



BAB 5

KESIMPULAN DAN SARAN

5.1 Kesimpulan

Kesimpulan yang dapat diambil dari penelitian ini:

1. Penggunaan asam akrilat, inisiator kalium persulfat, *crosslinker* CaCl_2 , *plasticizer* gliserin, dan *foaming agent* NaHCO_3 menghasilkan polimer yang berbentuk gel dan terdapat gelembung kecil di dalamnya.
2. Penambahan volume asam akrilat dapat meningkatkan daya serap air.
3. Pencucian polimer dengan aseton meningkatkan daya serap air.
4. Biopolimer berongga memiliki daya serap tertinggi sebesar 30,08 g air/g polimer pada perbandingan mol pati : mol AA = 1 : 2 dan dilakukan pencucian dengan aseton.

5.2 Saran

Penelitian ini masih perlu dikembangkan lagi untuk dapat membuat polimer berbahan dasar pati ganyong yang memiliki daya serap yang tinggi. Pemilihan bahan seperti *foaming agent* perlu diteliti lebih lanjut, serta cara pengeringan polimer yang baik sehingga polimer tidak mudah hancur setelah dikeringkan. Perlu ada analisis morfologi menggunakan *X-ray Microscope* atau SEM untuk melihat rongga dan pori dalam polimer



DAFTAR PUSTAKA

- Brown, W. H., & Poon, T. (2014). *Introduction to Organic Chemistry*. United States of America: John Wiley & Sons, Inc.
- Buleon, A., Colonna, P., Planchot, V., & Ball, S. (1998). Starch Granules: Structure and Biosynthesis. *International Journal of Biological Macromolecules*, 85-112.
- Chen, J., Park, H., & Park, K. (1999). Synthesis of Superporous Hydrogels: Hydrogels with Fast Swelling and Superabsorbent Properties. *J Biomed Mater Res(44)*, 53-62.
- Elliott, M. (1997). Superabsorbent Polymers. *Product Development Scientist for SAP, BASF Aktiengesellschaft*.
- Glagovich, N. (2005, Maret 01). *Infrared Spectroscopy*. Dipetik Juli 30, 2017, dari Instruction Greenriver: <http://www.instruction.greenriver.edu/kmarr/Chem%20162/Chem162%20Labs/Interpreting%20IR%20Spectra/IR%20Absorptions%20for%20Functional%20Groups.htm>
- Gogoi, R., Niyogi, U. K., Alam, M. S., & Mehra, D. S. (2012). Effect of Organometallic and Tertiary Amine Catalyst on the Properties of Polyurethane Prepolymer. *J. Polym, Mater*, 451-462.
- Harmayani, E., Murdiati, A., & Griyaningsih. (2011, November). Karakterisasi Pati Ganyong (*Canna edulis*) dan Pemanfaatannya sebagai Bahan Pembuatan Cookies dan Cendol. *Agritech*, 31(4), 297-304.
- Hart, B. (1997). Technology and food production. *Nutrition & Food Science*, 53-57.
- Herwanto, S. (2015, Agustus 29). Dipetik Desember 11, 2016, dari BPS (badan Pusat Statistik): <https://www.bps.go.id/linkTabelStatis/view/id/1349>
- Hung, P. V., & Morita, N. (2005). Physicochemical Properties and Enzymatic Digestibility of Starch from Edible canna (*Canna edulis*) Grown in Vietnam. *Cabohydrate Polymer*, 314-321.
- Jha, S. K., Liu, C., & Hayashi, K. (2014). Molecular Imprinted Polyacrylic acids Based QCM Sensor Array for Recognition of Organic Acids in Body Odor. *Sensors and Actuators B* 204, 74-87.
- Jokandan, E. F., Naeiji, P., & Varaminian, F. (2016). The Synergism of the Binary and Ternary Solutions of Polyethylene glycol, Polyacrylamide and Hydroxyethyl

