rajan, G., Locher, C., & Lim, L. Y. (2020). Fibroblast Growth Factor 2—A Review of Stabilisation Approaches for Clinical Applications. *Pharmaceutics*, 12(6), 1–14. <https://doi.org/10.3390/pharmaceutics12060508>
- Bhachoo, J., & Beuming, T. (2017). Investigating Protein–Peptide Interactions Using the Schrödinger Computational Suite. *Methods in Molecular*

Biology, 235–254. https://doi.org/10.1007/978-1-4939-6798-8_14

- Bhattarai, E. (2020). Stem Cells And Their Potential Applications In Dermatology. *Journal of Stem Cells Research, Development & Therapy*, 6(4), 1–6. <https://doi.org/10.24966/srtd-2060/100043>
- Bos, J. D., & Meinardi, M. M. H. M. (2000). The 500 Dalton Rule for the Skin Penetration of Chemical Compounds and Drugs. *Experimental Dermatology*, 9(3), 165–169. <https://doi.org/10.1034/j.1600-0625.2000.009003165.x>
- Bosshard, H. R., Marti, D. N., & Jelesarov, I. (2004). Protein Stabilization by Salt Bridges: Concepts, Experimental Approaches and Clarification of Some Misunderstandings. *Journal of Molecular Recognition*, 17(1), 1–16. <https://doi.org/10.1002/jmr.657>
- BPOM RI. (2022). Peraturan Badan Pengawas Obat Dan Makanan Nomor 17 Tahun 2022 Tentang Perubahan Atas Peraturan Badan Pengawas Obat Dan Makanan Nomor 23 Tahun 2019 Tentang Persyaratan Teknis Bahan Kosmetika. In *BPOM RI*.
- Budi, H. S., Setyawati, M. C., Anitasari, S., Shen, Y. K., Pebriani, I., & Ramadan, D. E. (2024). Cell Detachment Rates and Confluence of Fibroblast and Osteoblast Cell Culture using Different Washing Solutions. *Brazilian Journal of Biology*, 84, 1–8. <https://doi.org/10.1590/1519-6984.265825>
- Bunnell, B. A. (2021). *Adipose Tissue-Derived Mesenchymal Stem Cells*. 10, 2–7.
- Callender, S. P., Mathews, J. A., Kobernyk, K., & Wettig, S. D. (2017). Microemulsion Utility in Pharmaceuticals: Implications for Multi-Drug Delivery. *International Journal of Pharmaceutics*, 526, 425–442. <https://doi.org/10.1016/j.ijpharm.2017.05.005>
- Challapa-Mamani, M. R., Tomás-Alvarado, E., Espinoza-Baigorria, A., León-Figueroa, D. A., Sah, R., Rodriguez-Morales, A. J., & Barboza, J. J. (2023). Molecular Docking and Molecular Dynamics Simulations in Related to Leishmania donovani: An Update and Literature Review. *Tropical Medicine and Infectious Disease*, 8(10), 1–13. <https://doi.org/10.3390/tropicalmed8100457>
- Chang, L., Fan, W., Pan, X., Zhu, X., & Guo, L. (2022). Stem Cells to Reverse Aging. *Chinese Medical Journal*, 135(8), 901–910. <https://doi.org/10.1097/CM9.0000000000001984>
- Chauhan, K., & Kumar, K. (2022). Molecular Docking of Medicinal Plants Compounds as New Potential Inhibitors of Novel Coronavirus. *International Journal of Innovative Research in Science Engineering and Technology* 2022, 3(5), 055–060. [https://doi.org/10.35248/ijirset.22.3\(5\).55-60.the](https://doi.org/10.35248/ijirset.22.3(5).55-60.the)

- Chen, D., Oezguen, N., Urvil, P., Ferguson, C., Dann, S. M., & Savidge, T. C. (2016). Regulation of Protein-Ligand Binding Affinity by Hydrogen Bond Pairing. *Science Advances*, 2(3), 1–16. <https://doi.org/10.1126/sciadv.1501240>
- Cheng, Y., Lin, K. H., Young, T. H., & Cheng, N. C. (2020). The Influence of Fibroblast Growth Factor 2 on the Senescence of Human Adipose-Derived Mesenchymal Stem Cells During Long-Term Culture. *Stem Cells Translational Medicine*, 9(4), 518–530. <https://doi.org/10.1002/sctm.19-0234>
- Company, T. H. (2020). *Olivem® 1000*.
- Costela-Ruiz, V. J., Melguizo-Rodríguez, L., Bellotti, C., Illescas-Montes, R., Stanco, D., Arciola, C. R., & Lucarelli, E. (2022). Different Sources of Mesenchymal Stem Cells for Tissue Regeneration: A Guide to Identifying the Most Favorable One in Orthopedics and Dentistry Applications. *International Journal of Molecular Sciences*, 23, 1–17. <https://doi.org/10.3390/ijms23116356>
- Czerwiec, K., Zawrzykraj, M., Deptuła, M., Skoniecka, A., Tymieńska, A., Zieliński, J., Kosiński, A., & Piśkuła, M. (2023). Adipose-Derived Mesenchymal Stromal Cells in Basic Research and Clinical Applications. *International Journal of Molecular Sciences*, 24(4), 1–21. <https://doi.org/10.3390/ijms24043888>
- Damayanti. (2017). Penuaan Kulit dan Perawatan Kulit Dasar pada Usia Lanjut. *Journal of Universitas Airlangga*, 29(1), 73–80.
- Damayanti, R. H., Rusdiana, T., & Wathoni, N. (2021). Mesenchymal Stem Cell Secretome for Dermatology Application : A Review. *Clinical, Cosmetic and Investigational Dermatology*, 14, 1401–1412.
- David, Karmila, S., Suryana, N., & Faizal, F. (2021). Pemodelan Degradasi Mikroplastik PoLlistirena dengan Nanofotokatalis TiO₂. *Jurnal Ilmu Dan Inovasi Fisika*, 05(01), 8–12.
- Dewi, R., Anwar, E., & Yunita, K. S. (2014). Uji Stabilitas Fisik Formula Krim yang Mengandung Ekstrak Kacang Kedelai (Glycine max). *Pharm Sci Res*, 1(3), 194–208.
- Dnyandev, K. M., Babasaheb, G. V., Chandrashekhar, K. V., Chandrakant, M. A., & Vasant, O. K. (2021). A Review on Molecular Docking. *International Research Journal of Pure and Applied Chemistry*, 22(3), 60–68. <https://doi.org/10.9734/irjpac/2021/v22i330396>
- Dominici, M., Le Blanc, K., Mueller, I., Slaper-Cortenbach, I., Marini, F. C., Krause, D. S., Deans, R. J., Keating, A., Prockop, D. J., & Horwitz, E. M. (2006). Minimal Criteria for Defining Multipotent Mesenchymal Stromal

