

## DAFTAR PUSTAKA

- Akbari, W., A. Yohana, and M. Abdassah. 2020. Pengaturan pelepasan obat dari tablet dengan sistem matriks karagenan. *Majalah Farmasetika* 5 (3): 124-136.
- Al-Zebari, S.M. Best, and R.E. Cameron. 2019. Effects of reaction ph on self-crosslinked chitosan-carrageenan polyelectrolyte complex gels and sponges. *JPhys Materials* 2: 015003.
- Amanda, E., Khoirun, N., dan Yulianto, A. 2020. Pengembangan bioplastik antibakteri *Morganella morganii* sebagai kemasan makanan. *Jurnal Kimia dan Kemasan*. 42(1): 29-36.
- Asadpour, S., S. Kargozar, L. Moradi, A. Ai, H. Nosrati, and J. Ai. 2020. Natural biomacromolecule based composite scaffolds from silk fibroin, gelatin and chitosan toward tissue engineering applications. *International Journal of Biological Macromolecules* 154: 1285-1294.
- Azizi, A., S. Fairus, dan E.J. Mihardja. 2020. Pemanfaatan limbah cangkang rajungan sebagai bahan kitin dan kitosan di Purchasing Crap Unit Eretan "Atul Gemilang", Indramayu. *Jurnal Solma* 9(2): 411.419.
- Bao, Z., M. Gao, Y. Sun, R. Nian, and M. Xian. 2020. The recent progress of tissue adhesive in design strategies, adhesive mechanism and applications. *Materials Science & Engineering C* 111 (110796).
- Baysal, K., A.Z. Aroguz, Z. Adiguzel, and B.M. Baysal. 2013. Chitosan/alginate crosslinked hydrogels: preparation, characterization and application for cell growth purposes. *International Journal of Biological Macromolecules* 59: 342-348.
- Bektas, N., B. Senel, E. Yenilmez, O. Ozatik, and R. Arslan. 2020. Evaluation of wound healing effect of chitosan-based gel formulation containing vitexin. *Saudi Pharmaceutical Journal* 28: 87-94.
- Berton, S.B.R., G.A.M. de Jesus, R.M. Sabino, J.P. Monteiro, S.A.S. Venter, M.I. Bruschi, K.C. Popat, M. Matsushita, A.F. Martins, and E.G. Bonafe. 2020. Properties of a commercial  $\kappa$ -carrageenan food ingredient and its durable superabsorbent hydrogels. *Carbohydrate Research* 287 (107883).
- Chang, S.H., C.H. Wu, and G.J. Tsai. 2018. Effects of chitosan molecular weight on its antioxidant and antimutagenic properties. *Carbohydrate Polymers* 181: 1026-1032.
- Chen, S., C.J. Gil, L. Ning, L. Jin, L. Perez, G. Kabboul, M.L. Tomov, and V. Serooshan. 2021. Adhesive tissue engineered scaffolds: mechanisms and applications. *Frontiers in Bioengineering and Biotechnology* 9 (683079).

