

BAB 5

KESIMPULAN DAN SARAN

5.1. Kesimpulan

1. Peningkatan konsentrasi ekstrak kering stroberi (*Fragaria x ananassa*) (5% , 7,5%, dan 10%) pada sediaan tabir surya dalam bentuk krim berpengaruh terhadap hasil uji mutu fisik dan uji efektivitas. Peningkatan konsentrasi akan menurunkan pH dan daya sebar serta meningkatkan viskositas, nilai SPF, nilai %TE, nilai % TP dan *water resistant*.
2. Formula dengan hasil terbaik pada sediaan tabir surya ekstrak stroberi (*Fragaria x ananassa*) dalam bentuk krim yang memenuhi persyaratan uji mutu fisik (organoleptis, homogenitas, pH, viskositas, daya sebar, dan tipe emulsi) dan uji efektivitas adalah formula 3 (ekstrak stroberi 10%).

5.2. Saran

Pada penelitian selanjutnya disarankan agar dilakukan melakukan *Design Expert* untuk menentukan formula optimum dan dapat dilakukan kombinasi bahan alam yang bekerja sinergis agar dapat memberikan nilai SPF yang lebih tinggi serta formulasi yang dihasilkan pada penelitian ini dapat dilakukan *scale up*, sehingga dapat diproduksi dalam skala industri dan maklon.

DAFTAR PUSTAKA

- Addor, F.A.S, Barcaui, C.B, Gomes, E.E, Lupi, O, Marcon, C.R, and Miot, H.A. (2022) "Sunscreen lotions in the dermatological prescription: review of concepts and controversies". *Dermatologia*, **97(2)**:204-222
- Adzhani, A., Darusman, F., dan Aryani R. (2022) "Kajian Efek Radiasi Ultraviolet terhadap Kulit," *Bandung Conference Series: Pharmacy*, **2(2)**:106–112.
- Agrawal, O.D. and Kulkarni, Y.A. (2020). "Mini-review of analytical methods used in quantification of ellagic acid," *Reviews in Analytical Chemistry*, **39(1)**:31–44.
- Aguilera, J., Gracia-Cazaña, T. and Gilaberte, Y. (2023) "New developments in sunscreens," *Photochemical and Photobiological Sciences*, **22(10)**:473 – 2482 .
- Agustina, D., Dhewaji, R.D. dan Martin, A. (2020) "Pemanfaatan panas kondenser pada pengering beku vakum," *Jurnal Energi dan Manufaktur*, **13(1)**:32–36.
- Ali, F, Younas, U., Nasir, A., Hassan, F., Iqbal, M., Hamza, B., Mukhtar, S., Khalid, A., and Ishfaq, H. (2022) "Biosynthesis and characterization of silver nanoparticles using strawberry seed extract and evaluation of their antibacterial and antioxidant activities," *Journal of Saudi Chemical Society*, **26(6)**:1-10
- Amini, A., Hamdin, C.D., Subaidah, W.A., dan Muliasari, H. (2020) "Efektivitas Formula Krim Tabir Surya Berbahan Aktif Ekstrak Etanol Biji Wali (*Brucea javanica* L. Merr)," *Jurnal Kefarmasian Indonesia*, **10(1)**:50–58.
- Andayani, D.G.S., Lotulung, P.D.N., Sulaswaty, A., Qanitaati, N., Andini, D.G.T., Mulyani, R., and Nursyifa, E. (2019) "Revelation of New Compound from Ethanolic Extract of *Fragaria x ananassa* var. Lembang," *Indonesian Journal of Cancer Chemoprevention*, **10(3)**:159-168.
- Anli, E.A. (2022) "Impact of Vacuum Assisted Oven Drying of Kurut on Product Quality and Drying Characteristics," *Applied Sciences (Switzerland)*, **12(21)**:1-19
- Antasionasti, I., Datu, O.S., Lestari, U.S., Abdullah, S.S., and Jayanto, A