Cells. The International Society for Cellular Therapy Position Statement. *Cytotherapy*, 8(4), 315–317. <https://doi.org/10.1080/14653240600855905>

Dréno, B., Zuberbier, T., Gelmetti, C., Gontijo, G., & Marinovich, M. (2019). Safety Review of Phenoxyethanol When Used as a Preservative in Cosmetics. *Journal of the European Academy of Dermatology and Venereology*, 33(S7), 15–24. <https://doi.org/10.1111/jdv.15944>

Du, X., Li, Y., Xia, Y. L., Ai, S. M., Liang, J., Sang, P., Ji, X. L., & Liu, S. Q. (2016). Insights into Protein–Ligand Interactions: Mechanisms, Models, and Methods. *International Journal of Molecular Sciences*, 17(2), 1–34. <https://doi.org/10.3390/ijms17020144>

Eckert, E., Jäger, T., Leibold, E., Bader, M., Göen, T., & Hiller, J. (2025). Dermal Penetration of 2 - Phenoxyethanol in Humans : In Vivo Metabolism and Toxicokinetics. *Archives of Toxicology*, 99(3), 1095–1103. <https://doi.org/10.1007/s00204-024-03938-5>

Ekawati, B., & Irianto, S. (2015). Sel Punca Jaringan Lemak sebagai Anti-aging untuk Kulit Menua Dini karena Paparan Ultra Violet. *Cermin Dunia Kedokteran*, 42(8), 632–634. <http://www.cdkjournal.com/index.php/CDK/article/view/983>

Erinç, H., & Okur, I. (2021). Determination of Physical and Chemical Properties of Oleogels Prepared with Olive Oil and Olive-based Emulsifier. *Journal of Food Processing and Preservation*, 45(6), 1–10. <https://doi.org/10.1111/jfpp.15545>

Erwiyani, A. R., Destiani, D., & Kabelen, S. A. (2018). Pengaruh Lama Penyimpanan Terhadap Sediaan Fisik Krim Daun Alpukat (Persea Americana Mill) dan Daun Sirih Hijau (Piper betle Linn). *Indonesian Journal of Pharmacy and Natural Product*, 1(1), 23–29. <https://doi.org/10.35473/ijpnp.v1i1.31>

Erwiyani, A. R., Sonia Cahyani, A., Mursyidah, L., Sunnah, I., & Pujistuti, A. (2021). Formulasi dan Evaluasi Krim Tabir Surya Ekstrak Daging Labu Kuning (Cucurbita maxima). *Majalah Farmasetika*, 6(5), 386–397. <https://doi.org/10.24198/mfarmasetika.v6i5.35969>

Eskens, O., & Amin, S. (2021). Challenges and Effective Routes for Formulating and Delivery of Epidermal Growth Factors in Skin Care. *International Journal of Cosmetic Science*, 43(2), 123–130. <https://doi.org/10.1111/ics.12685>

Farooq, M., Khan, A. W., Kim, M. S., & Choi, S. (2021). The Role of Fibroblast Growth Factor (FGF) Signaling in Tissue Repair and Regeneration. *Cells*, 10(11), 1–20. <https://doi.org/10.3390/cells10113242>

Fatriansyah, J. F., Boanerges, A. G., Kurnianto, S. R., Pradana, A. F., Fadilah, &

- Surip, S. N. (2022). Molecular Dynamics Simulation of Ligands from *Anredera cordifolia* (Binahong) to the Main Protease (M pro) of SARS-CoV-2. *Journal of Tropical Medicine*, 2022, 1–13. <https://doi.org/10.1155/2022/1178228>
- Fisher, T. (2014). Elisa Guide ThermoFisher. In *Kit Manual* (Vol. 597, Issue 815).
- Fitri, H. (2024). *Uji Kandungan Transforming Growth Factor- β 1 (TGF- β 1) pada Sekretom Sel Punca Mesenkimal yang Diformulasikan dalam Sediaan Krim dengan Metode ELISA.*
- Freshney, R. I. (2014). *Animal Cell Culture Guide*. University Blvd. <https://doi.org/10.31826/jlr-2014-110101>
- Fuentes, D. E. R., Garza, L. E. F., Meza, J. A. S., Barrera, S. A. B., Caplan, A. I., & Saldaña, H. A. B. (2021). Mesenchymal Stem Cells Current Clinical Applications: A Systematic Review. *Archives of Medical Research*, 52(1), 93–101. <https://doi.org/10.1016/j.arcmed.2020.08.006>
- Gautam, A. K., & Kumar, S. (2019). Techniques for the Detection, Identification, and Diagnosis of Agricultural Pathogens and Diseases. In *Natural Remedies for Pest, Disease and Weed Control*. Elsevier Inc. <https://doi.org/10.1016/B978-0-12-819304-4.00012-9>
- Gibco. (2020). *Cell Culture Basics Handbook*. ThermoFisher Scientific.
- Golikov, M. V., Valuev-Elliston, V. T., Smirnova, O. A., & Ivanov, A. V. (2022). Physiological Media in Studies of Cell Metabolism. *Molecular Biology*, 56(5), 629–637. <https://doi.org/10.1134/S0026893322050077>
- Gonzalez, A., Gaines, M., Gallegos, L. Y., Guevara, R., & Gomez, F. A. (2018). Thread-Paper, and Fabric Enzyme-Linked Immunosorbent Assays (ELISA). *Methods*, 1–8. <https://doi.org/10.1016/j.ymeth.2018.02.008>
- Guedes, I. A., de Magalhães, C. S., & Dardenne, L. E. (2014). Receptor-Ligand Molecular Docking. *Biophysical Reviews*, 6, 75–87. <https://doi.org/10.1007/s12551-013-0130-2>
- Han, Y., Li, X., Zhang, Y., Han, Y., Chang, F., & Ding, J. (2019). Mesenchymal Stem Cells in Regenerative Medicine. *Biomedical and Health Research*, 8, 1–32. <https://doi.org/10.3233/978-1-61499-076-5-51>
- Hartono, B. (2017). Sel Punca : Karakteristik, Potensi dan Aplikasinya. *Jurnal Kedokteran Meditek*, 22(60), 72–75.
- Hassan, S. N., & Ahmad, F. (2020). The Relevance of Antibiotic Supplements in Mammalian Cell Cultures: Towards a Paradigm Shift. *Gulhane Medical Journal*, 62(4), 224–230. <https://doi.org/10.4274/gulhane.galenos.2020.871>

