

BAB 5

SIMPULAN

5.1. Simpulan

Berdasarkan data penelitian yang telah diinterpretasikan, dapat ditarik kesimpulan :

- Tablet likuisolid ibuprofen yang menggunakan polimer hidrofilik PVP K-30 dan PEG 400 sebagai pelarut *non volatile* dapat meningkatkan disolusi ibuprofen dibandingkan dengan tablet ibuprofen konvensional (non likuisolid).
- Penambahan polimer hidrofilik PVP K-30 dapat meningkatkan konstanta laju disolusi tablet likuisolid ibuprofen dengan PEG 400 sebagai pelarut *non volatile*. Formula B, C, dan D mempunyai konstanta laju disolusi lebih besar dibandingkan formula A. Formula D dengan konsentrasi polimer hidrofilik PVP K-30 sebesar 10% dari *liquid medication* merupakan formula yang memiliki konstanta laju disolusi terbesar dibandingkan dengan ketiga formula lainnya.

5.2. Alur Penelitian Selanjutnya

Dapat dilakukan penelitian tablet likuisolid dengan mencari formula optimum berdasarkan berbagai faktor seperti konsentrasi obat dalam pelarut, konsentrasi polimer, konsentrasi *carrier*, dan perbandingan antara *carrier* dan *coating*.

DAFTAR PUSTAKA

- Anonim, 1979, **Farmakope Indonesia**, ed. III, Departemen Kesehatan RI, Jakarta, 6-8.
- Anonim, 1995, **Farmakope Indonesia**, ed. IV, Departemen Kesehatan RI, Jakarta, 4, 166, 449-450, 488-489, 515, 683, 783-784, 999-1000.
- Anonim, 1997, **AHFS**, Drug Information AMERICAN Society of Health System Pharmacist, Inc., Bethesda, 1499-1504.
- Anonim, 2007, **US Pharmacopeia XXX**, US Pharmacopeial Convention Inc., Rockville.
- Anonim, 2009, **Petunjuk Operasional Penerapan Cara Pembuatan Obat Yang Baik 2006**, Badan Pengawasan Obat dan Makanan RI, Jakarta, 585.
- Anonim, 2010. http://en.wikipedia.org/wiki/PEG_400.
- Anonim, 2011. http://wellspringchem.com/html_products/Microcrystalline-Cellulose-PH102-126.html.
- Banakar, U.V., 1992, **Pharmaceutical Disolution Testing**, Marcel Dekker Inc., New York, 19-25.
- Banker, G.S. and N.R. Anderson, 1986, Tablet, in: **The Theory and Practice of Industrial Pharmacy: Tablet**, L. Lachman, H.A. Lieberman, and J.L. Kanig (Eds.), 3rd ed., Lea and Febiger, Philadelphia, 259, 299, 316 – 329.
- Banker,G.S. and C.T. Rhodes, 1996, **Modern Pharmaceutics**, 3rd ed., Marcel Dekker Inc., New York, 341 – 348.
- Bolton, S., 1990, **Pharmaceutical Statistic: Practical and Clinical Applications**, 2nd ed., Marcel Dekker Inc., New York, 324-427.
- Davies, P., 2001, Oral Solid Dosage Forms, in: **Pharmaceutical Preformulation and Formulation: A Practical Guide from Candidate**

Drug Selection to Commercial Dosage Form, M. Gibson (Ed.), vol. 199, 2nd ed., Informa Healthcare USA, Inc., New York, 373.

Dibbern, H.W., R.M. Muller, and E. Wirbitzki, 2002, **UV and IR Spectra: Pharmaceutical Substances (UV and IR) and Pharmaceutical and Cosmetic Excipients (IR)**, Editio Cantor Verlag, Germany.

Duchene, D., 1983, Tablet Disintegration, In: **Topic in Pharmaceutical Science**, P.D. Breimer, and P. Spesier (Eds.), Proceeding of The 43rd International Congress of Pharmaceutical, Amsterdam – New York – Oxford, 387 – 399.

