

## DAFTAR PUSTAKA

- Allen, L.V., 2002, *The Art, Science, and Technology of Pharmaceutical Compounding*, 2<sup>nd</sup> edition, 301- 324, American Pharmaceutical Association, United States of America.
- Allen, L.V., Ropovich, N.G., dan Ansel, H.C., 2005, *Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems*, 8<sup>th</sup> ed, 352-360, Lippincott William and Wilkinns, Baltimore.
- Alvarez, M.P., Pudney, P.D.A., Hadgraft, J., & Lane, M.E., 2018, Topical Delivery of Climbazole to Mammalian Skin, *International Journal of Pharmaceutics*.
- Andini, T., Yusriadi, & Yuliet, Optimasi Pembentuk Film Polivinil Alkohol dan Humektan Propilen Glikol pada Formula Masker Gel *Peel off* Sari Buah Labu Kuning (*Cucurbita moschata* Duchesne) sebagai Antioksidan, 165-173, *Jurnal Farmasi Galenika* Vol 3(2).
- Andriany, V.H., 2018, Optimasi Emulgel Zinc Oxide Nanopartikel dengan Carbopol 940 sebagai *Gelling Agent* dan Propilen Glikol sebagai Humektan dan Uji Aktivitas Tabir Surya secara *In Vitro*, Universitas Muhammadiyah Surakarta, Surakarta.
- Anonim, 2014, *Farmakope Indonesia*, Ed V, 51, 63, Departemen Kesehatan Republik Indonesia, Jakarta.
- Anonim, 2010, *Riset Kesehatan Dasar*, Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia, Jakarta.
- Ascencio, S.M., Choe, C.S., Meinke, M.C., Müller, R.H., Maksimov, G.V., Wigger-Alberti, W., Lademann, J., & Darvin, M.E., 2016, Confocal Raman Microscopy and Multivariate Statistical Analysis for Determination of Different Penetration Abilities of Caffeine and Propylene Glycol Simultaneously in a Mixture on Porcine Skin *ex vivo*, *European Journal of Pharmaceutics and Biopharmaceutics*.
- Atef, E., & Altuwaijri, N., 2017, Using Raman Spectroscopy in Studying the Effect of Propylene Glycol, Oleic Acid, and Their Combination on the Rat Skin, *American Association of Pharmaceutical Scientists*.
- Barel, O.A., Paye, M. & Mailbach, H.I., 2001, *Handbook of Science and Technology*, 350, 354-356, Marcel Dekker, Inc., New York.
- Barel, O.A., Paye, M. & Mailbach, H.I., 2009, *Handbook of Science and Technology*, 108, Marcel Dekker, Inc., New York.
- Barlow, A.J., & Erginsav, A., 1974, Viscoelastic properties of poly(propylene glycols), 110-114, *Polymer* Vol 16.
- Carrer, V., Alonso, C., Pont, M., Zanuy, M., Cordoba, M., Espinosa, S., Barba, C., Oliver, M.A., Marti, M., & Coderch, L., 2019, Effect of Propylene Glycol on the Skin Penetration of Drugs, *Archives of Dermatological Research*, Springer.
- Chantasart, D., & Li, K.S., 2012, Structure Enhancement Relationship of Chemical
- Dwiastuti, R., 2010, Pengaruh Penambahan CMC (*Carboxymethyl Cellulose*) sebagai *Gelling Agent* dan Propilen Glikol sebagai Humektan dalam Sediaan Gel

- Sunscreen* Ekstrak Kering Polifenol Teh Hijau (*Camellia sinensis* L.), Jurnal Penelitian Vol 13 no 2.
- Endarini, L.H., 2016, *Farmakognosi dan Fitokimia*, 2, Badan Pengembangan dan Pemberdayaan Sumber Daya Manusia kesehatan, Kementrian Kesehatan Indonesia.
- Ertel, K., 2006, *Cosmetic Formulation of Skin Care Product*, 35-36, Taylor & Francis Group, New York.
