BAB 5

KESIMPULAN DAN SARAN

KESIMPULAN:

1. Produk superabsorben dengan rasio mol AA/Aam 1:0 memiliki nilai *Equilibrium Swelling* yang lebih baik dibandingkan produk superabsorben dengan rasio mol AA/Aam 0:1.
2. Produk superabsorben dengan rasio mol AA/Aam 1:1 merupakan produk dengan perbandingan monomer yang memiliki nilai *Equilibrium Swelling* paling tinggi sebesar 391.53 g/g.
3. Secara keseluruhan, nilai *Equilibrium Swelling* akan menurun seiring menurunnya pH.
4. Secara keseluruhan, penambahan komposit akan mengurangi nilai *Equilibrium Swelling* produk.
5. Produk dengan rasio mol AA/Aam 1:3 tanpa komposit pada medium penyerapan basa memiliki laju *swelling* terbaik.

SARAN:

1. Sintesa produk dilakukan dalam reaktor yang dapat diamati fenomena yang terjadi didalamnya.
2. Memastikan suhu yang dibutuhkan untuk disosiasi inisiator APS tercapai, agar *initiation step* dapat berlangsung dengan baik.
3. Memastikan bahwa waktu yang dibutuhkan untuk *initiation step* cukup, sehingga tidak banyak terbentuk homopolimer.
4. Melakukan analisa *Nuclear Magnetic Resonance* (NMR) *Spectroscopy* untuk memastikan bahwa monomer telah ter-*graft* pada *backbone* kappa-karaginan.
6. Untuk penelitian berikutnya, dapat dilakukan variasi dari parameter-parameter konstan pada penelitian ini untuk mengetahui pengaruh dari konsentrasi kappa-karaginan, crosslinker, inisiator, monomer, dan komposit terhadap nilai *Equilibrium Swelling* produk.

DAFTAR PUSAKA

Ako, K. (2015). Influence of elasticity on the syneresis properties of κ-carrageenan gels. *115*.

Amit Bhattacharya, J. R. (2009). *Polymer Grafting and Crosslinking.* Canada: John Wiley & Sons, Inc.

Barbaroux, O. (2007). Production, Properties, and Uses of Alginate, Carrageenan and Agar.

BeMiller, J. N. (1986, June). An Introduction to Pectins: Structure and Properties.

Brandrup, J. E., Immergut, E., & Grulke, E. (1999). *Polymer Handbook.* New York: John Wiley.

Cathy Wong, N. (2015). The Benefits of Brown Seaweed.

CETCO. (2013). Sodium Bentonite: Its Structure and Properties.

Chillimanjaro. (2012, July 11). Red Seaweed invades New England beaches in US.

Deyu, G., Thomas, B., Heimann, R., & Struttgart, P. (2003). Superabsorbent Polymer Composite (SAPC) Materials and their Industrial and High-Tech Application.

Druehl, L. (2000). *Pacific Seaweeds.* M, Madeira Park, B.C., Canada: Harbour Publishing.

Elliot, M. (1997). Superabsorbent Polymers. 1.

FAO. (2013). *Social and economic dimensions of carrageenan seaweed farming.* Rome.

FAO. (2015). Global Aquaculture Production statistics database updated to 2013 Summary Information. *Fisheries and Aquaculture Department.*

Fiero, B. (2008). Polymer Osmosis.

Hossein, H. (2009). A new salt-resistant superabsorbent hydrogel based on kappa-carrageenan. *e-Polymers, 128*, 5.

Harbo, R. (1999). *Whelks to Whales.* Madeira Park, B.C., Canada: Harbour Publishing.

Hoogeboom, R., Becer, C., Guerrero-Sanchez, C., Hoeppener, S., & Schubert, U. (2010). Solubility and Thermoresponsiveness of PMMA in Alcohol-Water Solvent Mixtures. *Research Front*, 1173-1178.

Hossein, H. (2012). Full-Polysaccharide Superabsorbent Hydrogels Based on Carrageenan and Sodium Alginate. *Middle-Easr Journal of Scientific Research*, 1522. doi:10.5829

Hua, S., & Wang, A. (2009). Synthesis, characterization and swelling behaviors of sodium alginate-g-poly(acrylic acid)/sodium humate superabsorbent. *Carbohydrate Polymers, 75*, 79-84.

Jaber, F. J. (2012). New Routes For Synthesis Of Environmentally Friendly Superabsorbent Polymers. 4.

Karibi, K., & Zohuriaan-Mehr, M. (2008). Superabsorbent Polymer Materials: A Review. *Iranian Polymer*.

Karnland, O. (2010, September). Chemical and mineralogical characterization of the bentonite buffer for he acceptance control procedure in a KBS-3 repository. hal. 9.

Kephart, J. C. (1955). *Chlorophyll Derivatives: Their Chemistry, Commercial Preparation and Uses* (Vol. 9).