- Hatami, S., Sirous, H., Mahnam, K., Najafipour, A., & Fassihi, A. (2023). Preparing a Database of Corrected Protein Structures Important in Cell Signaling Pathways. *Research in Pharmaceutical Sciences*, 18(1), 67–78. <https://doi.org/10.4103/1735-5362.363597>
- Hayrapetyan, H., Tran, T., Tellez-Corrales, E., & Madiraju, C. (2023). Enzyme-Linked Immunosorbent Assay: Types and Applications. *Methods Mol Biol*, 2612, 1–17.
- Herman, A., & Herman, A. P. (2014). Essential Oils and Their Constituents as Skin Penetration Enhancer for Transdermal Drug Delivery: a Review. *Journal of Pharmacy and Pharmacology*, 67, 473–485. <https://doi.org/10.1111/jphp.12334>
- Hidayat, R., & Wulandari, P. (2021). Enzyme Linked Immunosorbent Assay (ELISA) Technique Guideline. *Bioscientia Medicina: Journal of Biomedicine and Translational Research*, 5(5), 447–453. <https://doi.org/10.32539/bsm.v5i5.228>
- Hosseini, S., Villegas, P. V., Palomares, M. R., & Chapa, S. O. M.-. (2018). Advantages, Disadvantages and Modifications of Conventional ELISA. In: Enzyme-linked Immunosorbent Assay (ELISA): From A to Z. In *SpringerBriefs in Applied Sciences and Technology* (Issue 9789811067655).
- Huang, S., Xu, L., Sun, Y., Wu, T., Wang, K., & Li, G. (2015). An Improved Protocol for Isolation and Culture of Mesenchymal Stem Cells from Mouse Bone Marrow. *Journal of Orthopaedic Translation*, 3, 26–33. <https://doi.org/10.1016/j.jot.2014.07.005>
- Huang, S. Y., & Zou, X. (2010). Advances and Challenges in Protein-Ligand Docking. *International Journal of Molecular Sciences*, 11(8), 3016–3034. <https://doi.org/10.3390/ijms11083016>
- Hunt, C. J. (2019). Technical Considerations in the Freezing, Low-Temperature Storage and Thawing of Stem Cells for Cellular Therapies. *Transfusion Medicine and Hemotherapy*, 46, 134–149. <https://doi.org/10.1159/000497289>
- Ischak, N. I., Musa, W. J. A., Aman, L. O., Alio, L., Kilo, A. La, & Saleh, S. D. (2023). Studi Molecular Docking dan Prediksi ADME Senyawa Metabolit Sekunder Tumbuhan Obat Tradisional Gorontalo terhadap Reseptor HER-2 sebagai Antikanker Payudara. 5(1), 90–103.
- Islam, R., Maji, S., Kabiraj, S., Habib, U., Pal, R., Bhattacharya, S., Chakraborty, S., & Bhattacharjee, D. A. (2022). Role of in Silico Drug Design in Pharmaceutical Sciences. *International Journal for Research in Applied Science and Engineering Technology*, 10(5), 2358–2367. <https://doi.org/10.22214/ijraset.2022.42836>

- Ivanisova, D., Bohac, M., Culenova, M., Smolinska, V., & Danisovic, L. (2023). Mesenchymal-Stromal-Cell-Conditioned Media and Their Implication for Osteochondral Regeneration. *International Journal of Molecular Sciences*, 24, 1–12. <https://doi.org/10.3390/ijms24109054>
- Izham, A. M., Min, J. C. M., Vidyadaran, S., Sulaiman, M. R., Bharatham, B. H., & Perimal, E. K. P. (2018). The Effect of DMEM and DMEM:F12 Culture Media on the Growth of SH-SY5Y Cells. *Life Sciences, Medicine and Biomedicine*, 2(3), 3–6. <https://doi.org/10.28916/lsmmb.2.3.2018.23>
- Jacob, S., Shirwaikar, A. ., Joseph, A., Prabu, S. L., Rathnanand, M., & Kumar, R. (2006). Stability of Proteins in Aqueous Solution and Solid State. *Indian Journal of Pharmaceutical Sciences*, 68(2), 154–162. <https://doi.org/10.4103/0250-474X.25708>
- Jayaraman, P., Nathan, P., Vasanthan, P., Musa, S., & Govindasamy, V. (2013). Stem Cells Conditioned Medium: A New Approach to Skin Wound Healing Management. *Cell Biology International*, 37, 1122–1128. <https://doi.org/10.1002/cbin.10138>
- Jo, Y. J., Karbstein, H. P., & Van Der Schaaf, U. S. (2019). Collagen Peptide-Loaded W1/O Single Emulsions and W1/O/W2 Double Emulsions: Influence of Collagen Peptide and Salt Concentration, Dispersed Phase Fraction and Type of Hydrophilic Emulsifier on Droplet Stability and Encapsulation Efficiency. *Food and Function*, 10(6), 3312–3323. <https://doi.org/10.1039/c8fo02467g>
- Juliana, I., Fatmawati, A., Munir, M. A., Emelda, E., & Rahmawati, F. (2024). Pengaruh Variasi Konsentrasi terhadap Uji Sifat Fisik dan Stabilitas Freeze-Thaw Cycling pada Formula Sediaan Gel Kombinasi Ekstrak Daun Kelor dan Ekstrak Daun Jeruk Nipis. *Journal of Pharmaceutical and Sciences*, 7(1), 26–34. <https://doi.org/10.36490/journal-jps.com.v7i1.188>
- Jung, Y. E., Lee, K. W., Cho, J. H., Bae, D. W., Jeong, B. G., Jung, Y. J., Park, S. B., An, Y. J., Kim, K., Lee, G. S., Kang, L. W., Moon, J. H., Lee, J. H., & Kim, E. K. (2023). Heating-Mediated Purification of Active FGF21 and Structure - based Design of Its Variant with Enhanced Potency. *Scientific Reports*, 13(1005), 1–14. <https://doi.org/10.1038/s41598-023-27717-x>
- Kalra, K., & Tomar, P. C. (2014). Stem Cell: Basics, Classification and Applications. *American Journal of Phytomedicine and Clinical Therapeutics*, 2(7), 919–930.
- Kavaldzhieva, K., Mladenov, N., Markova, M., & Belemezova, K. (2025). Mesenchymal Stem Cell Secretome: Potential Applications in Human Infertility Caused by Hormonal Imbalance, External Damage, or Immune Factors. *Biomedicines*, 13(3). <https://doi.org/10.3390/biomedicines13030586>