- Falahi, A., Azizah., S.N., Indriani, E., & Indah, C., 2020, Pengaruh Propilen Glikol dan Menthol sebagai *Enhancer* terhadap Sifat dan Stabilitas Fisik serta Efektifitas Antiinflamasi Emulgel Meloksikam, *Journal of Current Pharmaceutical Sciences* Vol 3 no 2.
- Fasano, W.J., Berge, W.F.T., Banton, M.I., Heneweer, M., & Moore, N.P., 2011, Dermal Penetration of Propylene Glycols : Measured Absorption Across Human Abdominal Skin *in vitro* and Comparison with a QSAR Model, 1664-1670, *Toxicology in Vitro* Vol 25, Elsevier.
- Fiume, M.M., Bergfeld, W.F., Belsito, D.V., Hill, R.A., Klaassen, C.D., Liebler, D., Marks, J.G., Shank, R.C., Slaga., T.J., Snyder, P.W., dan Andersen, F.A., 2012, Safety Assessment of Propylene Glycol, Tripropylene Glycol, and PPGs as Used in Cosmetics, 245s – 260s, *International Journal of Toxicology* Vol 31.
- Garg, A., Aggarwal, D., Garg, S., dan Singla, A.K., 2002, Spreading of Semisolid Formulation, *Pharmaceutical Technology*, 84-102, [www.pharmtech.com](http://www.pharmtech.com)
- Ghaim, J.B., & Volz, E.D., 2001, Skin Cleansing Bars, cit. Barel, A.O., Paye, M., Maibach., H.I., 3<sup>rd</sup> ed, 485-491, *Handbook of Cosmetic Science and Technology*, Marcell Dekker Inc., New York.
- Goyal, A., Kumar, S., Nagpal, M., Singh, I., dan Arora, S., 2011, Potential of Novel Drug Delivery Systems for Herbal Drugs, 138-148, *Ind J Pharm Edu Res* Vol 2.
- Herh, P., Tkachuk, J., Wu, S., Bernzen, M., dan Rudolph, B., 1998, Reology of Pharmaceutical and Cosmetic Semisolid, [www.atsrheosystems.com/PDF%20files/Pharmacy%20Paper.pdf](http://www.atsrheosystems.com/PDF%20files/Pharmacy%20Paper.pdf)
- Hidayawati, E., 2018, Optimasi Sediaan Gel Ekstrak Jahe Merah (*Zingiber officinale Roscoe var rubrum*) Menggunakan *Gelling Agent* Carbopol dan Humektan Propilen Glikol dengan Metode *Simplex Lattice Design*, Universitas Muhammadiyah Surakarta, Sukoharjo.
- Ittiqo, D.H., dan Wahid, A.R., 2018, Optimasi Formula Gel Serbuk Getah *Ashitaba* (*Angelica keiskei* Koidzumi) dan Uji Aktivitas Terhadap Lama Penyembuhan Luka Eksisi pada Kelinci, *Pharmauho* Vol 4(2), Jurnal Farmasi, Sains, dan Kesehatan, Universitas Muhammadiyah Mataram.
- Jawetz, M. A., 1995, *Mikrobiologi Kedokteran (Medical Microbiology)*, Ed. 20, EGC, Jakarta.
- Kurniawan M.F., Sugihartini, N., & Yuwono, T., 2018, Permeabilitas dan Karakteristik Fisik Emulgel Minyak Atsiri Bunga Cengkeh dengan Penambahan *Enhancer*, *Medical Sains* Vol 3 no 1.

- Lachman, L., Lieberman, H.A., dan Kanig, J.L., 2008, *Teori dan Praktek Farmasi Industri*, diterjemahkan oleh Siti Suyatmi, Ed II, 948-952, 961-965, UI Press, Jakarta.
- Lai-Cheong, J.E., & McGrath, J.A., 2009, Structure and Function of Skin, Hair, and Nails, 37(5), 223-6, Medicine (Baltimore).
- Lane, M.E., 2013, Skin Penetration Enhancers, 12-21, International Journal of Pharmaceutics Vol 447.
- Lessmann, H., Schnuch, A., Geier, J., dan Uter, W., 2005, Skin-sensitizing and irritant properties of propylene glycol, University of Erlangen-Nürnberg, Germany.