- (2021) "Correlation Analysis of Antioxidant Activities with Tannin, Total Flavonoid, and Total Phenolic Contents of Nutmeg (*Myristica fragrans* Houtt) Fruit Precipitated by Egg white," *Borneo Journal of Pharmacy*, **4(4)**: 301–310.
- Arnandea, D. 2020 "The Effect Of 70% Ethanol Of Strawberries (*Fragaria x ananassa*) In Facial Spray Gel Preparations On Physical Properties, Physical Stability And Antioxidant Activity," *Indonesia Natural Research Pharmaceutical Journal*, **5(1)**:19–34.
- Ashari, S., Pramesti, H., Fitriana, I., dan Rohmani, S. (2020) "Potensi senyawa flavonoid dalam tanaman sebagai lotion tabir surya," *Proceedings National Conference PKM Center*, **1(1)**:164–166.
- Auliya, D.F., Suhartinah, S. dan Ansory, H.M. (2022) "Potensi dan Stabilitas Emulgel Ekstrak Etanol Daun Strawberry (*Fragaria x ananassa* var *Duchesne*) Sebagai Tabir Surya," *Majalah Farmaseutik*, **18(4)**:469–474
- Azyyati, A., Fitrianti, D., dan Ratih, A. (2022) "Kajian Efek Radiasi Ultraviolet terhadap Kulit," *Bandung Conference Series: Pharmacy*, **2(2)**, 106–112.
- Baby, N. and Chakraborty, S. (2022) "Determination of Sun Protection Factor (SPF) for Various Sunscreens by UV Spectrophotometry," *Ymer*, **21(11)**: 483–491.
- Badan POM RI, **2019**, *Peraturan Badan Pengawas Obat Dan Makanan Nomor 23 Tahun 2019 Tentang Persyaratan Teknis Bahan Kosmetika*, Jakarta: BPOM.
- Badan Standarisasi Nasional (1996) "SNI 16-4399-1996: Sediaan Tabir Surya," *Badan Standardisasi Nasional 16-4399-1996*, **16(4399)**:1–3.
- Bains, P; and Kaur, S. (2023), "Silicone in Dermatology : An Update," *Bulletin for medical practitioners*, **6(1)**: 14–20.
- Balla, D.Q., Neto, A.V., Martinez, R.M., Hubner, A.A., Rosado, C., Baby, A.R., and Lima, F.V. (2023) "Methods for cutaneous penetration assessment of organic UV filters - a review," *Biomedical and Biopharmaceutical Research*, **20(1)**: 1–21.
- Barnes, T.M., Mijaljica, D., Townley, J.P, Spada, F., and Harrison, I.P., (2021), "Vehicles for drug delivery and cosmetic moisturizers:

