

DAFTAR PUSTAKA

- Adiningsih, N., & Gozali, D. (2022). *REVIEW ARTIKEL: PENINGKATAN KELARUTAN OBAT CARVEDILOL*. 20(1).
- Allawadi, D., Singh, N., Singh, S., & Arora, S. (2013). SOLID DISPERSIONS: A REVIEW ON DRUG DELIVERY SYSTEM AND SOLUBILITY ENHANCEMENT. *International Journal of Pharmaceutical Sciences and Research*, 4(6).
- Budiman, A., Lailasari, E., Nurani, N. V., Yunita, E. N., Anastasya, G., Aulia, R. N., Lestari, I. N., Subra, L., & Aulifa, D. L. (2023). Ternary Solid Dispersions: A Review of the Preparation, Characterization, Mechanism of Drug Release, and Physical Stability. *Pharmaceutics*, 15(8), 2116. <https://doi.org/10.3390/pharmaceutics15082116>
- Butar-butur, M. E. T., Wathoni, N., Ratih, H., & Wardhana, Y. W. (2023). Solid Dispersion Technology for Improving the Solubility of Antiviral Drugs. *Pharmaceutical Sciences and Research (PSR)*, 10(1).
- Cao, Q.-R., Liu, Y., Xu, W.-J., Lee, B.-J., Yang, M., & Cui, J.-H. (2012). Enhanced oral bioavailability of novel mucoadhesive pellets containing valsartan prepared by a dry powder-coating technique. *International Journal of Pharmaceutics*, 434(1–2), 325–333. <https://doi.org/10.1016/j.ijpharm.2012.05.076>
- Chavan, R. B., Rathi, S., Jyothi, V. G. S. S., & Shastri, N. R. (2019). Cellulose based polymers in development of amorphous solid dispersions. *Asian Journal of Pharmaceutical Sciences*, 14(3), 248–264. <https://doi.org/10.1016/j.ajps.2018.09.003>
- Chella, N., Daravath, B., Kumar, D., & Tadikonda, R. R. (2016). Formulation and Pharmacokinetic Evaluation of Polymeric Dispersions Containing Valsartan. *European Journal of Drug Metabolism and Pharmacokinetics*, 41(5), 517–526. <https://doi.org/10.1007/s13318-015-0290-5>
- Chella, N., & Tadikonda, R. (2015). Melt dispersion granules: Formulation and evaluation to improve oral delivery of poorly soluble drugs – a case study with valsartan. *Drug Development and Industrial Pharmacy*, 41(6), 888–897. <https://doi.org/10.3109/03639045.2014.911308>
- Cooper, A. (2015). *Biophysical chemistry*. Royal Society of Chemistry.
- De Castro, L. M. L., De Souza, J., Caldeira, T. G., De Carvalho Mapa, B., Soares, A. F. M., Pegorelli, B. G., Della Croce, C. C., & Barcellos, N. M. S. (2020). The Evaluation of Valsartan Biopharmaceutics Properties. *Current Drug Research Reviews*, 12(1), 52–62. <https://doi.org/10.2174/2589977511666191210151120>
- Diaz, D. A., Colgan, S. T., Langer, C. S., Bandi, N. T., Likar, M. D., & Van Alstine, L. (2016). Dissolution Similarity Requirements: How Similar or Dissimilar Are the Global Regulatory Expectations? *The AAPS Journal*, 18(1), 15–22. <https://doi.org/10.1208/s12248-015-9830-9>

- DrugBank. (2023). *Valsartan*. <https://www.drugbank.ca/drugs/DB00177>
- Elisabeth, V., YamLean, P., & Supriati, H. S. (2018). Formulasi Sediaan Granul Dengan Bahan Pengikat Pati Kulit Pisang Goroho (*Musa Acuminata* L.) dan Pengaruhnya Pada Sifat Fisik Granul. *Jurnal Ilmiah Farmasi*, 7(4).