- Khasawneh, R. R., Al Sharie, A. H., Abu-El Rub, E., Serhan, A. O., & Obeidat, H. N. (2019). Addressing the Impact of Different Fetal Bovine Serum Percentages on Mesenchymal Stem Cells Biological Performance. *Molecular Biology Reports*, 46(4), 4437–4441. <https://doi.org/10.1007/s11033-019-04898-1>
- Kim, W. S., Park, B. S., Park, S. H., Kim, H. K., & Sung, J. H. (2009). Antiwrinkle Effect of Adipose-Derived Stem Cell: Activation of Dermal Fibroblast by Secretory Factors. *Journal of Dermatological Science*, 53, 96–102. <https://doi.org/10.1016/j.jdermsci.2008.08.007>
- Kim, Y. J., Seo, D. H., Lee, S. H., Lee, S. H., An, G. H., Ahn, H. J., Kwon, D., Seo, K. W., & Kang, K. S. (2018). Conditioned Media from Human Umbilical Cord Blood-Derived Mesenchymal Stem Cells Stimulate Rejuvenation Function in Human Skin. *Biochemistry and Biophysics Reports*, 16(April), 96–102. <https://doi.org/10.1016/j.bbrep.2018.10.007>
- Kızılcay, G., Ertürk Toker, S., & Matur, D. (2024). A New and Rapid HPLC Method for the Determination of Phenoxyethanol in Topical Formulation. *İstanbul Journal of Pharmacy*, 54(1), 96–101. <https://doi.org/10.26650/istanbuljpharm.2024.1385171>
- Koledova, Z., Sumbal, J., Rabata, A., Bourdonnaye, G. D. La, Chaloupkova, R., Hrdlickova, B., & Damborsky, J. (2019). Fibroblast Growth Factor 2 Protein Stability Provides Decreased Dependence on Heparin for Induction of FGFR Signaling and Alters ERK Signaling Dynamics. *Frontiers in Cell and Development Biology*, 7(331), 1–15. <https://doi.org/10.3389/fcell.2019.00331>
- Kumar, S., Saha, D., Ray, D., & Aswal, V. K. (2025). Surfactant-driven Modifications in Protein Structure. *Royal Society of Chemistry*, 21, 4979–4998. <https://doi.org/10.1039/d5sm00207a>
- Kwon, T., Oh, C. T., Choi, E. J., Kim, S. R., Jang, Y., Ko, E. J., Yoo, K. H., & Kim, B. J. (2015). Conditioned Medium from Human Bone Marrow-Derived Mesenchymal Stem Cells Promotes Skin Moisturization and Effacement of Wrinkles in UVB-Irradiated SKH-1 Hairless Mice. *Photodermatology, Photoimmunology & Photomedicine ORIGINAL*, 32, 120–128. <https://doi.org/10.1111/phpp.12224>
- Leal, G. C., Costa, I. M. da, Silva, J. B. da, Santos, R. S. dos, Bruschi, M. L., Mello, J. C. P. de, Nakamura, C. V., & Lonni, A. A. S. G. (2022). Development, Characterization, and Evaluation by Cutaneous Bioengineering of a Natural Emulsion, to Provide a Standardized Vehicle Base for Topical Compounded Preparations. *Research, Society and Development*, 11(16), 1–25. <https://doi.org/10.33448/rsd-v11i16.38290>
- Linkova, D. D., Rubtsova, Y. P., & Egorikhina, M. N. (2022). Cryostorage of Mesenchymal Stem Cells and Biomedical Cell-Based Products. *Cells*, 11,

1–24. <https://doi.org/10.3390/cells11172691>

- Liu, Q., Song, S., Song, L., Bi, Y., Zhu, K., Qiao, X., Wang, H., Gao, C., Cai, H., & Ji, G. (2022). Mesenchymal Stem Cells Alleviate Aging In Vitro and In Vivo. *Annals of Translational Medicine*, 10(20), 1–12. <https://doi.org/10.21037/atm-22-1206>
- Liu, S., Yang, W., Li, Y., & Sun, C. (2023). Fetal Bovine Serum, an Important Factor Affecting the Reproducibility of Cell Experiments. *Scientific Reports*, 13(1), 1–8. <https://doi.org/10.1038/s41598-023-29060-7>
- López-Sánchez, L., Miralles, P., Salvador, A., Merino-Sanjuán, M., & Merino, V. (2021). In Vitro Skin Penetration of Bronidox, Bronopol and Formaldehyde from Cosmetics. *Regulatory Toxicology and Pharmacology*, 122(November 2020). <https://doi.org/10.1016/j.yrtph.2021.104888>
- Maden, S. F., Sezer, S., & Acuner, S. E. (2023). Fundamentals of Molecular Docking and Comparative Analysis of Protein–Small-Molecule Docking Approaches. In *Intech*. <https://doi.org/10.5772/intechopen.105815>
- Mansauda, K. L. R., Jayanto, I., & Tunggal, R. I. (2022). Stabilitas Fisik Krim Ekstrak Biji Alpukat (*Persea americana* Mill.) dengan Variasi Emulgator Asm Stearat dan trietanolamin. *Jurnal MIPA*, 11(1), 17–22. <https://doi.org/10.35799/jm.v11i1.36786>
- Margiana, R., Markov, A., Zekiy, A. O., Hamza, M. U., Al-Dabbagh, K. A., Al-Zubaidi, S. H., Hameed, N. M., Ahmad, I., Sivaraman, R., Kzar, H. H., Al-Gazally, M. E., Mustafa, Y. F., & Siahmansouri, H. (2022). Clinical Application of Mesenchymal Stem Cell in Regenerative Medicine: A Narrative Review. *Stem Cell Research and Therapy*, 13(366), 1–22. <https://doi.org/10.1186/s13287-022-03054-0>
- Marlina, Pradifta, R., Lucida, H., Sudji, I. R., Salsabila, H. N., & Namira, P. A. (2023). Formulation of Mesenchymal Stem Cell Secretome as Antiaging Cream. *International Journal of Applied Pharmaceutics*, 15(1), 45–50.
- Meng, X.-Y., Zhang, H.-X., Mezei, M., & Cui, M. (2011). Molecular Docking: A Powerful Approach for Structure Based Drug Discovery. *Curr Comput Aided Drug*, 77(2), 146–157. <https://doi.org/10.47583/ijpsrr.2022.v77i02.029>
- Menteri Kesehatan. (2018). *Peraturan Menteri Kesehatan RI Nomor 32 Tahun 2018*.
- Mimatun Nasihah, & Fajrin, F. I. (2019). Efektivitas Ekstrak Buah Lada Hitam (*Piper Nigrum* L) Kombinasi Jahe Merah (*Zingiber Officinale*) Untuk Mengobati Penyakit Vitiligo. *Journal of Research and Technology*, 5(2), 154–167. <https://doi.org/10.55732/jrt.v5i2.324>

