

## BAB 5

### SIMPULAN

#### 5.1. Simpulan

Dari data penelitian yang telah diinterpretasikan, dapat ditarik kesimpulan :

- Asam tartrat sebagai bahan *effervecent* tablet berpengaruh secara signifikan terhadap sifat fisik tablet dan disolusi tablet ibuprofen. Asam tartrat menurunkan kekerasan tablet, meningkatkan kerapuhan tablet, mempercepat *floating lag time*, dan memperbesar konstanta laju disolusi. Sedangkan kombinasi perbandingan polimer HPMC K4M-*xanthan gum* meningkatkan kekerasan tablet, menurunkan kerapuhan tablet, mempercepat *floating lag time*, dan memperbesar konstanta laju disolusi. Interaksi konsentrasi asam tartrat dan kombinasi perbandingan polimer HPMC K4M-*xanthan gum* memberikan pengaruh menurunkan kekerasan tablet, meningkatkan kerapuhan tablet, memperlambat *floating lag time*, dan memperbesar konstanta laju disolusi..
- Formula optimum tablet katopril dapat diperoleh dengan kombinasi asam tartrat 4,5% dan kombinasi perbandingan polimer HPMC K4M – *xanthan gum* 3,75:1 yang memiliki sifat fisik tablet dan disolusi yang memenuhi persyaratan, yaitu kekerasan tablet 12,02 Kp, kerapuhan tablet 0,47%, *floating lag time* 0,32 menit, dan konstanta laju disolusi 0,05 mg/ menit.

#### 5.2. Alur Penelitian Selanjutnya

Dilakukan penelitian pembuktian beberapa formula optimum terpilih, yang kemudian dibandingkan dengan hasil secara teoritis.

## DAFTAR PUSTAKA

- Anonim, 1979, **Farmakope Indonesia**, Ed. III. Departemen Kesehatan RI, Jakarta, 6-8, 510, 591.
- Anonim, 1995, **Farmakope Indonesia**, Ed. IV. Departemen Kesehatan RI, Jakarta, 4, 167-168, 515-516, 999-1000.
- Anonim, 2005, **US Pharmacopeia XXVIII**, US Pharmacopeial Convention, Inc., Rockville, 1896-1899, 2412-2415
- Anonim, 2003, *Gastro-retentive Drug; A Review*, 1-3, 2003, <http://www.expresspharmapulse.com>.
- Anonim, *Water Structure and Behavior: Xanthan Gum*, 2005a, <http://www.isbu.ac.uk/water/hyxan.html>.
- Ansel, H.C., 1989. **Pengantar Bentuk Sediaan Farmasi**. (Ibrahim, F., penerjemah), 4<sup>th</sup> ed., UI Press. Jakarta, 118-120, 144, 148, 247-299.
- Aulton, M.E., 2002, **Pharmaceutics The Science of Dosage Form Design**, 2<sup>th</sup> Edition, Churchill Livingstone, 299-302.
- Author, 2007, **Farmakologi dan Terapi**, ed. 5, Fakultas Kedokteran Universitas Indonesia, Jakarta, 354-357.
- Banakar, U.V., 1992, **Pharmaceutical Disolution Testing**, Marcel Dekker, Inc., New York, 322.
- Bandelin, F.J. and Shangraw, R.F., 1989. Compressed tablet by wet granulation. In: Lieberman, H.A., Lachman, L., Schwartz, J.B. (Eds.), **Pharmaceutical Dosage Forms**, Volume 1, Marcel Dekker, Inc., New York, 148-152.
- Banker, G.S. and Anderson, N.R., 1994. Tablet. In: Lachman, L., Lieberman, H.A., Kanig, J.L. (Eds.), **The Theory and Practice of Industrial Pharmacy**, 3<sup>rd</sup> ed., Lea and Febiger, Philadelphia, 293-317.
- Bhardwaj, T.R., Kanwar, M., Lal, R. and Gupta, A., 2000. Natural gum and modified natural gums as sustained release carriers, **Drugs Dev Ind Pharm**, **26**, 1025-1038.
- Bolton, S., 1990, **Pharmaceutical Statistics: Practical and clinical Applications**, 2<sup>nd</sup> Edition, Marcel Dekker, Inc., New York and Basel, A.

Chang, R.K. and Robinson, J.R., 1990. Sustained drug release from tablets and particles through coating. In: Lieberman, H.A., Lachman, L., Schwartz, J.B. (Eds.), **Pharmaceutical Dosage Forms: Tablets**, volume 3, 2<sup>nd</sup> ed., Marcel Dekker, Inc. New York, 200-206.

Chawla, G., Gupta, P., Koradadia, V., Bansal, A.K., 2003, Gastroretention: A Means to Address Regional Variability in Intestinal Drug Absorption, *Pharmaceutical Technology*, 50-60, <http://www.pharmtech.com>.

Collett, J. and Moreton, C., 2002. Modified-release peroral dosage form. In: Aulton, M.E. (Ed.), **Pharmaceutics: The Science of Dosage Form Design**, 2<sup>nd</sup> ed., Churchill Livingstone, Edinburgh, 289-302.

