



## DAFTAR PUSTAKA

- Akhtar, K., Khan, S.A., Khan, S.B., Asiri, A.M., 2019, Scanning Electron Microscopy: Principle and Applications in Nanomaterials Characterization, *Handbook of Materials Characterization*, doi: 10.1007/978-3-319-92955-2\_4.
- Allenspach, C., Timmins, P., Lumay, G., Holman, J., Minko, T., 2021, Loss-in-weight Feeding, Powder Flow and Electrostatic Evaluation for Direct Compression Hydroxypropyl Methylcellulose (HPMC) to Support Continuous Manufacturing, *International Journal of Pharmaceutics*, 596 (2021): 1-14.
- Arisanti, C.I.S., Wiradewi, N.M.A., Wijayanti, N.P.A.D., 2014, Pengaruh Perbandingan Amilum Singkong (*Manihot esculenta* Crantz.) Fully Pregelatinized dan Gom Akasia terhadap Sifat Fisik Eksipien Co-Processing, *Jurnal Farmasi Udayana*, 3(1): 1-8.
- ASTM, 2021, ASTM E1252 – Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis, *Annual book of American Society for Testing and Materials (ASTM) Standards*, Vol.08.01.
- Balfas, R.F., Nanda, M.D., 2019, Uji Waktu Alir dan Uji Kompresibilitas Granul Pati Kentang dengan Metode Granulasi Basah, *Syntax Idea*, 1(5): 1-6.
- Bin, L.K., Gaurav, A., Mandal, U.K., 2019, A Review on Co-Processed Excipients: Current and Future Trend of Excipient Technology, *International Journal of Pharmacy and Pharmaceutical Sciences*, 11(1): 1-9.
- Bunaciu, A.A., Aboul-Enein, H.Y., Fleschin, S., 2011, Recent Applications of Fourier Transform Infrared Spectrophotometry in Herbal Medicine Analysis, *Applied Spectroscopy Reviews*, 46: 251-260.
- Carriere, J., Vaughn, N., Kraber, J., Sobczyk, P., Bronikowski, P., Mazur, J.M., 2019, *Design Expert*, Minneapolis, Statease, USA.
- Chaudhari, P.D., Phatak, A.A., Desai, U., 2012, A Review: Coprocessed Excipients-An Alternative to Novel Chemical Entities, *International Journal of Pharmaceutical and Chemical Sciences*, 1(4): 1-19.
- Damayanti, D., Sari, I.P., Sulaiman, T.N.S., Bestari, A.N., Setiawan, I.M., 2018, The Formulation of Pacing (*Costus speciosus*) Extract Tablet by Using



Avicel®Ph 200 As Filler-Binder and Amylum As Disintegration Agent,  
*Indonesian Journal Pharmacy*, 29(1): 29.

Daud, A., Suriati, Nuzulyanti, 2019, Kajian Penerapan Faktor yang Mempengaruhi Akurasi Penentuan Kadar Air Metode Thermogravimetri, *LUTJANUS*, 24(2): 11-16.

Depkes RI, 1979, *Farmakope Indonesia*, Edisi Ketiga, Depkes RI, Jakarta.

Depkes RI, 2008, *Farmakope Herbal Indonesia*, Edisi Pertama, Depkes RI, Jakarta.

Depkes RI, 2020, *Farmakope Indonesia*, Edisi Keenam, Depkes RI, Jakarta.

Desai, U., Chavan, R., Mhatre, P., Chinchole, R., 2012, A Review: Co-Processed Excipients, *International Journal Pharmaceutical Science Rev and Res.*, 12(2): 93-105.

Echie, F.E., Okor, R.S., 2002, Effect of Acid Treatment on the Consolidation and Plasto-elasticity of Tapioca Powder, *Trop. J. Of Pharm. Resc.*, 1(1): 45-49.

Elisabeth, V., YamLean, P.V.Y., Supriati, H.S., 2018, Formulasi Sediaan Granul dengan Bahan Pengikat Pati Kulit Pisang Goroho (*Musa acuminata* L.) dan Pengaruhnya pada Sifat Fisik Granul, *Pharmacon – Jurnal Ilmiah Farmasi*, 7(4): 1-11.

Enterprise, J., 2018, *SPSS Komplet untuk Mahasiswa*, Elex Media Komputindo, Jakarta.

