

## BAB 5

### SIMPULAN

#### 5.1. Simpulan

Berdasarkan data penelitian yang telah diinterpretasikan, dapat ditarik kesimpulan:

- Formula hasil prediksi yang terpilih untuk memperoleh rancangan yang optimum yaitu menggunakan total konsentrasi sebesar 22,35% dan dengan rasio perbandingan pektin : *xanthan gum* = 1 : 4,24. Yang akan memberikan prediksi hasil respon konstanta laju disolusi 0,1756%; %ED<sub>720</sub> 50,58%; %Wt<sub>720</sub> 68,81%; dan *floating lag time* 6,33 menit.
- Total konsentrasi tidak selalu berperan dalam menahan pelepasan bahan aktif dari tablet. Modifikasi rasio perbandingan dari polimer lebih berperan terutama pada parameter *floating lag time*, konstanta laju disolusi, %ED<sub>720</sub> dan %WT<sub>720</sub>, namun tidak berpengaruh terhadap *floating time*.

#### 5.2. Saran

Dapat dilakukan penelitian lebih lanjut mengenai kombinasi polimer pektin dan *xanthan gum* dengan membuktikan formula optimum terpilih, kemudian dibandingkan dengan hasil yang teoritis.

## DAFTAR PUSTAKA

- Akhtar, N., M. Ahmad, G. Aziz, M. Atif, Haji M.S. Khan, M.Aleem, and A. Mahmood, 2006, Pharmacokinetic Studies of Ranitidine Tablets in Healthy Human Subjects Using Two Binders, **Bull. Pharm. Sci.**, Assiut University, 29(2), 416-431
- Anderson, P.O., J.E.Knowben, W.G. Troutman, 2002, **Handbook of Clinical Drug Data**, 10<sup>th</sup> ed., McGraw-Hill Companies, North America. 538.
- Anonim, 1979, **Farmakope Indonesia**, ed.III, Departemen Kesehatan RI Jakarta.
- Anonim, 2003, **Guidelines on Method Validation to be Performed in Support of Analytical Methods for Agrochemical Formulations**, Cipac Document.
- Anonim, 2005, **Direct Compression Formulation Using Starch 1500 with Ranitidine HCl (150 mg) Tablets, Film Coated with Opadry II (85F Series)**, Colorcon
- Anonim, 2006, **USP29-NF24**, General Information Chapter '<1174> Powder Flow'. US Pharmacopeial Convention, Rockville, MD, USA
- Ansel, H.C., 1990, **Pharmaceutical Dosage Forms and Drug Delivery Systems**, 5<sup>th</sup> ed, London, Pharmaceutical Press.
- Arief, M., 1994, **Farmasetika**, Gajah Mada University Press, Yogyakarta, 112-113.
- Aslani, A., H. Jahangiri, 2013, Formulation, Characterization and Physicochemical Evaluation of Ranitidine Effervescent Tablets, **Advanced Pharmaceutical Bulletin**, 3(2), 315-322.
- Banakar, U.V., 1992, **Pharmaceutical Dissolution Testing**, Marcel Dekker Inc., New York, 322.