- Moon, K. M., Park, Y. H., Lee, J. S., Chae, Y. B., Kim, M. M., Kim, D. S., Kim, B. W., Nam, S. W., & Lee, J. H. (2012). The Effect of Secretory Factors of Adipose-Derived Stem Cells on Human Keratinocytes. *International Journal of Molecular Sciences*, 13, 1239–1257. <https://doi.org/10.3390/ijms13011239>
- Moradi, S., Mahdizadeh, H., Šarić, T., Kim, J., Harati, J., Shahsavarani, H., Greber, B., & Moore, J. B. (2019). Research and Therapy with Induced Pluripotent Stem Cells (iPSCs): Social, legal, and ethical considerations. *Stem Cell Research and Therapy*, 10(341), 1–13. <https://doi.org/10.1186/s13287-019-1455-y>
- Mótyán, J., Tóth, F., & Tőzsér, J. (2013). Research Applications of Proteolytic Enzymes in Molecular Biology. *Biomolecules*, 3, 923–942. <https://doi.org/10.3390/biom3040923>
- Mufidah, T., Wibowo, H., & Subekti, D. T. (2015). Pengembangan Metode ELISA dan Teknik Deteksi Cepat dengan Imunostik terhadap Antibodi Anti *Aeromonas hydrophila* pada Ikan Mas (*Cyprinus carpio*). *Jurnal Riset Akuakultur*, 10(4), 553. <https://doi.org/10.15578/jra.10.4.2015.553-565>
- Nining, Radjab, N. S., & Kholifah, N. (2019). Kombinasi Trietanolamin Stearat dan Setil Alkohol dalam Stabilitas Fisik Krim M/A Ekstrak Psidium guajava L. *Jurnal Farmasi Dan Kesehatan*, 9(1), 17–23. <http://www.jurnalscientia.org/index.php/scientia>
- Nofriyanti, & Wildani. (2019). Formulasi Krim Dari Ekstrak Air Daun Alpukat (*Persea americana* Mill.) Sebagai Sediaan Anti Jerawat. *Jurnal Penelitian Farmasi Indonesia*, 7(2), 51–56.
- Noverina, R., Widowati, W., Ayuningtyas, W., Rinendyaputri, R., Rilianawati, R., & Faried, A. (2019). Growth Factors Profile in Conditioned Medium Human Adipose Tissue-Derived Mesenchymal Stem. *Clinical Nutrition Experimental*, 24, 34–44. <https://doi.org/10.1016/j.yclnex.2019.01.002>
- Noviantari, A., & Khariri. (2020). Ragam Penelitian dan Pengembangan Isolasi dan Kultur Sel Punca Mesenkim dari berbagai Sumber. *Pros Sem Nas Masy Biodiv Indon*, 6(1), 611–618. <https://doi.org/10.13057/psnmbi/m060122>
- Nugraheni, C. K., Ikasari, E. D., & Kusmita, L. (2016). Optimasi Basis Krim Ekstrak Etanol Daun Kawista (*Limonia acidissima* L.) Sebagai Antibakteri *Staphylococcus aureus*. *Media Farmasi Indonesia*, 11(1), 993–1003.
- Nurfadhila, L., Muldianah, D., Nurdimayanthi, D. A., Rahmawati, D. S., Hartati, H., & Fadhillah, H. (2023). Review Artikel: Pemanfaatan Kimia Komputasi Dengan Berbagai Metode Dalam Menentukan Desain Senyawa Baru. *Journal of Pharmaceutical and Sciences*, 6(2), 555–566. <https://doi.org/10.36490/journal-jps.com.v6i2.42>

- Ono, I. (2011). A Study on the Alterations in Skin Viscoelasticity Before and After an Intradermal Administration of Growth Factor. *Journal of Cutaneous and Aesthetic Surgery*, 4(2), 98–104. <https://doi.org/10.4103/0974-2077.85022>
- Pagadala, N. S., Syed, K., & Tuszynski, J. (2017). Software for Molecular Docking: a Review. *Biophysical Reviews*, 9(2), 91–102. <https://doi.org/10.1007/s12551-016-0247-1>
- Pandi, S., Kulanthaivel, L., Subbaraj, G. K., Rajaram, S., & Subramanian, S. (2022). Screening of Potential Breast Cancer Inhibitors through Molecular Docking and Molecular Dynamics Simulation. *BioMed Research International*, 2022, 1–9.
- Park, S. R., Kim, J. W., Jun, H. S., Roh, J. Y., Lee, H. Y., & Hong, I. S. (2018). Stem Cell Secretome and Its Effect on Cellular Mechanisms Relevant to Wound Healing. *Molecular Therapy*, 26(2), 606–617. <https://doi.org/10.1016/j.ymthe.2017.09.023>
- Percio, A., Cicchinelli, M., Masci, D., Summo, M., Urbani, A., & Greco, V. (2024). Oxidative Cysteine Post Translational Modifications Drive the Redox Code Underlying Neurodegeneration and Amyotrophic Lateral Sclerosis. *Antioxidants*, 13(8), 1–27.
- Petit, I., Levy, A., Estrach, S., Féral, C. C., Trentin, A. G., Dingli, F., Loew, D., Qu, J., Zhou, H., Théry, C., Prunier, C., Aberdam, D., & Ferrigno, O. (2022). Fibroblast Growth Factor-2 Bound to Specific Dermal Fibroblast-Derived Extracellular Vesicles is Protected from Degradation. *Scientific Reports*, 12(1), 1–16. <https://doi.org/10.1038/s41598-022-26217-8>
- Phelps, J., Sanati-Nezhad, A., Ungrin, M., Duncan, N. A., & Sen, A. (2018). Bioprocessing of Mesenchymal Stem Cells and Their Derivatives: Toward Cell-Free Therapeutics. *Stem Cells International*, 2018, 1–23. <https://doi.org/10.1155/2018/9415367>
- Poddebniak, P., & Kalinowska-Lis, U. (2024). A Survey of Preservatives Used in Cosmetic Products. *Applied Sciences*, 14, 1–15. <https://doi.org/10.4324/9781315232140-14>
- Pradifta, R., Marlina, & Lucida, H. (2021). Analisis Protein pada Medium Terkondisi Sel Punca. *Jurnal Media Kesehatan*, 14(2), 137–145.
- Prasetyaningrum, N., Ridwan, R. D., Saskianti, T., Rachmawati, D., & Virginia, R. P. (2024). Prediction of Secretome Release from Hydrogels Based on Molecular Interactions and Binding Affinity to Promoting Bone Regeneration in Periodontitis. *Research Journal of Pharmacy and Technology*, 17(11), 5368.
- Prudovsky, I. (2021). Cellular Mechanisms of FGF-Stimulated Tissue Repair.