Fadlelmoula, A., Pinho, D., Carvalho, V.H., Catarino, S.O., Minas, G., 2022, Fourier Transform Infrared (FTIR) Spectroscopy to Analyse Human Blood over the Last 20 Years: A Review towards Lab-on-a-Chip Devices, *Micromachines*, 13(187): 1-20.

Fatmawaty, H.A., Nisa, M., Rezki, R., 2019, *Teknologi Sediaan Farmasi*, Deepublish, Yogyakarta.

Fleming, I., Williams, D., 2020, *Spectroscopic Methods in Organic Chemistry*, 7<sup>th</sup> Edition, Springer, Switzerland.

Frank, O., 2010, Preformulation Studies and Compaction Properties of a New Starch-Based Pharmaceutical Aid, *Research Journal of Pharmaceutical Biology and Chemical Science*, 1(3): 255.

Gibson, M., 2009, *Pharmaceutical Preformulation and Formulation*, 2nd Edition, Informa Healthcare, New York.

Grdesic, P., Paudel, A., Ilic, I.G., 2020, High-Molecular-Weight Hypromellose from Three Different Suppliers: Effect of Compression Speed, Tableting



Equipment, and Moisture on the Compaction, *AAPS PharmSciTech*, 21(203): 1-14.

Hadisoewignyo, L., Teny, G.F., Handayani, E.T., Yunita, B., 2011, Pengaruh Bahan Pengisi pada Tablet Ibuprofen dengan Metode Cetak Langsung, *Majalah Farmasi Indonesia*, 22(4): 279-285.

Halim, M.H.P., Purwanto, U.R.E., Ikasari, E.D., 2020, Preparation and Characterization of A Co-Processed Excipient from Purple Sweet Potato (*Ipomoea batatas* L.) Starch and Avicel PH101, *Journal of Food and Pharmaceutical Sciences*, (3): 344-350.

Hauschild, K., Freyer, K.M.P., 2004, Evaluation of a New Coprocessed Compound Based on Lactose and Maize Starch for Tablet Formulation, *AAPS PharmSciTech*, 6(2): 1-12.

Hidayat, I.R., Zuhrotun, A., Sopyan, I., 2021, Design-expert Software sebagai Alat Optimasi Formulasi Sediaan Farmasi, *Majalah Farmasetika*, 6(1): 99-120.

Huichao, W., Shouying, D., Yang, L., Ying, L., Di, W., 2014, The Application of Biomedical Polymer Material Hydroxy Propyl Methyl Cellulose (HPMC) in Pharmaceutical Preparations, *JCPR*, 6(5): 155-160.

Imtihani, H.N., Alfreeda, S., Arif, J.R.A., 2023, Pengaruh Variasi Disintegran Avicel PH-102 dan Primogel terhadap Karakteristik *Co-Processed Excipient*, *Jurnal Ilmiah Medicamento*, 9(1): 9-15.

International Council of Harmonization, 2009, *ICH Harmonised Tripartite Guideline: Pharmaceutical Development Q8 (R2)*, ICH Expert Working Group, European Union-Japan-USA.

Jankovic, A., Chaudhary, G., Goia, F., 2021, Designing the Design of Experiments (DOE) – An Investigation on the Influence of Different Factorial Designs on the Characterization of Complex Systems, *Energy and Buildings*, 250 (2021): 1-17.

Kokott, M., Lura, A., Breitkreutz, J., Wiedey, R., 2021, Evaluation of Two Novel Co-Processed Excipient for Direct Compression of Orosoluble Tablets and Mini-Tablets, *European Journal of Pharmaceutics and Biopharmaceutics*, 168 (2021): 122-130.

Kusumo, N.N., Mita, S.R., 2016, Review Pengaruh Natural Binder pada Hasil Granulasi Parasetamol, *Jurnal Farmaka*, 14(1): 228-235.

Lachman, L., Lieberman, H.A., Schwartz, J.B., 1990, *Pharmaceutical Dosage Form: Tablets*, Volume II, Edisi Kedua, Marcell Dekker Inc., New York.



Lachmann, Leon, Lieberman, H.A., Kanig, J.L., 1994, *The Theory and Practice of Industrial Pharmacy*, Edisi Ketiga, UI Press, Jakarta.

Main, A., Bhairav, B.A., Saudager, R.B., 2017, Co Processed Excipients for Tabletting: Review Article, *Research J. Pharm and Tech.*, 10(7): 2427 – 2432.