Kraan, S. (2012). Algal Polysaccharides, Novel Applications and Outlook. Dalam C.-F. Chang (Penyunt.), *Carbohydrates - Comprehensive Studies on Glycobiology and Glycotechnology* (hal. 489). InTech.

Kraan, S., Patrick, M., & Mair, C. (2012). *Natural and sustainable seaweed formula that replaces synthetic additives in fish feed.*

Kumar, C., Ganesan, P., & Bhaskar, N. (2008). In vitro antioxidant activities of three selected brown seaweeds of India. Dalam *Food Chemistry* (Vol. 107, hal. 707-713). Karnataka, India.

Mahdavinia, G., Zohuriaan-Mehr, M., Pourjavadi, A., & Hosseinzadeh, H. (2005). Modified Carrageenan. 1. H-CarragPAM, a Novel Biopolymer-Based Superabsorbent Hydrogel. *Journal of Bioactive and Compatible Polymers*, 482. doi:10.1177/0883911505055164

McHugh, D. J. (2003). *A guide to the seaweed industry.* Canberra, Australia: Department of Chemistry, University College.

MIller-Chou, B. A., & Koenig, J. (2003). A review of Polymer Dissolution. *Progress in Polymer Science*, 1223-1270.

MJ, Z.-M. (2006). Super-Absorbents. 2-4.

Montgomery, D. C. (2009). Design and Analysis of Experiments. John Wiley & Sons, Inc.

Mouritsen, O. (2013). The Science of Seaweeds. *101*(The Hidden Ocean).

Murata, M., & Nakazoe, J.-i. (2001). Production and Use of Marine Algae in Japan. 286.

Network, A. (2001). The History and Working Principle of the Scanning Electron Microscope (SEM).

Omidian, H., Zohuriaan-Mehr, M., Kabiri, K., & Shah, K. (2004). *Polymer chemistry attractiveness: Synthesis and swelling studies of gluttonous hydrogels in the advanced academic laboratory.*

Percival, E. (2007). The polysaccharides of green, red and brown seaweeds: Their basic structure, biosynthesis and function. *British Phycological.*

Phillips, G., & Williams, P. (2009). *Handbook of Hydrocolloids* (2 ed.). Boca Raton: CRC Press.

Po, R. (1994). Water-absorbent polymers: A patent survey. (C34), 607-662.

Pocklington, J. (2016, May 31). Brown Seaweed. *Taxonomic Toolkit for marine life od Port Phillip Bay*.

Porto, R. D. (2003). Carrageenan Structure.

Province, P. G. (2008). 30 Thousand Ton/Year Super Absorbent Polymer Project of Jilin City.

Rempp, P., & Franta, E. (2010). Grafting and Branching of Polymers. 229.

Roy, D., Semsarilar, M., Guthrie, J., & Perrier, S. (2009). Cellulose Modification by polymer grafting: a review. Dalam *Chemical Society Reviews* (hal. 2046-2064). doi:10.1039/B8088639G

Sadeghi, M. (2011). Synthesis of a Biocopolymer Carrageenan-g-Poly(AAm-co-IA)/Montmorilonite Superabsorbent Hydrogel Composite. *29*(2), 295-296.

Salimi, H., Pourvajadi, A., Seidi, F., Jahromi, P. E., & Soleyman, R. (2010). New Smart Carrageenan-Based Superabsorbent Hydrogel Hybrid: Investigation of Swelling Rate and Environmental Responsiveness. doi:10.1002

Seaplants, A. (2015). Major Seaweed Classes.

Soleimani, F. (2011). Synthesis of Novel Polysaccharide-Based Superabsorbent Hydrogels Via Graft Copolymerization of Vinylic Monomers onto Kappa-Carrageenan. *International Journal of Chemical Engineering and Applications, 2*.

Tseng, C. (2001). Algal Biotechnology Industries and Research Activities in China. *Journal of Applied Phycology, 13*(4).

Vera, J., Castro, J., Gonzalez, A., & Moenne, A. (2011, December). Seaweed Polysaccharides and Derived Oligosaccharides Stimulate Defense Responses and Protection Against Pathogens in Plants.

Waaland, R. (1977). *Common Seaweeds of the Pacific Coast.* Vancouver, B.C., Canada: J.J. Douglas Ltd.

Yoo, A. (2008). k-Carrageenan Micropellets: Production and Dissolution Behavior. Dusseldorf.

Zohuriaan-Mehr , M., & Kabiri, K. (2008). Superabsorbent Polymer Materials: A Review. *Iranian Polymer Journal*, 451-477.

Tomar, R., Gupta, I., Singhal, R., & Nagpal, A. (2007). Synthesis of Poly (Acrylamide-co-Acrylic Acid) based Superabsorbent Hydrogels: Study of Network Parameters and Swelling Behaviour. Polymer-PLastics Technology and Engineering, 481-488.