Cells, 10, 1–19. <https://doi.org/10.3390/cells10071830>

- Purwaningsih, N. S., Romlah, S. N., & Choirunnisa, A. (2020). Literature Review Uji Evaluasi Sediaan Krim. *Edu Masda Journal*, 4(2), 108–119. <https://doi.org/10.52118/edumasda.v4i2.102>
- Putra, A. (2019). *Basic Molecular Stem Cell*. Unissula Press.
- Putra, P. P. (2022). *Teori dan Tutorial Molecular Docking Menggunakan AutoDock Vina* (W. Nur (ed.); Edisi Pert). Wawasan Ilmu.
- Putri, W. E., & Endaryanto, A. (2021). Mesenchymal Stem Cells-Conditioned Medium (Secretom) in Skin Aging: A Systematic Review. *International Journal of Pharmaceutical Research*, 13(02). <https://doi.org/10.31838/ijpr/2021.13.02.020>
- Raval, K., & Ganatra, T. (2022). Basics, Types and Applications of Molecular Docking: A Review. *IP International Journal of Comprehensive and Advanced Pharmacology*, 7(1), 12–16. <https://doi.org/10.18231/j.ijcaap.2022.003>
- Rosochowicz, M. A., Lach, M. S., Richter, M., Suchorska, W. M., & Trzeciak, T. (2023). Conditioned Medium – Is it an Undervalued Lab Waste with the Potential for Osteoarthritis Management? *Stem Cell Reviews and Reports*, 19(5), 1185–1213. <https://doi.org/10.1007/s12015-023-10517-1>
- Rusli, Z., & Setiani, L. A. (2020). Modifikasi Metode Analisis Daya Hambat terhadap Proses Denaturasi Protein yang Diinduksi oleh Panas. *Chemical Engineering Research Articles*, 3(2), 55–62.
- Rusmin. (2021). Formulasi dan Uji Stabilitas Sediaan krim Ekstrak Rimpang Iris (*Iris pallida* Lamk.) Menggunakan Emulgator Anionik dan Nonionik. *Jurnal Kesehatan Yamas Makassar*, 5(2), 50–58. https://doi.org/10.1007/978-3-540-71095-0_3558
- Sahayarayan, J. J., Rajan, K. S., Vidhyavathi, R., Nachiappan, M., Prabhu, D., Alfarraj, S., Arokiyaraj, S., & Daniel, A. N. (2021). In-silico Protein-Ligand Docking Studies Against the Estrogen Protein of Breast Cancer using Pharmacophore Based Virtual Screening Approaches. *Saudi Journal of Biological Sciences*, 28(1), 400–407. <https://doi.org/10.1016/j.sjbs.2020.10.023>
- Sakamoto, S., Putalun, W., Vimolmangkang, S., Phoolcharoen, W., Shoyama, Y., Tanaka, H., & Morimoto, S. (2018). Enzyme-linked Immunosorbent Assay for the Quantitative/Qualitative Analysis of Plant Secondary Metabolites. *Journal of Natural Medicines*, 72(1), 32–42. <https://doi.org/10.1007/s11418-017-1144-z>
- Salman, S., Nanda, A. Y. D., Irawan, D. A. H., Wahyudi, N. Y., & Megrian, N. O. E. (2023). Perkembangan Uji Stabilitas Berdasarkan Parameter pada

Sediaan Suspensi dengan Berbagai Bahan Aktif yang Berbeda. *Journal of Pharmaceutical and Sciences*, 6(2), 633–639.

Salsabila, H. N. (2022). Uji Kandungan Faktor Pertumbuhan Epidermal Growth Factor (EGF) dan Fibroblas Growth Factor dalam Sediaan Krim Sekretom Sel Punca Mesenkimal. Universitas Andalas.

Santos, J. S., & Gonzatto, M. P. (2023). Citrus Essential Oils and Nanosystems Towards Skin Delivery. *Citrus Research - Horticultural and Human Health Aspects*, 1–17. <https://doi.org/10.5772/intechopen.110406>

Santosa, B. (2020). Teknik Elisa: Metode Elisa Untuk Pengukuran Protein Metallothionein Pada Daun Padi Ir Bagendit. In *Unimus Press, Semarang*.

Sarango-Granda, P., Espinoza, L. C., Díaz-Garrido, N., Alvarado, H., Rodríguez-Lagunas, M. J., Baldomá, L., & Calpena, A. (2022). Effect of Penetration Enhancers and Safety on the Transdermal Delivery of Apremilast in Skin. *Pharmaceutics*, 14(5), 1–17. <https://doi.org/10.3390/pharmaceutics14051011>

Sari, W. P., Gaya, M. L., Irianto, G., & Karisma, N. (2019). Manajemen Topikal Anti-Aging pada Kulit. *Medula*, 9(2), 228–234.

Saryanti, D., Setiawan, I., & Safitri, R. A. (2019). Optimasi Formula Sediaan Krim M/A dari Ekstrak Kulit Pisang Kepok (*Musa paradisiaca* L.). *Jurnal Riset Kefarmasian Indonesia*, 1(3), 225–237. <https://doi.org/10.33759/jrki.v1i3.44>

Satarker, S., Maity, S., Mudgal, J., & Nampoothiri, M. (2022). In Silico Screening of Neurokinin Receptor Antagonists as a Therapeutic Strategy for Neuroinflammation in Alzheimer's disease. *Molecular Diversity*, 26(1), 443–466. <https://doi.org/10.1007/s11030-021-10276-6>

Segeritz, C. P., & Vallier, L. (2017). Cell Culture: Growing Cells as Model Systems In Vitro. In *Basic Science Methods for Clinical Researchers*. <https://doi.org/10.1016/B978-0-12-803077-6.00009-6>

Sharma, P. K., Panda, A., Parajuli, S., Prado, R. M. B., Kundu, S., Repka, M. A., Ureña-Benavides, E., & Murthy, S. N. (2021). Effect of Surfactant on Quality and Performance Attributes of Topical Semisolids. *International Journal of Pharmaceutics*, 596, 1–6. <https://doi.org/10.1016/j.ijpharm.2021.120210>