- Emara, L. H., Badr, R. M., & Abd Elbary, A. (2002). Improving the Dissolution and Bioavailability of Nifedipine Using Solid Dispersions and Solubilizers. *Drug Development and Industrial Pharmacy*, 28(7), 795–807. <https://doi.org/10.1081/DDC-120005625>
- Falk, M. L., & Langer, J. S. (2011). Deformation and Failure of Amorphous, Solidlike Materials. *Annual Review of Condensed Matter Physics*, 2(1), 353–373. <https://doi.org/10.1146/annurev-conmatphys-062910-140452>
- Fan, N., He, Z., Ma, P., Wang, X., Li, C., Sun, J., Sun, Y., & Li, J. (2018). Impact of HPMC on inhibiting crystallization and improving permeability of curcumin amorphous solid dispersions. *Carbohydrate Polymers*, 181, 543–550. <https://doi.org/10.1016/j.carbpol.2017.12.004>
- Filho, G. R., De Assunção, R. M. N., Vieira, J. G., Meireles, C. D. S., Cerqueira, D. A., Da Silva Barud, H., Ribeiro, S. J. L., & Messaddeq, Y. (2007). Characterization of methylcellulose produced from sugar cane bagasse cellulose: Crystallinity and thermal properties. *Polymer Degradation and Stability*, 92(2), 205–210. <https://doi.org/10.1016/j.polymdegradstab.2006.11.008>
- Fouad, S. A., Malaak, F. A., El-Nabarawi, M. A., Abu Zeid, K., & Ghoneim, A. M. (2021). Preparation of solid dispersion systems for enhanced dissolution of poorly water soluble diacerein: In-vitro evaluation, optimization and physiologically based pharmacokinetic modeling. *PLOS ONE*, 16(1), e0245482. <https://doi.org/10.1371/journal.pone.0245482>
- Fudholi, A. (2013). *Disolusi & Pelepasan In Vitro*. Pustaka Pelajar.
- Gill, P., Moghadam, T. T., & Ranjbar, B. (2010). *Differential Scanning Calorimetry Techniques: Applications in Biology and Nanoscience*. 21(4).
- Grdešič, P., Vrečer, F., & Ilić, I. (2016). Flow and compaction properties of hypromellose: New directly compressible versus the established grades. *Drug Development and Industrial Pharmacy*, 42(11), 1877–1886. <https://doi.org/10.1080/03639045.2016.1181079>
- Griffiths, P., & Haseth, J. (2007). *Fourier Transform Infrared Spectrometry* (2 ed.). John Wiley & Sons.
- Gupta, D. K., Negi, R., Kala, S., Juyal, D., & Geeta, R. (2014). *A REVIEW ON SOLID DISPERSION: A MODERN FORMULATION APPROACH IN DRUG DELIVERY SYSTEM*. 2(4).
- Hallouard, F., Mehenni, L., Lahiani-Skiba, M., Anouar, Y., & Skiba, M. (2016). Solid Dispersions for Oral Administration: An Overview of the Methods for their Preparation. *Current Pharmaceutical Design*, 22(32), 4942–4958. <https://doi.org/10.2174/1381612822666160726095916>

- Hamed, R., & Alnadi, S. H. (2018). Transfer Behavior of the Weakly Acidic BCS Class II Drug Valsartan from the Stomach to the Small Intestine During Fasted and Fed States. *AAPS PharmSciTech*, 19(5), 2213–2225. <https://doi.org/10.1208/s12249-018-1028-x>
- Harris, D. (2014). *QUANTITATIVE CHEMICAL ANALYSIS* (8 ed.). Clancy Marshall.
- Ibrahim, M. (2015). INVESTIGATION ON THERMAL STABILITY AND PURITY DETERMINATION OF TWO ANTIHYPERTENSIVE DRUGS, VALSARTAN AND LOSARTAN POTASSIUM. *Int J Curr Pharm Res*, 7(3), 64–69.
- Jambekhar, S., & Breen, P. (2012). *Basic Pharmacokinetics* (Second). Pharmaceutical Press.
- Jani, B. R., & Shah, S. V. (2014). *Development and Validation of Analytical Method for Simultaneous Estimation of Valsartan and Pioglitazone Hydrochloride by Simultaneous Equation Method*.