- Leyden, J.J., & Rawlings, A.V., 2002, *Skin Moisturization*, 245-249, Marcel Dekker Inc, New York.
- Llewelyn, V.K., Berger, L., & Glass, B.D., 2019, Permeability of Frog Skin to Chemicals : Effect of Penetration Enhancers, Heliyon Vol 5, Elsevier.
- Loden, M., 2001, Hydrating Substances, cit. Barel, A.O., Paye, M., dan Maibach, H.I., *Handbook of Cosmetic Science and Techonology*, Marcel Dekker Inc., New York.
- Mahalingam, R.Li.X., & Jasti, B.R., 2008, Semisolid Dosages: Ointments, Creams, and Gels, cit. Gad, S. C., *Pharmaceutical Manufacturing Handbook: Production and Processes*, 279, Wiley-Interscience, New Jersey.
- Melani, H.D., Purwanti, T., dan Soeratri, W., 2005, Korelasi Kadar Propilen Glikol dalam Basis dan Pelepasan Dietilammonium Diklofenak dari Basis Gel Karbopol ETD 2020, Majalah Farmasi Aquadestlangga Vol 5(1).
- Menon, G.K., Lee, S.H., 1998, Ultrastructural Effects of some Solvents and Vehicles on the Stratum Corneum and Other Skin Components : Evidence for an “Extended Mosaic-partitioning Model of the Skin Barrier”, cit. Roberts, M.S., & Walters, K.A., 1998, Dermal Absorption and Toxicity Assessment, Chapter 29, Marcel Dekker, New York.
- Mitsui, T., 1997, *New Cosmetic Science*.Edisi 1, 487-490, Elsevier Science B.V, Amsterdam.
- Moeloek, F.A., 2006, Herbal and Traditional Medicine: National Perspectives and Policies in Indonesia, 293-297, Jurnal Bahan Alam Indonesia Vol 5 (1).
- Moghadam, S.H., Saliaj, E., Wettig, S.D., Dong, C., Ivanova, M.V.J., Huzil, T., & Foldvari, M., 2013, Effect of Chemical Permeation Enhancers on Stratum Corneum Barrier Lipid Organizational Structure and Interferon Alpha Permeability, 2248-2260, Molecular Pharmaceutics Vol 10, American Chemical Society.
- Mulyana, S., 2016, Pengaruh Propilen Glikol terhadap Penetrasi Gel Hesperidin secara *in vitro*, Universitas Tanjungpura.
- Muzzafar, F., Singh, U.K., dan Chauhan, L., 2013. Review on Microemulsion As Futuristic Drug Delivery, 39, International Journal of Pharmacy.
- Nurahmanto, D., Mahrifah, I.R., Azis, R.F.N.I., & Rosyidi, V.A., 2017, Formulasi Sediaan Gel Dispersi Padat Ibuprofen : Studi *Gelling Agent* dan Senyawa

- Peningkat Penetrasi, 96-105, Jurnal Ilmiah Manuntung Vol 3 no 1.
- Nurdianti, L., 2015, Formulasi dan Evaluasi Gel Ibuprofen dengan Menggunakan Viscolam sebagai *Gelling Agent*, Jurnal Kesehatan Bakti Tunas Husada Volume 14 no 1.
- Niazi, 2004, *Handbook of Pharmaceutical Manufacturing Formulation, Liquid Products*, Vol III, 304, CRC Press, Boca Raton
- Noveon, 2002, *Polymer in Semisolid Products*, Bulletin 8, Noveon Inc, Ohio.
- Osborne, D.W., 1990, *Topical Drug Delivery Formulation*, 13-16, 34, 35, Marcell Dekker Inc., New York.
- Pawar, P.D., 2015, Review on Pharmaceutical Excipients, American Journal of Pharmacy & Health Research.
- Qisti, B.W.K., Nurahmanto, D., & Rosyidi, V.A., 2018, Optimasi Propilen Glikol dan Etanol sebagai Peningkat Penetrasi Ibuprofen dalam Sediaan Gel dengan Metode *Simplex Lattice Design*, e-Jurnal Pustaka Vol 6 no 1.