Shivanika, C., Deepak Kumar, S., Ragunathan, V., Tiwari, P., Sumitha, A., & Brindha Devi, P. (2022). Molecular Docking, Validation, Dynamics Simulations, and Pharmacokinetic Prediction of Natural Compounds Against the SARS-CoV-2 Main-Protease. *Journal of Biomolecular Structure and Dynamics*, 40(2), 585–611. <https://doi.org/10.1080/07391102.2020.1815584>

- Silvyana, A. E., Rahayu, F. E., Wartu, L., & Asih, D. (2022). Formulation and Stability Test of Cream From Juice of Belimbing Wuluh (*Averrhoa bilimbi* L.). *Journal of Research in Pharmacy and Pharmaceutical Sciences*, 1(2), 61–65. <https://doi.org/10.33533/jrpps.v1i2.6309>
- Sohn, S. J., Yu, J. M., Lee, E. Y., Nam, Y. J., Kim, J., Kang, S., Kim, D. H., Kim, A., & Kang, S. (2018). Anti-aging Properties of Conditioned Media of Epidermal Progenitor Cells Derived from Mesenchymal Stem Cells. *Dermatology and Therapy*, 8, 229–244. <https://doi.org/10.1007/s13555-018-0229-2>
- Stewart, C. K., Parker, J., Hwang, R., Vincent, M., & Fung, E. (2023). Quantitative Risk Assessment of Dermal Sensitization Potential Following Use of Shampoo Products Containing the Formaldehyde Releasing Preservative DMDM Hydantoin. *International Journal of Toxicology*, 42(4), 326–333. <https://doi.org/10.1177/10915818231174429>
- Suárez-Castro, A., Valle-Sánchez, M., Cortés-García, C. J., & Chacón-García, L. (2018). Molecular Docking in Halogen Bonding. *Molecular Docking*, 99–114. <https://doi.org/10.5772/intechopen.72994>
- Subongkot, T., Opanasopit, P., Rojanarata, T., & Ngawhirunpat, T. (2012). Effect of Limonene and 1,8 Cineole on the Skin Penetration of Fluorescein Sodium Deformable Liposomes. *Advanced Materials Research*, 506, 449–452. <https://doi.org/10.4028/www.scientific.net/AMR.506.449>
- Subongkot, T., Pamornpathomkul, B., Rojanarata, T., Opanasopit, P., & Ngawhirunpat, T. (2014). Investigation of the Mechanism of Enhanced Skin Penetration by Ultradeformable Liposomes. *International Journal of Nanomedicine*, 9(1), 3539–3550. <https://doi.org/10.2147/IJN.S65287>
- Suryadi, Y., Manzila, I., & Machmud, M. (2016). Potensi Pemanfaatan Perangkat Diagnostik ELISA serta Variannya untuk Deteksi Patogen Tanaman. *Jurnal AgroBiogen*, 5(1), 39. <https://doi.org/10.21082/jbio.v5n1.2009.p39-48>
- Sutjahjokartiko, S. (2017). Pengaruh Konsentrasi Pengawet DMDM Hydantoin terhadap Karakteristik, Stabilitas Fisika & pH pada Water Based Pomade yang Mengandung Ekstrak Aloe Vera. *Jurnal Ilmiah Mahasiswa Universitas Surabaya*, 6(2), 553.
- Suwalie, E. R., & Mita, S. R. (2017). Terpen sebagai Peningkat Penetrasi pada Sediaan Transdermal. *Farmaka*, 15(3), 102–110. <http://jurnal.unpad.ac.id/farmaka/article/view/13664>
- Svilenov, H. L., & Winter, G. (2020). Formulations That Suppress Aggregation During Long-Term Storage of a Bispecific Antibody are Characterized by High Refoldability and Colloidal Stability. *Journal of Pharmaceutical Sciences*, 109(6), 2048–2058. <https://doi.org/10.1016/j.xphs.2020.03.011>

- Syahidah, H. N., & Hadisaputri, Y. E. (2016). Review Artikel: Media Yang Digunakan Pada Kultur Sel. *Farmaka*, 14(3), 27–36. <https://jurnal.unpad.ac.id/farmaka/article/view/10615>
- Tanaka, Y., Uchi, H., & Furue, M. (2019). Antioxidant Cinnamaldehyde Attenuates UVB-Induced Photoaging. *Journal of Dermatological Science*, 96(3), 151–158. <https://doi.org/10.1016/j.jdermsci.2019.11.001>
- Tarar, H. S., Roughton, B. C., & Camarda, K. V. (2014). Designing Optimum Protein-Excipient Interactions Using Molecular Docking Simulations. *Computer Aided Chemical Engineering*, 34, 441–446. <https://doi.org/10.1016/B978-0-444-63433-7.50058-4>
- Tayebi-Khorami, M., Chegeni, N., Birgani, M., Danyaei, A., Fardid, R., & Zafari, J. (2022). Construction a CO2 Incubator for Cell Culture with Capability of Transmitting Microwave Radiation. *Journal of Medical Signals and Sensors*, 12, 127–132. https://doi.org/10.4103/jmss.jmss_113_21
- Teeranachaideekul, V., Soontaranon, S., Sukhasem, S., Chantasart, D., & Wongrakpanich, A. (2023). Influence of the Emulsifier on Nanostructure and Clinical Application of Liquid Crystalline Emulsions. *Scientific Reports*, 13(4185), 1–14. <https://doi.org/10.1038/s41598-023-31329-w>
- Terefe, E. M., & Ghosh, A. (2022). Molecular Docking, Validation, Dynamics Simulations, and Pharmacokinetic Prediction of Phytochemicals Isolated From *Croton dichogamus* Against the HIV-1 Reverse Transcriptase. *Bioinformatics and Biology Insights*, 16, 1–20. <https://doi.org/10.1177/11779322221125605>
- Tokudome, Y., Komi, T., Omata, A., & Sekita, M. (2018). A New Strategy for the Passive Skin Delivery of Nanoparticulate, High Molecular Weight Hyaluronic Acid Prepared by a Polyion Complex Method. *Scientific Reports*, 8(1), 1–9. <https://doi.org/10.1038/s41598-018-20805-3>
- Tungadi, R., Pakaya, M. S., & Ali, P. D. A. (2023). Formulasi dan Evaluasi Stabilitas Fisik Sediaan Krim Senyawa Astaxanthin. *Indonesian Journal of Pharmaceutical Education*, 3(1), 117–124. <https://doi.org/10.37311/ijpe.v3i1.14612>
- Wang, Z., Li, L., Ren, G., Duan, X., Guo, J., Liu, W., Ang, Y., Zhu, L., & Ren, X. (2022). A Comprehensive Review on Stability of Therapeutic Proteins Treated by Freeze-Drying: Induced Stresses and Stabilization Mechanisms Involved in Processing. *Drying Technology*, 40(16), 3373–3388. <https://doi.org/10.1080/07373937.2022.2048847>
- Widhiastuti, S. S. (2020). Aplikasi Media Terkondisi Sel Punca Mesensimal dalam Terapi Penyakit Degeneratif dan Penyembuhan Luka. *Biota : Jurnal Ilmiah Ilmu-Ilmu Hayati*, 5(1), 48–60. <https://doi.org/10.24002/biota.v5i1.2963>