- Jessica, A., Sari, E., Yenti, R., & Zaini, E. (2023). Pembentukan dan Karakterisasi Dispersi Padat Kandesartan Sileksetil-HPMC dengan Teknik Solvent Co-Evaporation. *Jurnal Sains Farmasi & Klinis*, 10(1), 71. <https://doi.org/10.25077/jsfk.10.1.71-77.2023>
- Kanaujia, P., Lau, G., Ng, W. K., Widjaja, E., Schreyer, M., Hanefeld, A., Fischbach, M., Saal, C., Maio, M., & Tan, R. B. H. (2011). Investigating the effect of moisture protection on solid-state stability and dissolution of fenofibrate and ketoconazole solid dispersions using PXRD, HSDSC and Raman microscopy. *Drug Development and Industrial Pharmacy*, 37(9), 1026–1035. <https://doi.org/10.3109/03639045.2011.558091>
- Kannan, M. (2018). Scanning Electron Microscopy: Principle, Components and Applications. Dalam *A Textbook on Fundamentals and Applications of Nanotechnology* (hlm. 81–92). Daya Publishing House®.
- Kawabata, Y., Wada, K., Nakatani, M., Yamada, S., & Onoue, S. (2011). Formulation design for poorly water-soluble drugs based on biopharmaceutics classification system: Basic approaches and practical applications. *International Journal of Pharmaceutics*, 420(1), 1–10. <https://doi.org/10.1016/j.ijpharm.2011.08.032>
- Krishnaiah, Y. S. R. (2010). Pharmaceutical Technologies for Enhancing Oral Bioavailability of Poorly Soluble Drugs. *Journal of Bioequivalence & Bioavailability*, 02(02). <https://doi.org/10.4172/jbb.1000027>
- Kumar, A., Negi, Y. S., Bhardwaj, N. K., & Choudhary, V. (2012). Synthesis and characterization of methylcellulose/PVA based porous composite. *Carbohydrate Polymers*, 88(4), 1364–1372. <https://doi.org/10.1016/j.carbpol.2012.02.019>
- Lambert, J., Gronert, S., Shurvell, H., Lightner, D., & Cooks, R. (2014). *Organic Structural Spectroscopy* (second). Pearson Education.
- Li, C. L., Martini, L. G., Ford, J. L., & Roberts, M. (2010). The use of hypromellose in oral drug delivery. *Journal of Pharmacy and Pharmacology*, 57(5), 533–546. <https://doi.org/10.1211/0022357055957>

- Li, N., Cape, J. L., Mankani, B. R., Zemlyanov, D. Y., Shepard, K. B., Morgen, M. M., & Taylor, L. S. (2020). Water-Induced Phase Separation of Spray-Dried Amorphous Solid Dispersions. *Molecular Pharmaceutics*, *17*(10), 4004–4017. <https://doi.org/10.1021/acs.molpharmaceut.0c00798>
- Long, M., & Chan, Y. (2009). *Dissolution Testing of Solid Products*. Developing Solid Oral Dosage Forms.
- Mahapatra, A. K., Murthy, P. N., Biswal, S., Mahapatra, A. P. K., & Pradhan, S. P. (2011). Dissolution Enhancement and Physicochemical Characterization of Valsartan in Solid Dispersions with β -CD, HP β -CD, and PVP K-30. *Dissolution Technologies*, *18*(1), 39–45. <https://doi.org/10.14227/DT180111P39>
- Makvana, C., & Sahoo, S. (2019). Spectrophotometric Method Development and Validation for Simultaneous Estimation of Nebivolol hydrochloride and Valsartan in Bulk and Combined Pharmaceutical Dosage Form in Release Media. *International Journal of Pharmaceutical Sciences and Drug Research*, *11*(06). <https://doi.org/shi>
- Malkawi, R., Malkawi, W. I., Al-Mahmoud, Y., & Tawalbeh, J. (2022). Current Trends on Solid Dispersions: Past, Present, and Future. *Advances in Pharmacological and Pharmaceutical Sciences*, *2022*, 1–17. <https://doi.org/10.1155/2022/5916013>
- Mašková, E., Kubová, K., Raimi-Abraham, B. T., Vllasaliu, D., Vohlídalová, E., Turánek, J., & Mašek, J. (2020). Hypromellose – A traditional pharmaceutical excipient with modern applications in oral and oromucosal drug delivery. *Journal of Controlled Release*, *324*, 695–727. <https://doi.org/10.1016/j.jconrel.2020.05.045>
- Medarević, D., Cvijić, S., Dobričić, V., Mitrić, M., Djuriš, J., & Ibrić, S. (2018). Assessing the potential of solid dispersions to improve dissolution rate and bioavailability of valsartan: In vitro-in silico approach. *European Journal of Pharmaceutical Sciences*, *124*, 188–198. <https://doi.org/10.1016/j.ejps.2018.08.026>
- Mehatha, A. K., Suryadevara, V., Deshmukh, A. M., & Sambath, L. P. (2014). *Formulation and Optimization of Ezetimibe Containing Solid Dispersions Using Kollidon VA64*.