- Cellulose to Methane Hydrate Kinetic Inhibitor. *Journal of Natural Gas Science and Engineering* 29, 15-20.
- Kumar, A., & Gupta, R. K. (1998). *Chemical Engineering Fundamental of Polymers*. Singapore: McGraw-Hill.
- Kwon, O.-J., Oh, S.-T., Lee, S.-D., Lee, N.-R., Shin, C.-H., & Park, J.-S. (2007). Hydrophilic and Flexible Polyurethane Foam Using Alginate as Polyol: Effects of PEG Molecular Weight and Cross-linking Agent Content on Water Absorbency. *Fiber and Polymers*, 347-355.
- Lee, J. H., Kao, C., Lai, C.-C., & Tsai, C.-Y. (2009, juli 2). *Paten No. US 2009/0170971 A1*. United States.
- Mathew, B., & Pillai, V. N. (1992). N, N'-Methylene-bis-acrylamide- Crosslinked Polyacrylamides as Supports for Dithiocarbamate Ligands for Metal Ion Complexation. *Polymer International*, 201-208.
- Miller, A. H. (1983). *Paten No. 4,382,507*. United State.
- Morton-Jones, D. (1989). *Polymer Processing*. London: Chapman & Hall.
- Rayner-Canham, G., & Overton, T. (2010). *Descriptive Inorganic Chemistry* (5 ed.). United States of America: W. H. Freeman and Company.
- Richana, N., & Sunarti, T. C. (2004). Karakteristik Sifat Fisikokimia Tepung Umbi dan Tepung Pati dari Umbi Ganyong, Suweg, Ubi Kelpa dan Gembili. *J.Pascapanen*, 29-37.
- Sadeghi, M., & Soleimani, F. (2011). Synthesis and Characterization Superabsorbent Hydrogels for Oral Drug Delivery System. *International Journal of Chemical Engineering and Applications*, Vol 2, No. 5, 314-316.
- Salam, A., Pawlak, J. J., Venditti, R. A., & El-tahlawy, K. (2010). Synthesis and Characterization of Satrch Citrate-Chitosan Foam with Superior Water and Saline Absorbance Properties. *Biomacromolecules*, 1453-1459.
- Shannon, J. C., Garwood, D. L., & Boyer, C. D. (2009). Genetics and Physiology of Starch Development. Dalam J. BeMiller, & R. Whistler, *Starch: chemistry and Technology* (hal. 24-82). United States of America: Elsevier Inc.
- Shell, M. S., Debenedtti, P. G., & Panagiotopoulos, A. Z. (2002). Molecular Structural Order and Anomalies in Liquid Silica. *Physical Review E*(66), 011202-1 - 011202-8.

- Solomons, T. G., & Fryhle, C. B. (2011). *Organic Chemistry* (10th ed.). United States of America: John Wiley & Sons Inc.
- Solomons, T. W., Fryhle, C. B., & Snyder, S. A. (2014). *Organic Chemistry* (11 ed.). United States of America: John Wiley & Sons, Inc.
- Songjaja, H. R., Hatton, T. A., & Tam, K. C. (2008). Self-Assembly of Poly(ethylene oxide)-block-poly(acrylic acid) Induced by CaCl₂: Mechanistic Study. *Langmuir*, 24, 8501-8506.
- Soni, P. L., Sharma, H., Srivastava, H. C., & Gharia, M. M. (1990). Physicochemical Properties of Canna edulis Starch - Comparasion with Maize Starch. *starch/starke*, 460-464.
- Tjitrajaya, Y. A. (2016). *Sintesis Polymer Pad dari Pati Ganyong Menggunakan Natrium bikarbonat sebagai Foaming agent*. Skripsi, Universitas Katolik Parahyangan, Teknik Kimia, Bandung.
- Vroman, I., & Tighzert, L. (2009). Review Biodegradable Polymer. *Material*, 307-344.
- Witono, J. R. (2012). *New Materials by Graftig Acrylic Acid onto Cassava Starch*. Netherlands: University Services Department University of Groningen.
- Yang, S.-R., Kwon, O.-J., Kim, D.-H., & Park, J.-S. (2007). Characterization of the Polyurethane Foam Using Alginic Acid as a Polyol. *Fibers and Polymers*, 257-262.
- Zhan, X.-y., Wang, F., Li, X.-w., & Wang, M. (2014). Synthesis of Montmorillonite/Acrylic Acid/Acrylamide Tricopolymer and Its SuperAbsorbent Properties. *Polymers & Polymer Composites*, 489-494.
- Zhou, J., Song, J., & Parker, R. (2006). Structure and Properties of Starch-based Foams Prepared by Microwave Heating from Extruded Pellets. *Carbohydrate Polymers*, 63, 466-475.
- Zohuriaan-Mehr, M. J., & Kabiri, K. (2008). Superabsorbent Polymer Materials: A Review. *Iranian Polymer Journal*, 451-477.