- Widowati, W., Noverina, R., Ayuningtyas, W., Kurniawan, D., Arumwardana, S., Kusuma, H. S. W., Rizal, R., Laksmiawati, D. R., Rinendyaputri, R., Rilianawati, R., & Faried, A. (2022). Potential of Conditioned Medium of hATMSCs in Aging Cells Model. *Hayati Journal of Biosciences*, 29(3), 378–388. <https://doi.org/10.4308/hjb.29.3.378-388>
- Widowati, W., & Widyanto, R. M. (2013). Sel Punca sebagai Transformasi Alternatif Terapi. *Zenit*, 2(1), 1–5.
- Wong, R. S. Y., Ng, N. C. S., Brianna, B., & Goh, B. H. (2025). Role of Mesenchymal Stem Cells in Skin Aging and Damage: Insights from Recent Preclinical and Clinical Studies. *Current Stem Cell Reports*, 11(1), 1–14. <https://doi.org/10.1007/s40778-025-00244-3>
- Wood, V. E., Groves, K., Cryar, A., Quaglia, M., Matejtschuk, P., & Dalby, P. A. (2020). HDX and in Silico Docking Reveal that Excipients Stabilize G-CSF via a Combination of Preferential Exclusion and Specific Hotspot Interactions. *Molecular Pharmaceutics*, 17(12), 4637–4651. <https://doi.org/10.1021/acs.molpharmaceut.0c00877>
- Wróblewska, M., & Winnicka, K. (2022). Composition Development and in Vitro Evaluation of O/W Emulsions Based on Natural Emulsifier Olivem 1000 As Tea Tree Oil Carriers. *Acta Poloniae Pharmaceutica - Drug Research*, 79(5), 687–705. <https://doi.org/10.32383/appdr/158784>
- Wróblewska, M., & Winnicka, K. (2023). Emollients With Natural Emulsifier Olivem 1000 As Topical Formulations for Urea or Sodium Hyaluronate. *Acta Poloniae Pharmaceutica - Drug Research*, 80(6), 977–990. <https://doi.org/10.32383/appdr/175847>
- Wu, J.-Y., Wu, S.-N., Zhang, L.-P., Zhao, X.-S., Li, Y., Yang, Q.-Y., Yuan, R.-Y., Liu, J.-L., Mao, H.-J., & Zhu, N.-W. (2022). Stem Cell-Derived Exosomes: A New Method for Reversing Skin Aging. *Tissue Engineering and Regenerative Medicine*, 19(5), 961–968. <https://doi.org/10.1007/s13770-022-00461-5>
- Wu, S., Sun, S., Fu, W., Yang, Z., Yao, H., & Zhang, Z. (2024). The Role and Prospects of Mesenchymal Stem Cells in Skin Repair and Regeneration. *Biomedicines*, 12(743), 1–21. <https://doi.org/10.3390/biomedicines12040743>
- Wulandari, F., Syaputri, F. N., & Jannah, N. R. (2022). The Effect of Various Concentrations of the Addition of Emulsifier Tween 80 and Span 80 on the Stability of Cream Formulation Ethanolic Extract of Basil Leaves (*Ocimum Americanum* L). *Jurnal Ilmu Kefarmasian*, 3(2), 197–203.
- Xiao, Q., Chen, G., Zhang, Y., Chen, F., Weng, H., & Xiao, A. (2021). Agarose Stearate-Carbomer940 as Stabilizer and Rheology Modifier for Surfactant-Free Cosmetic Formulations. *Marine Drugs*, 19(334), 1–24.

- Yang, G., Hu, S., Jiang, H., & Cheng, K. (2023). Peelable Microneedle Patches Deliver Fibroblast Growth Factors to Repair Skin Photoaging Damage. *Nanotheranostics*, 7(4), 380–392. <https://doi.org/10.7150/NTNO.79187>
- Yuniati, R., Nurtari, R. Y., Annaafi, A. D., Priguna, T. M., Anggita, V. D., Kusumaningrum, N., Muslimin, I. S., Putra, F. E., & Hardian. (2024). Pengaruh Waktu Pemanasan dan Pengasaman Terhadap Kadar Albumin Ekstrak Ikan Gabus. *Jurnal Pengolahan Hasil Perikanan Indonesia*, 27(2), 104–111.
- Yunta, M. J. R. (2015). How Important is to Account for Water When Modeling Biomolecular Complexes? *American Journal of Modeling and Optimization*, 3(3), 68–86. <https://doi.org/10.12691/ajmo-3-3-2>
- Zakrzewski, W., Dobrzyński, M., Szymonowicz, M., & Rybak, Z. (2019). Stem Cells: Past, Present, and Future. *Stem Cell Research and Therapy*, 10(1). <https://doi.org/10.1186/s13287-019-1165-5>
- Zhang, S., & Duan, E. (2018). Fighting Against Skin Aging: The Way from Bench to Bedside. *Cell Transplantation*, 27(5), 729–738. <https://doi.org/10.1177/0963689717725755>
- Zhang, W., & Huang, X. (2023). Stem Cell-Based Drug Delivery Strategy for Skin Regeneration and Wound Healing: Potential Clinical Applications. *Inflammation and Regeneration*, 43(33), 1–11. <https://doi.org/10.1186/s41232-023-00287-1>
- Zhao, Q., Ren, H., & Han, Z. (2016). Mesenchymal Stem Cells: Immunomodulatory Capability and Clinical Potential in Immune Diseases. *Journal of Cellular Immunotherapy*, 2(1), 3–20. <https://doi.org/10.1016/j.jocit.2014.12.001>
- Zhou, J., & Shi, Y. (2023). Mesenchymal Stem/Stromal Cells (MSCs): Origin, Immune Regulation, and Clinical Applications. *Cellular and Molecular Immunology*, 20, 555–557. <https://doi.org/10.1038/s41423-023-01034-9>
- Zougbi, K. Al, Othman, M., & Hassan, I. (2014). Preparation and Evaluation of Semisolid Dosage forms Containing Ferula Hermonis Extract. *International Journal of Pharmaceutical Sciences Review and Research*, 25(2), 211–216.