- National Center for Biotechnology Information. (2023). *PubChem Compound Summary for CID 60846, Valsartan* [dataset]. <https://pubchem.ncbi.nlm.nih.gov/compound/Valsartan>
- Ozon, E. A., Novac, M., Gheorghe, D., Musuc, A. M., Mitu, M. A., Sarbu, I., Anuta, V., Rusu, A., Petrescu, S., Atkinson, I., & Lupuliasa, D. (2022). Formation and Physico-Chemical Evaluation of Nifedipine-hydroxypropyl- β -cyclodextrin and Nifedipine-methyl- β -cyclodextrin: The Development of Orodispersible Tablets. *Pharmaceutics*, *15*(8), 993. <https://doi.org/10.3390/ph15080993>
- Pandi, P., Bulusu, R., Kommineni, N., Khan, W., & Singh, M. (2020). Amorphous solid dispersions: An update for preparation, characterization, mechanism on

- bioavailability, stability, regulatory considerations and marketed products. *International Journal of Pharmaceutics*, 586, 119560. <https://doi.org/10.1016/j.ijpharm.2020.119560>
- Patel, N. G., & Serajuddin, A. T. M. (2022). Moisture sorption by polymeric excipients commonly used in amorphous solid dispersion and its effect on glass transition temperature: I. Polyvinylpyrrolidone and related copolymers. *International Journal of Pharmaceutics*, 616, 121532. <https://doi.org/10.1016/j.ijpharm.2022.121532>
- Prasanthi, S., & Vidyavanthi, M. (2017). *FORMULATION AND OPTIMIZATION OF BUOYANT IN SITU GELLING SYSTEM OF VALSARTAN USING NATURAL POLYMER*. 09(10).
- Qian, F., Wang, J., Hartley, R., Tao, J., Haddadin, R., Mathias, N., & Hussain, M. (2012). Solution Behavior of PVP-VA and HPMC-AS-Based Amorphous Solid Dispersions and Their Bioavailability Implications. *Pharmaceutical Research*, 29(10), 2766–2776. <https://doi.org/10.1007/s11095-012-0695-7>
- Rajesh, K., & Yu, L. (2008). *Biopharmaceutics Applications in Drug Development*. Springer Science+Business Media, LLC.
- Ramadhana, A. F., Chaerunisa, A. Y., & Sopyan, I. (2021). Dispersi Padat Sebagai Metode Peningkatan Kelarutan Bahan Obat Dalam Tablet: Formulasi Dan Karakterisasi. *Farmaka*, 19(2).
- Rohama, Melviani, & Noval. (2022). Optimasi Formulasi Sediaan Tablet Effervescent dari Ekstrak Etanol Tanaman Kalangkala (*Litsea angulata*) sebagai Antioksidan Menggunakan Metode SLD (Simple Lattice Design). *Jurnal Surya Medika*, 8(3). <https://doi.org/10.33084/jsm.vxix.xxx>
- Rowe, R., Sheskey, P., & Quinn, M. (2009). *Handbook of Pharmaceutical Excipients* (6 ed.). Pharmaceutical Press.