Review and comparison,” *Pharmaceutics*, **13**(12).1-18

- Baskara, I.B.B., Suhendra, L. dan Wrsiati, L.P. (2020), “Pengaruh Suhu Pencampuran dan Lama Pengadukan terhadap Karakteristik Sediaan Krim,” *Jurnal Rekayasa dan Manajemen Agroindustri*, **8**(2): 200-209.
- Becker, L.C., Bergfeld, W.F., Belsito, D.V., Hill, R.A., Klaassen, C.D., Liebler, D.C., Marks Jr, J.G., Shank, R.C., Slaga, T.J., Snyder, P.W., Gill, L.J., and Heldreth, B., (2020), “Safety Assessment of Glycerin as Used in Cosmetics,” *International Journal of Toxicology*, **38**(3): 6-22.
- Benson A.E, Roberts M.S, and Silva V.R. (2019) *Cosmetic Formulation Principles and Practice*, CRC Press.
- BPOM (2022) “Peraturan Badan Pengawas Obat dan Makanan Nomor 3 Tahun 2022 Tentang Persyaratan Teknis Klaim Kosmetika,” Badan Pengawas Obat dan Makanan Republik Indonesia: 1–33.
- Budiman, S., dan Saraswati, D. (2008), *Berkebun Stroberi Secara Komersial*. Penebar Swadaya. Jakarta.
- Buhse, L. (2003), Presented at the Advisory Committee for Pharmaceutical Science Meeting On March 12, Diakses pada 10 Desember 2015.
- Cao, C., Xiao, Z., Wu, Y., and Ge, C. (2020) “Diet and skin aging—from the perspective of food nutrition,” *Nutrients*, **12**(3):1–25.
- Carli, B. (2020), *Cosmetic Formulation: A Beginners Guide*, *Institute of Personal Care Science*.
- Chauhan, L. and Gupta, S. (2020), “Creams: A Review on Classification, Preparation Methods,
- Chavda, V.P., Acharya, D., Hala, V., Daware, S., and Vora, L.K. (2023), “Journal of Drug Delivery Science and Technology Sunscreens : A comprehensive review with the application of nanotechnology,” *Journal of Drug Delivery Science and Technology*, **86**(4): 1-28.
- Couto, J., Figueirinha, A., Batista, M.T., Paranhos, A., Nunes, C., Goncalves, L.M., Marto, J., Fitas, M., Pinto, P., Ribeiro, H.M., and Pina, M.E. (2020), “*Fragaria vesca* l. Extract: A promising cosmetic ingredient with antioxidant properties,” *Antioxidants*, **9**(2): 1–15.
- Cristina, M., Leitao, Z.G., Coutinho, C.C., Vermelho, A.B., Silva, R.S., Presgrave, O.A.F., Leitao, A.A.C., Leitao, G.G., Junior, E.R., and

- Santos, E.P. (2016), "In vitro and in vivo evaluation of efficacy and safety of photoprotective formulations containing antioxidant extracts," *Revista Brasileira de Farmacognosia*, **26(2)**: 251–258.
- Dadi, M. and Yasir, M. (2022), "Spectroscopy and Spectrophotometry: Principles and Applications for Colorimetric and Related Other Analysis," *Colorimetry*, **3 (6)**: 1–24.
- Das, A.K., Islam, M.N., Faruk, M.O., Ashaduzzaman, M., and Dungani, R (2020), "Review on tannins: Extraction processes, applications and possibilities," *South African Journal of Botany*, **135 (08)**:58–70.
- Daud, N.S., Musdalipah., Karmilah., Nurhikma, E., Tee, S.A., Rusli, N., Fauziah, Y., dan Sari, E.N.I.. (2022) "Formulasi Krim Tabir Surya Ekstrak Daun Stroberi (*Fragaria x ananassa* A.N. Duch) Asal Malino, Sulawesi Selatan," *Jurnal Mandala Pharmacon Indonesia*, **8(2)**:165–176.
- Departemen Kesehatan RI. (1985), *Cara Pembuatan Simplisia*. Departemen Kesehatan Republik Indonesia, Jakarta
- Departemen Kesehatan Republik Indonesia., (1995). *Farmakope Indonesia, Edisi IV*, Departemen Kesehatan Republik Indonesia, Jakarta
- Departemen Kesehatan RI. (2000), "Parameter Standar Umum Ekstrak Tanaman Obat," Departemen Kesehatan RI.
- Dhawale, P. V., Vineeth, S.K., Gadhave, R.V., Fatima, J., Supekar, M.V., Thakur, V.K., and Raghavan, P. (2022), "Tannin as a renewable raw material for adhesive applications: a review," *Materials Advances* [Preprint].**3(12)**:3365-3388
- Dienilah, A. 2022, "Formulasi Sediaan Nanoemulsi Ekstrak Buah Stroberi (*Fragaria* sp.) Sebagai Bahan Aktif Pembuatan Serum Antioksidan," *Skripsi*:1–91.
- Djekic, I., Milosavljevic, D., Maksimovic, V., Miliwojevic, J., Wolf, B., Zuber, J., Vogt, C., Maksimovic, J.D. (2023) "Sugars and Organic Acids in 25 Strawberry Cultivars: Qualitative and Quantitative Evaluation." *Plants*, **12(2238)**: 1-18
- Draelos, Z.D. 2022, *Cosmetic Dermatology Product and Procedures Third Edition*.
- Dragicevic, N. and Maibach, H.I. (2021) *Percutaneous absorption: Drugs, Cosmetics, Mechanism, Methods*. Evaluation and its Applications,"

Journal of Drug Delivery and Therapeutics, **10(5)**: 281–289.