Montgomery, D.C., 2017, *Design and Analysis of Experiments*, Edisi Kesembilan, Wiley, USA.

Moravkar, K.K., Korde, S.D., Bhairav, B.A., Shinde, S.B., Kakulade, S.V., Chalikwar, S.S., 2020, Traditional and Advanced Flow Characterization Techniques: A Platform Review for Development of Solid Dosage Form, *Indian Journal of Pharmaceutical Science*, 82(6): 945 – 957.

Murtini, G., Elisa, Y., 2018, *Teknologi Sediaan Solid*, Kemenkes RI, Jakarta.

Niazi, S.K., 2009, *Handbook of Pharmaceutical Manufacturing Formulations*, Informa Healthcare USA, Inc., New York.

Nisah, K., 2017, Study Pengaruh Kandungan Amilosa dan Amilopektin Umbi-Umbian Terhadap Karakteristik Fisik Plastik Biodegradable dengan Plasticizer Gliserol, *Jurnal Biotik*, Vol. 5 No. 2.

Nurhidayati, D., Warmmiati, 2021, Moisture Analyzer Sartorius Type MA 45 sebagai Alat Uji Kadar Air Gelatin dari Tulang Kelinci, *Majalah Kulit Politeknik ATK Yogyakarta*, 20(2): 95-101.

Nuwamanya, E., Baguma, Y., Emmambux, N., Taylor, J., 2010, Physicochemical and Functional Characteristics of Cassava Starch in Ugandan Varieties and Their Progenies, *J. Plant Breed Crop Science*, 2(1): 1-11.

Odziomek, K., Ushizima, D., Oberbek, P., Puzyn, T., Haranczyk, M., 2016, Scanning Electron Microscopy Image Representativeness: Morphological Data on Nanoparticles, *Journal of Microscopy*, doi: 10.1111/jmi.12461.

Okunlola, A., 2018, Flow, Compaction and Tabletting Properties of Co-Processed Excipients Using Pregelatinized Ofada Rice Starch and HPMC, *Journal Excipients and Food Chemistry*, 9(1): 1-12.

Parikh, D.M., 2021, *Handbook of Pharmaceutical Granulation Technology*, 4<sup>th</sup> Edition, CRC Press, England and Wales.

Pramesti, H.A., Siadi, K.H., Cahyono, E., 2012, Analisis Rasio Kadar Amilosa/Amilopektin dalam Amilum dari Beberapa Jenis Umbi, *Indonesian Journal of Chemical Science*, 1(2): 159 – 163.



- Putra, I.G.N.A.D., Murwanti, R., Rohman, A., Sulaiman, T.N.S., 2018, Physical and Chemical Properties of Native and Fully Pregelatinized Cassava Starch (*Manihot esculenta* Crantz), *Indonesian Journal of Pharmacy*, 29(3): 145-156.
- Qiu, Y., Chen, Y., Zhang, G.G.Z., 2009, *Developing Oral Dosage Forms: Pharmaceutical Theory and Practice*, Elsevier Inc, New York.
- Quraisy, A., 2020, Normalitas Data Menggunakan Uji Kolmogorov-Smirnov dan Sapiro-Wilk, *Journal of Health, Education, Economics, Science, and Technology*, 3(1): 7 – 11.
- Ramadhani, R.A., Riyadi, D.H.S., Triwibowo, B., Kusumaningtyas, R.D., 2017, Review Pemanfaatan Design Expert untuk Optimasi Komposisi Campuran Minyak Nabati sebagai Bahan Baku Sintesis Biodiesel, *Jurnal Teknik Kimia dan Lingkungan*, 1(1): 11-16.
- Reza, S., Quadir, M.A., Haider, S.S., 2003, Comparative Evaluation of Plastic, Hydrophobic, and Hydrophilic Polymers as Matrices for Controlled-Release Drug Delivery, *J Pharm Pharmaceutical Sciences*, 6(2): 282-291.
- Rohman, A., 2011, Application of Fourier Transform Infrared Spectroscopy for Quality Control of Pharmaceutical Products: A Review, *Indonesian J. Pharm*, 23(1): 1-8.
- Rowe, R.C., Sheskey, P.J., Quinn, M.E., 2009, *Handbook of Pharmaceutical Excipients*, 6th Edition, Pharmaceutical Press, USA.
- Saifuddin, A., Rahayu, V., Teruna, H., 2011, *Standarisasi Bahan Obat Alam*, Graha Ilmu, Yogyakarta.
- Sediarso, Saputra, E., Efendi, K., 2018, Ekstrak Biji Petai sebagai Hepatoprotektor Berdasarkan Kadar SGPT, SGOT, dan Histologi Hati Tikus Putih Jantan yang Diinduksi CCL-4, *Jurnal Ilmiah Kesehatan*, 10: 181-189.
- Selvamuthu, D., Das, D., 2018, *Introduction to Statistical Methods, Design of Experiments and Statistical Quality Control*, Springer Nature Singapore Ltd., Singapore.
- Shah, R.B., Tawakkul, M.A., Khan, M.A., 2008, Comparative Evaluation of Flow for Pharmaceutical Powders and Granules, *AAPS PharmSciTech*, 9(1): 250 – 258.
- Shukla, A.K., Iravani, S., 2019, *Green Synthesis, Characterization, and Applications of Nanoparticles: a Volume in Micro and Nano Technologies*, Elsevier Inc., UK.