- Bastos, M., Friedrich, R.B., Beck, R.C.R. 2008, **Effects of Filler-Binders and Lubricants on Physicochemical Properties of Tablets Obtained by Direct Compression: A 22 Factorial Design**, *Latin American Journal of Pharmacy*, 578-83.
- Bertuzzi, G., 2005, Effervescent Granulation in **Handbook of Pharmaceutical Granulation Technology**, Boca Raton, Taylor & Francis Group, 365, 374-375.
- Bolton, S., 1990, **Pharmaceutical Statistics: Practical and clinical applications**, 2<sup>nd</sup> ed., Marcel Dekker, inc., New York.
- Collett, J.H., R.C. Moreton, 2009, Modified Release Peroral Dosage Form in **Aulton's Pharmaceutics : The Design and Manufacture of Medicines**, edisi 3, Elsevier, China, 492, 493.
- Dash, S., P.N. Murthy, L. Nath, P. Chowdhury, 2010, Review: Kinetic Modelling on Drug Release from Controlled Drug Delivery Systems, **Acta Poloniae Pharmaceutica-Drug Research**, 67, 3, 217-223.
- Dehghan, M.H.G., F.N. Khan, 2009, Drug Delivery System : A Patent Perspective, **International Journal of Health Resesarch**, 2(1),23-27.
- Departemen Kesehatan RI. 1995, **Farmakope Indonesia**, ed. IV, Jakarta, 4, 166, 449-450, 488-489, 515, 683, 783-784, 999-1000.
- Elmowafy, E.M., G.A.S. Awad, S. Mansour, A.El-Hamid, El-Shamy, 2008, Release Mechanisms Behind Polysaccharides-Based Famotidine Controlled Release Matrix Tablets, **AAPS PharmSciTech**, Vol 9, No 4, 1230-1239.
- Green, J.M., 1996, **A Practical Guide to Analysis Method Validation**,23,305-309.
- Hadisoewignyo, L., A. Fudholi, 2007, Studi Pelepasan Invitro Ibuprofen dari Matriks Xanthan Gum yang Dikombinasikan dengan Suatu Crosslinking Agent, **Majalah Farmasi Indonesia**, 18 (3), 133-140.
- Hadisoewignyo, L., A. Fudholi, 2013, Tablet Khusus, dalam: **Sediaan Solida**, Pustaka Pelajar, Yogyakarta.

- Hajare, A.A., V.A. Patil, 2012, Formulation and Characterization of Metformin Hydrochloride Floating Tablets, **Asian Pharma Press**, Vol 2, 111-117.
- Harmita, 2004, Petunjuk Pelaksanaan Validasi Metode dan Cara Perhitungannya, **Majalah Ilmu Kefarmasian**, Vol., I, nomor 3, 117-132.
- Hetangi, R., P. Vishnu, M. Moin, 2010, In Situ Gel as a Novel Approach of Gastroretentive Drug Delivery, **International Journal of Pharmacy & Life Sciences**, 1(8), 440-441.
- Jagdale, S.C., S.A. Patil, B.S. Kuchekar, 2012, Design, Development and Evaluation of Floatin Tablets of Tapentadol Hydrochloride using Chitosan, **Asian Journal of Pharmaceutical and Clinical Research**, vol 5, 163-168.
- Kavitha, K., K.P. Puneeth, M.T. Tamizh, 2010, Development and Evaluation of Rosiglitazone Maleate Floating Tablet using Natural Gums, **International Journal of PharmTech Research**, vol 2, 1662.
- Kortajarvi, H., M. Yliperttula, J.B. Dressman, H.E. Junginger, K.K. Midha, 2005, Biowaiver Monographs for Immediate Release Solid Oral Dosage Forms : Ranitidine Hydrochloride, **Journal of Pharmaceutical Sciences**, Agustus, vol. 94, no 8, 1617-1625.
- Lund, W. 1994, The Pharmaceutical Codex, eds. 23, **Pharmaceutical Press**, London, 1035.
- Mamidala, R.K., Ramana, V., G. S., Lingan, M., Gannu, R., Yamsani, M.R., 2009, Factors Influencing the Design and Performance of Oral Sustained/Controlled Release Dosage Forms, **International Journal of Pharmaceutical Sciences and Nanotechnology**, volume 2, 583-584.
- Martin, A. 1993, Physical Pharmacy, in: **Farmasi Fisik : Dasar- Dasar Farmasi Fisik dalam Ilmu Farmasetik**, 3<sup>th</sup> ed., Martin A., Swarbrick, J., Cammarata, A., translated by Yoshita, Universitas Indonesia, Jakarta, 845-855.