- Retnowati, A.D., 2013, Optimasi Formula Gel Minyak Atsiri Buah Adas (*Foeniculum vulgare*) dengan Kombinasi Propilen Glikol – Carbopol Terhadap Sifat Fisik dan Aktivitas Repelan Pada Nyamuk *Anopheles aconitus* Betina, Universitas Muhammadiyah Surakarta, Surakarta.
- Rieger, M., 2001, *Harry's Cosmetology*, 8th edition, 745-753, Chemical Publishing.
- Rowe, R.C., Sheskey, P.J., & Owen, S.C., 2006, *Handbook of Pharmaceutical Excipients*, Edisi 5, The Pharmaceutical Press, London.
- Santos, P., Watkinson, A.C., Hadgraft, J., & Lane, M.E., 2012, Influence of Penetration Enhancer on Drug Permeation from Volatile Formulations, 260-268, International Journal of Pharmaceutics.
- Santos, P., Watkinson, A.C., Hadgraft, J., & Lane, M.E., 2011, Formulation issues associated with transdermal fentanyl delivery, 155-159, International Journal of Pharmaceutics.
- Senja, R.Y., Nugroho, A.K., dan Setyowati, E.R., 2015, Optimasi Formula Gel Ekstrak Kubis Ungu (*Brassica oleracea* L. var. *capitata* f. *rubra*) Menggunakan *Simplex Lattice Design* dan Pengujian Aktivitas Antioksidan Secara *in vitro*, 171-180, Pharmacia Vol 6 no 2.
- Sheskey, P.J., Cook, W.G., dan Cable, G.C., 2017, *Handbook of Pharmaceutical Excipients*, 795, 906, The Pharmaceutical Press, London.
- Sinko, P.J., 2006, *Martin: Farmasi Fisika dan Ilmu Farmasetika*, 5<sup>th</sup> ed, 706 – 708, EGC, Jakarta.
- Tsabitah, A.F., Zulkarnain, A.K., Wahyuningsih, M.S.H., dan Nugrahaningsih, D.A.A., 2019, Optimasi Carbomer, Propilen Glikol, dan Trietanolamin dalam Formulasi Sediaan Gel Ekstrak Etanol Daun Kembang Bulan (*Tithonia diversifolia*), 111-118, Majalah Farmaseutik Vol 16 no 2.
- Wasitaatmadja, 1997, *Penuntut Kosmetik Medik*, Universitas Indonesia, Jakarta.
- Wasito, H., 2011, *Obat Tradisional Kekayaan Indonesia*, 74-75, Graha Ilmu, Jakarta.
- Wijaya, A., & Utami, L.W., 2018, Uji Fisik Sediaan Gel dengan Ekstrak Daun Wungu (*Graptophyllum pictum* (L) Griff) dengan Kombinasi Humektan Propilen Glikol

- dan Gliserin, 16-22, Akfarindo Vol 3 (1).
- Williams, A.C., & Barry, B.W., 2003, Penetration Enhancers, 603-618, *Advanced Drug Delivery Reviews* 56.
- Yuliani, S.R., 2010, Optimasi Kombinasi Campuran Sorbitol, Gliserol, dan Propilen Glikol dalam Gel *Sunscreen* Ekstrak Etanol *Curcuma manga*, 83-89, *Majalah Farmasi Indonesia*, 21(2).
- Zatz, J.L., & Kushla, G.P., 1996, Gels, cit. Lieberman, H.A., Rieger, M.M., Banker, G.S., *Pharmaceutical Dosage Forms: Disperse System*, 2<sup>nd</sup> ed, 399-421, Marcel Dekker Inc., New York.
- Zatz, J.L., Berry, J.J., & Alderman, D.A., 1996, Viscosity-Imparting Agents in Disperse System, cit. Banker, Gilbert S., Lieberman, H.A., Rieger, Martin M., (Eds.), *Pharmaceutical Dosage Forms: Disperse System Vol 1*, 2<sup>nd</sup>, 291, 304-309, Marcel Dekker Inc., New York.
- Zocchi, G., 2001, Skin-Fell Agents, cit. Barel, A.O., dan Paye, M., 2001, *Handbook of Cosmetic and Technology*, Marcel Dekker Inc., New York.