Colombo, P., Santi, P., Bettini, P., Brazel, C.S., Peppas, N.A., 2000. Drug release from swelling-controlled systems, In: Wise, D.L. (Ed.), **Handbook of Pharmaceutical Controlled Release Technology**, Marcel Dekker, Inc., New York, 185-190.

Gordon, R.E., Rosanske, T.W., Fonner, D.E., Anderson, N.R., Banker, G.S., 1990. Granulation technology and tablet characterization. In: Lieberman, H.A., Lachman, L., Schwartz, J.B. (Eds.), **Pharmaceutical Dosage Form: Tablet**, volume 2, 2<sup>nd</sup> ed., Marcel Dekker, Inc., New York, 283-300, 321-336.

Green, J.H., 1996. A Practical Guide to Analytical Method Validation. **Analytical Chemistry**, 23, 305 – 309.

Higuchi, W.L., 1963, Mechanism of Sustained Action Medication. Theoretical Analysis of Release of Solid Drug Disperse in Solid Matrices, **Journal of Pharmaceutical Sciences**, vol. 52, 1145-1149.

Kadin, H., 1982, **Captopril dalam Analytical Profiles of Drug Substances** Volume 11.: Academic Press, New York, 80-131.

Katzung, B.G., 2001, **Basic and Clinical Pharmacology**, 8th ed. McGraw-Hill Companies Inc, Singapore, 467-471.

Kibbe, A.H., 2000. **Handbook of Pharmaceutical Excipients**, 3<sup>rd</sup> ed. The Pharmaceutical Press, London, 276-284, 305-307, 433-439, 555, 556.

Lachman, L., Lieberman, H.A., Kanig, J.L., 1986. **The Theory and Practice of Industrial Pharmacy**. 3<sup>rd</sup> Edition. Lea and Febiger, Philadelphia, 294.

Langenbucher, F., 1972. Linearisation of dissolution rate curve by Weibull distribution, **J. Pharm. Pharmacol.**, 24, 979-981.

Lapidus, H. and Lordi, N.G., 1968. Drug release from compressed hydrophilic matrices, **J. Pharm. Sci.**, 57, 1292-1301

Li. X and Jasti. B.R., 2006. **Design of Controlled Release Drug Delivery Systems**. America, 180-182.

Lieberman, H. A., Lachman, L., and Schwartz, J. B., 1989, **Tablet Formulation and Design, Pharmaceutical Dosage Forms: Tablet**, 2<sup>nd</sup> edition, vol. 7, Marcell Dekker, New York, 258-326.

Lowman, A.M. and Peppas, N.A., 1999. Hydrogels. In: Mathiowitz, E. (Ed.), **Encyclopedia of Controlled Drug Delivery**, volume 1, John Wiley & Sons, Inc., New York, 405-406.

Martin, A., Swarbrick, J., Cammarata, A., 1993. **Farmasi Fisik: Dasar-Dasar Kimia Fisik dalam Ilmu Farmasetik**. (Yoshita, penerjemah). Universitas Indonesia Press, Jakarta, 845-847.

Moes, A.J., 2003, Gastric Retention System for Oral Drug Delivery System, **Business briefingpharmatech**, 157-159, <http://www.touchbriefings.com>.

Nugraheni, S., dan F. A. Nitasari, 2009, Sediaan Time Delay Kaptopril dan Propanolol HCl, [online], <http://yosefw.wordpress.com/2009/03/20/sediaan-time-delays-kaptopril-dan-propanolol-hcl-2/>, (2009, Desember 20).

Parrott, E.L., 1971, **Pharmaceutical Technology: Fundamental Pharmaceutics**, Burgess Publishing Company, Minneapolis, 17-30, 80-86.

Rao, B.P., Kottan, N.A., Snehith, V.S., Ramesh, C., 2009, **Development of Gastro Retentive Drug Delivery System of Cephalexin by using Factorial Design**, *Ars Pharm*, India, 8-22.

Reynolds, J.E.F., 1982, **Martindale: The Extra Pharmacopoeia**, 28<sup>th</sup> ed. The Pharmaceutical Press, London, 138.

Shargel, L. and Yu, B.C., 1999. **Applied Biopharmaceutics and Pharmacokinetics**, 4<sup>th</sup> ed., McGraw-Hill, London, 169-201.

Swarbrick, 1992. **Encyclopedia of Pharmaceutical Technology**. Vol.5. Marcell & Dekker, Inc., New York, 189.

Voigt, R., 1995. Buku **Pelajaran Teknologi Farmasi**. (Soewandhi, S.M., penerjemah), 5<sup>th</sup> ed., Gajah Mada University Press, Yogyakarta, 158, 165-173.

Wagner, J.G., 1971. **Biopharmaceutics and Relevant Pharmacokinetics**, 1<sup>st</sup> Edition. Drug Intelligence Publications, Illinois, 64-110.

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