- Salah Attia, M., Ali Hasan, A., Ghazy, F.-E. S., & Gomaa, E. (2021). Solid Dispersion as a Technical Solution to Boost the Dissolution Rate and Bioavailability of Poorly Water-Soluble Drugs. *Indian Journal of Pharmaceutical Education and Research*, 55(2s), s327–s339. <https://doi.org/10.5530/ijper.55.2s.103>
- Santos Júnior, A. D. F., Barbosa, I. S., Santos, V. L. D., Silva, R. L., & Caetite Junior, E. (2014). Test of dissolution and comparison of in vitro dissolution profiles of coated ranitidine tablets marketed in Bahia, Brazil. *Brazilian Journal of Pharmaceutical Sciences*, 50(1), 83–89. <https://doi.org/10.1590/S1984-82502011000100008>
- Sapkal, S., Babhulkar, M., Rathi, A., Mehetre, G., & Narkhede, M. (2013). An Overview On The Mechanisms Of Solubility And Dissolution Rate Enhancement In Solid Dispersion. *International Journal of PharmTech Research*, 5(1), 31–39.
- Sareen, S., Joseph, L., & Mathew, G. (2012). Improvement in solubility of poor water-soluble drugs by solid dispersion. *International Journal of Pharmaceutical Investigation*, 2(1), 12. <https://doi.org/10.4103/2230-973X.96921>

- Savjani, K. T., Gajjar, A. K., & Savjani, J. K. (2012). Drug Solubility: Importance and Enhancement Techniques. *ISRN Pharmaceutics*, 2012, 1–10. <https://doi.org/10.5402/2012/195727>
- Saydam, M., & Takka, S. (2007). *BIOAVAILABILITY FILE: VALSARTAN*.
- Seftian, M. (2023). *Pengembangan dan Karakterisasi Dispersi Padat Valsartan dengan PVP-VA Ko-polimer dan Poloxamer 407 sebagai Pembawa*. Universitas Gadjah Mada.
- Sekizaki, H., Danjo, K., Eguchi, H., Yonezawa, Y., Sunada, H., & Otsuka, A. (1995). Solid-State Interaction of Ibuprofen with Polyvinylpyrrolidone. *Chemical and Pharmaceutical Bulletin*, 43(6), 988–993. <https://doi.org/10.1248/cpb.43.988>
- Setyawan, D., & Zaini, E. (2018). *Polimorf Bahan Aktif Farmasi*. Airlangga University Press.
- Shi, N.-Q., Lei, Y.-S., Song, L.-M., Yao, J., Zhang, X.-B., & Wang, X.-L. (2013). Impact of amorphous and semicrystalline polymers on the dissolution and crystallization inhibition of pioglitazone solid dispersions. *Powder Technology*, 247, 211–221. <https://doi.org/10.1016/j.powtec.2013.06.039>
- Siddiqui, N., Husain, A., Chaudhry, L., Alam, M. S., Mitra, M., & Bhasin, P. S. (2011). Pharmacological and Pharmaceutical Profile of Valsartan: A Review. *Journal of Applied Pharmaceutical Science*, 01(04).
- SPECIALTY ELECTRONIC MATERIALS UK. (2017). *SAFETY DATA SHEET METHOCEL™ E6 Premium LV Hydroxypropyl* (Hydroxypropyl methyl cellulose; 6.2) [dataset].
- Sujatno, A., Salam, R., Bandriyana, B., & Dimiyati, A. (2017). STUDI SCANNING ELECTRON MICROSCOPY (SEM) UNTUK KARAKTERISASI PROSES OXIDASI PADUAN ZIRKONIUM. *Jurnal Forum Nuklir*, 9(1), 44. <https://doi.org/10.17146/jfn.2015.9.1.3563>
- Sunkara, G., Bende, G., Mendonza, A. E., Solar-Yohay, S., Biswal, S., Neelakantham, S., Wagner, R., Flarakos, J., Zhang, Y., & Jarugula, V. (2014). Bioavailability of valsartan oral dosage forms: Clinical Pharmacology in Drug Development. *Clinical Pharmacology in Drug Development*, 3(2), 132–138. <https://doi.org/10.1002/cpdd.56>
- Susanti, I. (2019). REVIEW: PENGARUH MEDIUM DISOLUSI DAN UPAYA PENINGKATAN PERMEABILITAS METFORMIN. *Farmaka*, 17(1), 98.