Fierse, E. F. and A. T. Hagen, 1986, Pre formulation, In: **The Theory and Practice of Industrial Pharmacy**, L. Lachman, H. A. Lieberman, and J. L. Kanig (Eds.), 3rd ed., Lea and Febiger, Philadelphia, 183-1.

Forner, D.E., N.R. Anderson, G.S. Banker, T.W. Rosanske, and R.E. Gordon, 1990, Granulation and Tablet Characteristic, In: **Pharmaceutical Dosage Form**, L. Lachman, H.A. Lieberman, and J.B. Schwartz (Eds.), vol. 2, 2nd ed., Marcel Dekker Inc., New York, 248-338.

Forner, D.E., N.R. Anderson, G.S. Banker, T.W. Rosanske, and R.E. Gordon, 1981, Granulation and Tablet Characteristic, In: **Pharmaceutical Dosage Form**, H. A. Lieberman, L. Lachman, and J.B. Schwartz (Eds.), Vol. 2, , Marcel Dekker,Inc., New York, 109 – 143, 188 – 190.

Green, J.M., 1996, A Practical Guide to Analytical Method Validition, **Analytical Chemistry**, 68, 305-309.

Gubbi S. and R. Jarag, 2009, Liquisolid Technique for Enhancement of Dissolution Properties of Bromhexine Hydrochloride, **J. Pharm**, 2(2), 382 – 386.

Hartono, 2004, **Statistik untuk Penelitian**, Lembaga Studi Filsafat, Kemasyarakatan, Kependidikan, dan Perempuan (LSFK₂P) bekerja sama dengan pustaka pelajar, Yogyakarta, 236.

Javadzadeh, Y., B. J. Navimipour, and A. Nokhodchi, 2007, Liquisolid Technique for Dissolution Rate Enhancement of a High Dose Water

Insoluble Drug (Carbamazepine), **International Journal of Pharmaceutics**, 341, 26 – 34.

Javadzadeh, Y., H. Shariati, E. Movahhed-Danesh, and A. Nokhodchi, 2009, Effect of some Commercial Grades of Microcrystalline Cellulose on Flowability, Compressibility, and Dissolution Profile of Piroxicam Liquisolid Compacts, **Drug Development and Industrial Pharmacy**, 35, 243-251.

Karmarkar, A.B., I.D.Gonjari, A.H. Hosmani, P.N. Dhabale, and S.B. Bhise, 2009^a, Liquisolid Tablets: A Novel Approach for Drug Delivery, **International Journal of Health Research**, 2(1), 45-50.

Karmarkar, A.B., I.D.Gonjari, A.H. Hosmani, P.N. Dhabale, and S.B. Bhise, 2009^b, Dissolution Rate Enhancement of Fenofibrat using Liquisolid Tablet technique, **Latin American Journal of Pharmacy**, 28(2), 219.

Khan, K.A., 1975, The Concept of Dissolution Efficiency. **J. Pharm**, 27(1), 48-49.

Kibbe, A.H. , 2000, **Handbook of Pharmaceutical Excipients**, 3rd ed., The Pharmaceutical Press, London, 102, 143, 305, 501, 555.

Langenbucher, F., 1972, Linearization of Dissolution Rate Curve by Weibull Distribution, **Journal of Pharmaceutical Sciences**, 24, 979-981.

Marin, M.V. Margarit, and G.E. Salcedo, "Characterization and solubility study of solid dispersions of flunarizine and polyvinylpyrrolidone," II Farmaco., vol. 57, pp. 723-727, 2002.

Martin, A., J. Swarbrick, and A. Cammarata, 1983, **Physical Pharmacy**, 3rd ed., Lea & Febiger, Philadelphia, 845-850.

Martin, A. N., 1993, *Physical Pharmacy and Clinical Pharmacokinetics*, 3th Edition, Marcel Dekker, Inc, New York, pp. 152-155.