- Meka, V.R., A. S. Songa, S. R. Nali, J. R. Battu, V. R.M. Kolapalli, 2012, Design and in vitro evaluation of effervescent gastric floating drug delivery systems of propranolol HCl, **Invest Clin**, 53(1), 60-70.
- Pare, A., S.K. Yadav, U.K. Patil, 2008, Formulation and Evaluation of Effervescent Floating Tablet of Amlodipine besylate, **Research Journal of Pharmacy and Technology**, 1(4), 526-530.
- Parrot, E.L., 1971, **Pharmaceutical Technology : Fundamental Pharmaceutics**, Burgess, Publishing Company, Mineapolis, 17-31, 80-86.
- Parveen, D.T., Nyamathulla, S., Murthy, K.V.R., 2012, Formulation and Evaluation of Gastric Floating Matrix Tablet of Metformin Hydrochloride using Pectin and Xanthan, **Research Journal of Pharmaceutical, Biological and Chemical Sciences**, Volume 3, 807-813.
- Ravat, H.D., J.G. Patel, K.N. Patel, B.A. Patel , P.A. Patel, 2012, Formulation and Evaluation of Floating Matrix Tablet of Ranitidine HCl, **International Journal for Pharmaceutical Research Scholars**, Volume 1, 521-522.
- Rowe, R.C., 2009, **Handbook of Pharmaceutical Excipient**, Great Britain, Pharmaceutical Press, 6<sup>th</sup> ed, 478,782-784.
- Salome, C.A., Onunkwo G.C., Onyishi I.I., 2013, Kinetics and Mechanisms of Drug Release from Swellable and Non Swellable Matrices: A Review, *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, volume 4, issue 2
- Staniforth, J.N., M. E. Aulton, 2009, Powder Flow in **Aulton's Pharmaceutics : The Design and Manufacture of Medicines**, edisi 3, Elsevier, China, 175-177, 493.
- Sharma, N., D. Argawal, M. K. Gupta, M. Pr. Khinchi, 2011, Formulation and Optimization of Hydro Dynamically Balance Tablet of Ranitidine Hydrochloride, **Asian Journal of Pharmaceutical and Health Sciences**, 61-65.

- Sulaiman, T. N. S., Fudholi, A., Nugroho, A.K. 2011, Optimasi formula tablet *gastroretentive* ranitidin HCl dengan sistem *floating*, **Majalah Farmasi Indonesia**, 106-114.
- Summers, M.P., M.E Aulton, Granulation in **Aulton's Pharmaceutics : The Design and Manufacture of Medicines**, edisi 3, Elsevier, China, 410-413.
- Sweetman, S.C. 2009, **Martindale: The Extra Pharmacopoeia**, 36<sup>th</sup> ed., The Pharmaceutical Press, London, 1767.
- Syukri, Y., 2002, **Biofarmasetika**, UI Press, Yogyakarta, 31-60.
- Uddin, M., P.B. Rathi, A.R. Siddiqui, A.R. Sonawane, D.D. Gadade, 2011, Recent Development in Floating Delivery System for Gastric Retention of Drugs an Overview, **Asian Journal of Biomedical and Pharmaceutical Sciences**, 1(3),26-42
- United States of Pharmacopeia XXVIII**, 2005, United States of Pharmacopeial Convention, Inc., Rockville, 1896-1899; 2412-2415.
- Voigt, R., 1995, **Buku Pelajaran Teknologi Farmasi**, Gadjah Mada University Press, Yogyakarta, 1035.
- Walfish, S., 2006, Analytical Methods: A Statistical Perspective on the ICH Q2A and Q2B Guidelines for Validation of Analytical Methods, **BioPharm International**, 1-6.
- Whistler, R.L., J.N. BeMiler, 1993, **Industrial Gums**, 3<sup>th</sup> ed., Academic Press, Inc., Indiana, 257.
- Zar, Jerrold H., 1984, **Biostatistical Analysis**, 2<sup>nd</sup> ed., Hall, Inc., New York, 300-302.