- Sinko, P.J., 2011, *Martin's Physical Pharmacy and Pharmaceutical Sciences*, 6th Edition, Lippincott Williams and Wilkins, Philadelphia.
- Subramanian, K.S., Janavi, G.J., Marimuthu, S., Kannan, M., Raja, K., Haripriya, S., Sharmila, D.J.S., Moorthy, P.S., 2018, *A Textbook on Fundamentals and Applications of Technology*, DAYA Publishing House, New Delhi.
- Suciati, R., Setiyadi, G., 2021, Optimasi Co-Processed Disintegrant Sodium Starch Glycolate dan Pati Kacang Merah (*Phaseolus vulgaris* L.) sebagai Bahan Penghancur Fast-Disintegrating Tablet Ondansetron Hydrochloride, *Pharmacon: Jurnal Farmasi Indonesia*, 1-16.
- Suh, H.J., Young, S., Duck, G., Hyeock, M., Jin, H., 2020, Effect of Moisture Content on the Heat-Sealing Property of Starch Films from Different Botanical Sources, *Polymer Testing*, 89 (March):1–10.
- Suhery, W.N., Fernando, A., Giovanni, B., 2016, Perbandingan Metode Granulasi Basah dan Kempa Langsung terhadap Sifat Fisik dan Waktu Hancur *Orally Disintegrating Tablets* (ODTs) Piroksikam, *Jurnal Sains Farmasi & Klinis*, 2(2): 138 – 144.
- Sulaiman, T.N.S., 2007, *Teknologi dan Formulasi Sediaan Tablet*, Edisi Pertama, Pustaka Laboratorium Teknologi Farmasi UGM, Yogyakarta
- Sulaiman, T.N.S., Febriani, H.T., 2010, Produksi Material Co-Processed dari Amilum Manihot dan Sukrosa dengan Metode Spray Drying, *Jurnal Majalah Farmaseutik*, 6(3): 27-34.
- Sulaiman, T.N.S., Sulaiman, S., 2020, Review: Eksipien untuk Pembuatan Tablet dengan Metode Kempa Langsung, *Journal of Pharmaceutical and Sciences*, 3(2): 64-76.
- Szumilo, M., Belniak, P., Swiader, K., Holody, E., Poleszak, E., 2017, Assessment of Physical Properties of Granules with Paracetamol and Caffeine, *Saudi Pharmaceutical Journal*, 25(6): 900-905.
- Thapa, P., Tripathi, J., Jeong, S.H., 2019, Recent Trends and Future Perspective of Pharmaceutical Wet Granulation for Better Process Understanding and Product Development, *Powder Technology*, 344 (2019): 864-882.
- Thulluru, A., Madhavi, C., Nandini, K., Sirisha, S., Spandana, D., 2019, Co-Processed Excipients: New Era in Pharmaceuticals, *Asian Journal of Research in Pharmaceutical Sciences*, 9(1): 1-6.
- United States Pharmacopeia, 2021, *The United States Pharmacopeia, USP 44/The National Formulary*, NF 39, U.S. Pharmacopeial Convention, Inc., Rockville.



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Voight, R., 1994, *Buku Pelajaran Teknologi Farmasi*, Gadjah Mada University Press, Yogyakarta.

Zaman, N.N., Sopyan, I., 2020, Metode Pembuatan dan Kerusakan Fisik Sediaan Tablet, *Majalah Farmasetika*, 5(2): 1-12.