- Syarifah, A., Suhesti, T. S., & Rehana. (2022). Karakteristik Fisik Morfologi, pH, dan Waktu Alir Serbuk Serat Ampas Kelapa sebagai Bahan Pengisi Sediaan Farmasi. *Jurnal Sains dan Kesehatan*, 4(3). <https://doi.org/10.25026/jsk.v4i3.1105>
- Szafraniec-Szczęsny, J., Antosik-Rogó , A., Kurek, M., Gawlak, K., Górska, A., Peralta, S., Knapik-Kowalczyk, J., Kramarczyk, D., Paluch, M., & Jachowicz, R. (2021). How Does the Addition of Kollidon®VA64 Inhibit the Recrystallization and Improve Ezetimibe Dissolution from Amorphous Solid Dispersions? *Pharmaceutics*, 13(2), 147. <https://doi.org/10.3390/pharmaceutics13020147>

- Tachibana, T., & Nakamura, A. (1965). A methode for preparing an aqueous colloidal dispersion of organic materials by using water-soluble polymers: Dispersion of B-carotene by polyvinylpyrrolidone. *Kolloid-Zeitschrift & Zeitschrift Für Polymere*, 203(2), 130–133. <https://doi.org/10.1007/BF01507758>
- Tekade, A. R., & Yadav, J. N. (2020). A Review on Solid Dispersion and Carriers Used Therein for Solubility Enhancement of Poorly Water Soluble Drugs. *Advanced Pharmaceutical Bulletin*, 10(3), 359–369. <https://doi.org/10.34172/apb.2020.044>
- Tran, P., Pyo, Y.-C., Kim, D.-H., Lee, S.-E., Kim, J.-K., & Park, J.-S. (2019). Overview of the Manufacturing Methods of Solid Dispersion Technology for Improving the Solubility of Poorly Water-Soluble Drugs and Application to Anticancer Drugs. *Pharmaceutics*, 11(3), 132. <https://doi.org/10.3390/pharmaceutics11030132>
- Vasconcelos, T., Sarmiento, B., & Costa, P. (2007). Solid dispersions as strategy to improve oral bioavailability of poor water soluble drugs. *Drug Discovery Today*, 12(23–24), 1068–1075. <https://doi.org/10.1016/j.drudis.2007.09.005>
- Wagh, V. T., Gilhotra, R. M., & Wagh, R. D. (2020). Solid Dispersion (Kneading) Technique: A Platform for Enhancement Dissolution Rate of Valsartan Poorly Water Soluble Drug. *INTERNATIONAL JOURNAL OF PHARMACEUTICAL QUALITY ASSURANCE*, 11(01), 20–24. <https://doi.org/10.25258/ijpqa.11.1.3>
- Xu, W., Sun, Y., Du, L., Chistyachenko, Y. S., Dushkin, A. V., & Su, W. (2018). Investigations on solid dispersions of valsartan with alkalizing agents: Preparation, characterization and physicochemical properties. *Journal of Drug Delivery Science and Technology*, 44, 399–405. <https://doi.org/10.1016/j.jddst.2018.01.012>
- Xu, W.-J., Xie, H.-J., Cao, Q.-R., Shi, L.-L., Cao, Y., Zhu, X.-Y., & Cui, J.-H. (2016). Enhanced dissolution and oral bioavailability of valsartan solid dispersions prepared by a freeze-drying technique using hydrophilic polymers. *Drug Delivery*, 23(1), 41–48. <https://doi.org/10.3109/10717544.2014.903012>
- Yu, J. Y., Kim, J. A., Joung, H. J., Ko, J. A., & Park, H. J. (2020). Preparation and characterization of curcumin solid dispersion using HPMC. *Journal of Food Science*, 85(11), 3866–3873. <https://doi.org/10.1111/1750-3841.15489>