- Evtyugin, D.D., Magina, S. and Evtuguin, D. V. (2020), “Ellagic Acid and Its Derivatives . A Review,” *Molecules*, **25(2745)**: 1-20
- Fakhruzy., Kasim, A., Asben, A., dan Anwar, A. (2020), “Review: Optimalisasi Metode Maserasi Untuk Ekstraksi Tanin Rendemen Tinggi,” *Menara Ilmu*, **14(2)**: 38–41.
- Fauzee, A.F.B., and Walker, R.B. (2020) “The impact of formulation variables on the optimization of pilot scale clobetasol 17- propionate creams,” *Cogent Engineering*, **7(1)**: 1-21
- Fauziyah, N., Widyasanti, A. dan Sutresna, Y. (2022) “Kajian Pengaruh Konsentrasi Etanol Terhadap Karakteristik Oleoresin Ampas Jahe Merah (*Zingiber officinale Roscoe*) Limbah Penyulingan,” *Teknotan*, **16(3)**:169-176
- Ferreira, A.O., Freire, E.S., Polonini., H.C., Silva, P.J, Brandao, M.A., and Raposo, N.R., (2018) “Anti-Aging Effects of Monomethylsilanetriol and Maltodextrin-Stabilized Orthosilicic Acid on Nails, Skin and Hair.” *Cosmetic*, **5(41)**:1-15
- Ferreira, T., Loureiro, A., Noro, J., Paulo, A.C., and Castro, T.G. (2023) “Addressing the Structural Organization of Silicone Alternatives in Formulations by Molecular Dynamics Simulations and a Novel Equilibration Protocol,” *Polymers*, **15 (796)**:1–20.
- Garg, A., Aggarwal, D., Garg, S., and Siglal, A. K. 2002, Spreading of Semisolid Formulation: AnUpdate, Pharmaceutical Technology.
- Garnacho, G.M., Vallejo, R.S., and Giménez, J.C. (2020), “Effects of solar radiation and an update on photoprotection,” *Anales de Pediatría*, **92(6)**: 377.e1- 377.e9.
- Geoffrey, K., Mwangi, A.N. and Maru, S.M. (2019) “Sunscreen products: Rationale for use, formulation development and regulatory considerations,” *Saudi Pharmaceutical Journal*, **27(7)**:1009–1018.
- Gilchrist, A.J. 2023, *Making Quality Cosmetics Good Manufacturing Practice and ISO 22716:2007*.
- González, S., Aguilera, J., Berman, B., Pinton, P.C., Gilaberte, Y., Goh, C.L., Lim, H.W., Schalka, S., Stengel, F., Wolf, P., and Xiang, F. (2022) “Expert Recommendations on the Evaluation of Sunscreen Efficacy and the Beneficial Role of Non-filtering Ingredients,” *Front Med* **9(3)**:1–10.