Nokhodchi. 2005, The Effect of Type and Concentration of Vehicles on the Dissolution Rate of a Poorly Soluble Drug (Indomethacin) From Liquisolid Compacts, **J. Pharm**, 8(1):18-25.

Ohwoavworhua, F.O., T.A.Adelakun, and A.O. Okhamafe, 2009, Processing Pharmaceutical Grade Microcrystalline Cellulose from Groundnut Husk: Extraction Methods and Characterization, **International Journal of Green Pharmacy**, 3(2), 97-104.

Parrott, E.L., 1971, **Pharmaceutical Technology Fundamental Pharmaceutics**, 3rd ed., Burgess Publishing Company, Minneapolis, 17-19, 82, 160-162.

Peck, G.E., G.J. Baley., V.E.McCurdy, and G.S.Banker, 1989, Tablet Formulation and Design, in: **Pharmaceutical Dosage Forms: Tablets**, L. Lachman, H.A. Lieberman, and J.B. Schwartz (Eds.), vol. 1, 2nd ed., Marcell Dekker Inc., New York, 88-127.

Reynolds, J.E.F., 1982, **Martindale: The Extra Pharmacopoeia**, 28th ed., The Pharmaceutical Press, London, 349.

Rosen, M.J., 1978, *Surfaktan and Interfacial Phenomena*, 83 – 85, 100 – 119, 125 – 130, John Willey and Rowe, R.C., P.J. Sheskey, and M. E. Quinn, 2009, **Handbook of Pharmaceuticals Excipient**, 6th ed., The Pharmaceutical Press, London, 283, 581.

Rowe, R.C., P.J. Sheskey, and M. E. Quinn, 2009, **Handbook of Pharmaceuticals Excipient**, 6th ed., The Pharmaceutical Press, London, 283, 581.

Shargel, L. and A. B. C. Yu, 1999, **Applied Biopharmaceutics and Pharmacokinetics**, 4th ed. McGraw – Hill. New York, 8, 132, 169-200.

Shervington, L.A. and A. Shervington, 1998, Guaifenesin, In: **Analytical Profiles of Drug Substances and Exipients**, H.G. Brittain (Ed.), vol. 25, Academic Press, London, 152.

Siregar, C. J. P., 1992, **Proses Validasi Manufaktur Sediaan Tablet**, Institut Teknologi Bandung, Bandung, 29-31.

Spireas, S., 2002, Liquisolid System and Methods of Preparation Same, **Pharmaceutical Research**, vol 9, 1-6.

Sweetman, S. C., 2009, **Martindale The Complete Drug Reference**, 36th ed., The Pharmaceutical Press, London, 64.

Voigt, R., 1995, **Buku Pelajaran Teknologi Farmasi**, Terjemahan S. Noerono dan M. S. Reksohardiprojo, Gadjah Mada University Press, Yogyakarta, 163-210.

Wade, A. and P.S. Weller, 1994, **Handbook of Pharmaceutical Exipients**, 2nd ed., The Pharmaceutical Press, London, 84 – 86.

Wagner, J.G., 1971, **Biopharmaceutics and Relevant Pharmacokinetics**, 1st ed., Drug Intelligence Publications, Illinois, 64-11.

Wells, J.T., 1988, **Pharmaceutical Formulation: The Physicochemical Properties of Drug Substance**, Ellis Howard, Ltd., Chester, 209-211.

Wilmana, P. F., 1995, Analgesik – Antipiretik Analgesik Anti-Inflamasi Nonsteroid dan Obat Pirai, dalam: **Farmakologi dan Terapi**, Sulistia G. Ganiswarna (Ed.), edisi 4, Gaya Baru, Jakarta, 207-218.

Yadav, V.B. and A.V. Yadav, 2009, Liquisolid Granulation Technique for Tablet Manufacturing: an Overview, **Journal of Pharmacy Research 2009**, 2(4),670-674.