- Grover, N., Meena, R., and Patni, V. (2020), "HPTLC Method for Quantification of Ellagic Acid in in-Vivo and in-Vitro Samples of *Woodfordia fruticosa* (Linn.) Kurz," *International Journal of Pharmacognosy*, **7(1)**: 29–35.
- Hagavane, S., Sonawane, S., Katkale, A., and Kunde, V. (2022), "Review on Cream As Topical Drug Delivery System," *International Journal of Research in Pharmacy and Pharmaceutical Sciences*, **7(1)**: 21–30.
- Hamad, J, Seck, S., Schalka, S., and Lim, H.W. (2022) "Photoprotection in Skin of Color," *Photochem Photobiol Sci*. Henry Ford Health [Preprint].
- Hamad, A., Hayuningtyas, A. and Jitphongsakul, P. (2022) "Comparison of Physical and Chemical Changes of Dried Berries Fruits Powders from Spray and Freeze Drying," *Journal of Chemical Process and Material Technology*, **6(1)**:37–44.
- Hamrun, N. dan Darlan, N.S.P. 2023, "Potensi Ekstrak Buah Stroberi (*Fragaria x ananassa*) dalam Meningkatkan Kecerahan Email Gigi," *Sinnun Maxillofacial Journal*, **5(1)**:24–31.
- Harahap, E.S., Ginting, C.N., Lubis, Y.N., dan Chiuman, L. (2022), "The Activity of Strawberry Extract as Sunscreen on Guinea Pigs Exposed to Sunlight," *IOP Conference Series: Earth and Environmental Science*, **1083(1)**:1-7
- Hayworth, S.A., Brown, D.G., and Marion, J.W. (2023), "Sunburn Frequency and Sun Protection Attitudes among Ocean Lifeguards at Florida Beaches," *Journal of Clinical and Aesthetic Dermatology*. **16(6)**: 46-49
- Iman, T.A.M., Khan, W., Chester, K., Mohamed, A.H., Ahmad, S., and Ayoub, S.M.H. (2020), "Simultaneous Quantitative Estimation of Ellagic Acid and Gallic Acid in *Sudanese solanum dubium* Seed By High Performance Thin Layer Chromatography (HPTLC)," *GSC Biological and Pharmaceutical Sciences*, **13(1)**:54–61.
- Indrawati, A., Isnaeni, D. dan Baharuddin, S. (2022), "Efektivitas Antibakteri Ekstrak Buah Stroberi (*Fragaria vesca* L.) Terhadap *Staphylococcus epidermidis* Dan *Propionibacterium acnes*," *JUKEJ: Jurnal Kesehatan Jompa*, **1(2)**:155–163.
- ISO 18861. (2020) "INTERNATIONAL STANDARD Cosmetics — Sun protection test methods — In vivo determination of sunscreen UVA protection," **09(2020)**:1–9.

- Iwanicka, B. and Wysokińska, K. (2022) “Chemical and physical UV filters,” *Polish Journal of Public Health*, **132(1)**: 48–51.
- Jones, D.S. (2010). *Statistik farmasi*. Diterjemahkan dari Bahasa Inggris oleh Hesty Utami Ramadaniati dan H. Hairizul Rivai. Penerbit Buku Kedokteran EGC. Jakarta.
- Kamaruzaman, N. and Yusop, S.M. (2021), “Determination of stability of cosmetic formulations incorporated with water-soluble elastin isolated from poultry”, *Journal of King Saud University Science*, **33(6)**: 1-18.
- Katel, S., Mandal, H.R., Kattel, S., Yadav, S.P.S., and Lamshal, B.S. (2022), “Impacts of plant growth regulators in strawberry plant: A review,” *Heliyon*, **8(12)**:1-5.
- Kementerian Kesehatan Republik Indonesia. (2017), *Farmakope herbal Indonesia Edisi II*. Jakarta: Kementerian Kesehatan RI
- Keurentjes, A.J, Kezic, S., Rustemeyer, T., Hulshof, C.T.J., and Molen, H.F. (2021) “Protection Against Solar Ultraviolet Radiation in Outdoor Construction Workers: Study Protocol for a Non-randomized Controlled Intervention Study,” *Frontiers in Public Health*, **9(3)**:1–8.
- Koopmann, A.K., Schuster, C., Rodriguez, J.T., Kain, S., Obermeyer, H.P., Petutschnigg, A., and Husing, N. (2020) “Tannin-Based Hybrid Materials and Their Applications: A Review,” *Molecules (Basel, Switzerland)*, **25(21)**:1-32
- Labille, J., Catalano, R., Slomberg, D., Motellier, S., Pinsino, A., Hennebert, P., Santaella, C., and Bartolomei, V. (2020) “Assessing Sunscreen Lifecycle to Minimize Environmental Risk Posed by Nanoparticulate UV-Filters – A Review for Safer by Design Products,” *Frontiers in Environmental Science*, **8(7)**:1–25.
- Lalita, C. and Shalini, G. (2020), “Creams: a Review on Classification, Preparation, Methods, Evaluation and Applications”, *Journal of Drug Delivery and Therapeutics*, **10(5)**:281- 289.
- Lee, A.Y. (2021), “Skin Pigmentation Abnormalities and Their Possible Relationship with Skin Aging,” *International Journal of Molecular Sciences*, **22(7)**:1-19
- Lestari, Y. (2019), “Perbandingan Kerja Alat Pengeringan Tipe Spray Dryer dan Freeze Dryer dalam Proses Pengeringan Bahan Berbentuk

- Cair”, *Jurnal Ilmiah Kohesi*, **3(3)**:1-4.
- Leyva-Porras, C., Leos, M.Z., Martinez, L.A., Solis, V.E., Figueroa, Y.T., Teran, A.T., and Martinez, I.C.(2021) “Strawberry Juice Powders: Effect of Spray-Drying Conditions on the Microencapsulation of Bioactive Components and Physicochemical Properties,” *Molecules*, **26(18)**:1-14
- Liferdi .2023, “Pedoman Budi Daya Stroberi”, *Katalog Budi Daya Stroberi*. Bogor: Pertanian Press.
- Maliyil, B.T., Koshy, R.R., Madhavan, A.T., and Korrapati, N.H. (2023), “Trust Your Sunscreen With Caution: A Literature Review on The Side Effects of Sunscreen,” *Cosmoderma*, **3(62)**:1-7
- Mansur R.S., Patricia P.A., Deborah, L.D. and Edward M. (1980), “Sunscreen Testing Methods: In Vitro Predictions of Effectiveness”, J.soc.
- Martins, T.E.A., Pinto, C.A., Oliveira, A.C., Velasco, M.V., Guitierrez, A.R., Rafael, M.F., Tarazona, J.P., and Figueroa, M.G. (2020), “Contribution of Topical Antioxidants To Maintain Healthy Skin—A Review,” *Scientia Pharmaceutica*, **88(2)**:1–17.
- Mewada, R. and Shah, Y. (2023), “Recent Advances in Sunscreen Agents and Their Formulations: A Review,” *International Journal of Pharmaceutical Chemistry and Analysis*, **9(4)**:141–50.
- Newerli-Guz, J., Smiechowska, M., Drzewiecka, A., and Tylingo, R. (2023) “Bioactive Ingredients with Health-Promoting Properties of Strawberry Fruit (*Fragaria x ananassa* Duchesne),” *Molecules*, **28(6)**:1–13.
- Nguyen, V.H., Thi, L.A., Chandana, P.S., Do, H.T., Pham, T.H., Lee, T., Nguyen, T.D., Phuoc, C.L., and Huong, P.T. (2021), “The Degradation of Paraben Preservatives: Recent Progress and Sustainable Approaches Toward Photocatalysis,” *Chemosphere*, **276(6)**: 1-21
- Nurkhasanah, Bachri, M.S., dan Yuliani, S., (2023), *Antioksidan dan Stress Oksidatif Cetakan Pertama*, UAD Press, Yogyakarta.
- Oleivera, R., Ferreira, J., Azevedo, L.F. and Almeida, I.F. 2023, An overview of methods to characterize skin type focus on visual rating scale and self report instruments, *Cosmetic Journal*, **10(14)**: 1-15.
- Pakyurek, M. (2021), “Current Studies on Fruit Science”. IKSAD Publishing

- Pambudi, P.G., Suhartinah., dan Ansory, H.M. 2021, “Potensi Krim Ekstrak Etanol Daun Stroberi (*Fragaria x ananassa* var *Duchesne*) sebagai Tabir Surya,” *Jurnal Farmasi Indonesia*, **18(2)**: 181–188.
- Patti, A., Lecocq, H., Serghei, A., Acierno, D., and Cassagnau, P. (2021), “The Universal Usefulness of Stearic Acid As Surface Modifier: Applications To The Polymer Formulations and Composite Processing,” *Journal of Industrial and Engineering Chemistry*, **96(6)**:1–33.
- Perez, Y.M.N., Linares, E.C., Montenegro, O.N., Sanjuan, V.R., Rivera, Y.M., Monzon, A.M., and Bedia, M.M. (2021), “Prediction of The Stability and Quality of O/W Cosmetic Emulsions Using Full Factorial Design”, *Journal of Pharmacy and Pharmacognosy Research*, **9(1)**: 98-112
- Petro, A. J. (1981). “Correlation of Spectrofotometric data with sunscreens protection factors”. *International journal of cosmetics science*.
- Pratiwi, D.A., Emelda., dan Husein, S. (2021), “Formulasi Krim Tabir Surya Ekstrak Etanol Ganggang Hijau (*Ulva lactuca* L.) dan Uji *In Vitro* Nilai SPF (*Sun Protecting Factor*)” *Inpharmmed Journal (Indonesian Pharmacy and Natural Medicine Journal)*, **4(1)**:1-10
- Proano, J., Rivadeneira, E., Moncayo, P. and Mosquera, E. (2020), “Passion Fruit Oil (*Passiflora edulis*): Use of Seeds in Cosmetic Products”, **11(1)**: 119-129.
- Purnomo, H. dan Syamsul, E.S. (2017), *Statistika Farmasi (Aplikasi Praktis dengan SPSS)*, CV. Grafika Indah, Yogyakarta.
- Putra, G.W., Ramona, Y. dan Proborini, M.W. 2020, “Eksplorasi dan Identifikasi Mikroba Pada Rhizosfer Tanaman Stroberi (*Fragaria x ananassa* Dutch.) Di Kawasan Pancasari Bedugul,” *Metamorfosa: Journal of Biological Sciences*, **7(2)**:62-70.
- Quintas, B.D., Neto, A.V., Martinez, R.M., Hubner., A.D., Rosado, C., Baby, A.R., and Lima, F.V. (2023) “Methods For Cutaneous Penetration Assessment of Organic UV Filters - A Review,” *Biomedical and Biopharmaceutical Research*, **20(1)**:1–21.
- Rahse, W. (2020). *Cosmetic Creams Development, Manufacture and Marketing of Effective Skincare Products*, Wiley-VCH, Germany
- Rapuru, R., Bathula, S., and Kaliappan, I. (2023) “Phytochemical

- Constituents and Pharmacological Activities of Strawberry,” *Recent Studies on Strawberries* [Preprint], (June 2024).
- Ratnasari, D. dan Puspitasari, R.N. (2018) “Optimasi Formula Sediaan Krim Anti-Aging Dari Ekstrak Terong Ungu (*Solanum melongena* L.) Dan Tomat (*Solanum lycopersicum* L.),” *Jurnal Riset Kesehatan*, **7(2)**:66-71.
- Sadick, N.S., Lupo, M.P., and Draelos, Z.P. (2023) *Cosmeceutical science in clinical practice Second edition*. CRC press: New York
- Satoshi, O., Izutsu, K., and Ballesteros, D.L. (2020), *Drying Technologies for Biotechnology and Pharmaceutical Application*. Wiley-VCH: Germany
- Sayyed, A., and Kulkarni, R. (2022) “Silicone Chemicals in Cosmetics Applications and Their Implications To The Environment, *health and sustainability*,”. *Euro cosmetic Technology R&D*. 10(22): 18-24
- Setyadi, P., Rio, D., Setyawan, C., Imam, W., Tohir, A., dan Faturhman, A. (2021) “Perhitungan Efisiensi Energi Mesin Pengereng Vakum Pada Berbagai Temperatur (0,-5)O C dengan Kevakuman 0,03 Atm,” *Prosiding Seminar Nasional Pengabdian kepada Masyarakat*, **20(2)**: 19–29.
- Sheskey, P.J., Cook, W.G., and Cable, C.G. (2020) “*Handbook of Pharmaceutical Excipients 9th Edition*,” Pharmaceutical Press: London
- Siemons, I., Politiek, R.G., Boom, R.G., Sman, R.G., and Schutyser, M.A. (2020) “*Dextrose Equivalence of Maltodextrins Determines Particle Morphology Development During Single Sessile Droplet Drying*,” *Food Research International*, **131(11)**, hal. 108988.
- Skarupova, D., Vostalova, J. And Svobodova, A.R. (2020) “Ultraviolet A Protective Potential of Plant Extracts And Phytochemicals,” *Biomedical Papers*, **164(1)**:1–22.
- Sonawane, T.N., Chaudhari, D.D., Mali, S.D., and Shaikh, A.Z. (2021). “A Short Review on Skin Cares Cream,” *Research Journal of Topical and Cosmetic Sciences*, **12(1)**:1–3.
- Srimiati, M., Zahra, A.D., Harsanti, F., Habibah, P., dan Maharani, A.R. (2023). “Pengaruh Konsentrasi Maltodekstrin terhadap Karakteristik Bubuk Stroberi yang Berpotensi Mencegah COVID-

- 19 pada Lansia”, *Amerta Nutrition*, **7(4)**: 520–526.
- Suleria, H.A.R., Barrow, C.J., and Dunshea, F.R.. (2020), “Screening and Characterization of Phenolic Compounds and Their Antioxidant Capacity in Different Fruit Peels,” *Foods*, **9(9)**:1-26
- Suryani, A. (2020) “Faktor-Faktor yang Memengaruhi Pigmentasi Manusia,” *Cermin Dunia Kedokteran*, **47(9)**:682-685.
- Swetha, M., Iswariya, VT., Maeywarnalatha, K. and Rao, T.R. 2022, “Review Article on Preparation and Evaluation of Herbal Face Cream”, *Annals of Forest Research*, **65(1)**: 10315-10323.
- Tampucci, S., Burgalassi, S., Chetoni, P., and Monti, D. (2018), “Cutaneous Permeation and Penetration of Sunscreens: Formulation Strategies and *In Vitro* Methods,” *Cosmetics*, **5(1)**:1-17
- Tari, M. dan Indriani, O. (2023) “Formulasi dan Uji Stabilitas Fisik Sediaan Krim Ekstrak Sembung Rambat (*Mikania micrantha* Kunth),” *Jurnal Ilmiah Multi Science Kesehatan*, **15(1)**:192–211.
- Thamkaew, G., Sjöholm, I. and Galindo, F.G. (2020), A review of drying methods for improving the quality of dried herbs, *Critical Reviews in Food Science and Nutrition*, **6(2)**:1-26.
- Thawabteh, A.M., Jibreen, A., Karaman, D., Thawabteh, A., and Karaman, R. (2023) “Skin Pigmentation Types, Causes and Treatment—A Review,” *Molecules*, **28(12)**: 1-28
- The OSHA Standard 29.(2020), “Safety Data Sheet Propyl Paraben,” *Material Safety Data Sheet*, **4(2)**:1–6.
- Vandenberg, L.N. and Bugos, J. (2021). “Assessing the Public Health Implications of the Food Preservative Propylparaben: Has This Chemical Been Safely Used for Decades,” *Current Environmental Health Reports*, **8(1)**:54–70.
- Wirawan, S., (2023), *Metodologi Penelitian untuk Tenaga Kesehatan*, Thema Publishing, Yogyakarta.
- Yang, J.W., Fan, G.B., Tan, F., Kong, H.M., Liu, Q., Zou, Y., and Tan, Y.M. (2023) “The Role and Safety of UVA and UVB in UV-Induced Skin Erythema,” *Frontiers in Medicine*, **10(6)**: 1-7