- Damayanti, W., E. Rochima, Dan Z. Hasan. 2016. Aplikasi kitosan sebagai antibakteri pada filet patin selama penyimpanan suhu rendah. *Jurnal Pengolahan Hasil Perikanan Indonesia* 19(3): 321-328.
- Derkach, S.R., N.G. Voronko, Y.A Kuchina, D.S. Kolotova, A.M. Gordeeva, D.A. Faizullin, Y.A. Gusev, Y.F. Zuev, and O.N. Makshakova. 2018. Molecular structure and properties of  $\kappa$ -carrageenan-gelatin gels. *Carbohydrate Polymers* 197: 66-74.
- Ding, H., J. Geng, Y. Lu, Y. Zhao, and B. Bai. 2020. Impacts of crosslinker concentration on nanogel properties and enhanced oil recovery capability. *Fuel* 267 (117098).
- Erizal. 2008. The effect of hydrogel dressing copolymer poli(vinylpirrolidone) (PVP)- $\kappa$ -carrageenan prepared by radiation and healing times on the radius reductions burn injured of wistar white rat. *Indonesia Journal Chemistry* 8(2): 271-278.
- Geonzon, L.C., X. Zhuang, A.M. Santoya, R.G. Bacabac, J. Xie, and S. Matsukawa. 2020. Gelation mechanism and network structure of mixed kappa-carrageenan/lambda carrageenan gels studied by macroscopic and microscopic observation methods. *Food Hydrocolloids* 105 (105759).
- Ghiviriga, I. and D.C. Oniciu. 2002. Steric hindrance to the solvation of melamines and consequences for non-covalent synthesis. *Chemical Communications* 22.
- Hargono, Abdullah, dan I. Sumantri. 2008. Pembuatan kitosan dari limbah cangkang udang serta aplikasinya dalam mereduksi kolesterol lemak kambing. *Reaktor* 12(1): 53-57.
- He. Q., R. Kusumi, S. Kimura, UJ. Kim, K. Deguchi, S. Ohki, A. Goto, T. Shimizu, and M. Wada. 2020. Highly swellable hydrogel of regioselectively aminated (1 $\rightarrow$ 3)- $\alpha$ -D-glucan crosslinked with ethylene glycol diglycidyl ether. *Carbohydrate Polymers* 237 (116189).
- Islam, M.M., M. Shahrizzaman, S. Biswas, and M. N. Sakib. 2020. Chitosan based bioactive material in tissue engineering applications. *Bioactive Materials* 5: 164-183.
- Jain, R. and S. Wairkar. 2019. Recent developments and clinical applications of surgical glues. *International Journal of Biological Macromolecules* 137: 95-106.
- Kadota, K., S. Nogami, H. uchiyama, and Y. Tozuka. 2020. Controlled release behavior of curcumin from kappa-carrageenan gels with flexible texture by the addition of metal chlorides. *Food Hydrocolloids* 101 (105564).
- Komoto, D., T. Furuike, and H. Tamura. 2019. Preparation of polyelectrolyte complex gel of sodium alginate with chitosan using basic solution of chitosan. *International Journal of Biological Macromolecules* 126: 54-59.

- Kurniawan, B.E., dan Y. Setiyorini. 2014. Pengaruh variasi *holding time* pada perlakuan panas *quench annealing* terhadap sifat mekanik dan mikro struktur pada baja mangan AISI 3401. *Jurnal Teknik Pomits* 3(1).
- Kurniawaty, E. dan N.R. Putranta. 2019. Potensi biopolimer kitosan dalam pengobatan luka. *Medula* 9(3): 459-464.
- Lenji, M.A., M. Haghshenasfard, M.V. Sefti, M.B. Salehi, and A.M. Moghadam. 2018. Numerical modeling and experimental investigation of inorganic and organic crosslinker effect on polymer gel properties. *Journal of Petroleum Science and Engineering* 160: 160-169.
- Mahdavina, G.R., M.H. Karimi, M. Soltaniniya, and B. Massoumi. 2019. In vitro evaluation of sustained ciprofloxacin release from  $\kappa$ -carrageenan-crosslinked chitosan/hydroxyapatite hydrogel nanocomposites. *International Journal of Biological Macromolecules* 126: 443-453.
- Murni, S.W., H. Pawignyo, D. Widyawati, dan N. Sari. 2013. Pembuatan edible film dari tepung jagung (*Zea mays L.*) dan kitosan. *Prosiding Seminar Teknik Kimia "Kejuangan"*, Yogyakarta.
- National Center for Biotechnology Information. 2021. PubChem compound summary for CID 71597331, carrageenan. <https://pubchem.ncbi.nlm.nih.gov/compound/Carrageenan>. Diakses tanggal 26 September 2021.
- Nayeb-Habib, F., S.Salahshoor-Kordestani, F.Afshar-Taromi, and Z. Shariatinia. 2011. A novel topical biocompatible tissue adhesive based on chitosan-modified urethane pre-polymer. *Iranian Polymer Journal* 20: 671-680.
- Nugroho, A., N.D. Nurhayati, dan B. Utami. 2011. Sintesis dan karakterisasi membran kitosan untuk aplikasi sensor deteksi logam berat. *Molekul* 6(2): 123-136.
- Nurainy, F., S. Rizal, dan Yudiantoro. 2008. Pengaruh konsentrasi kitosan terhadap aktivitas antibakteri dengan metode difusi agar (sumur). *Jurnal Teknologi Industri dan Hasil Pertanian* 13(2).
- Pei, M., J. Mao, W. Xu, Y. Zhou, and P. Xiao. 2018. Photocrosslinkable chitosan hydrogels and their biomedical applications. *Journal of Polymer Science*.
- Phuong, P.T.M., H.J. Won, Y.J. Oh, H.S. Lee, K.D. Lee, and S.Y. Park. 2019. The chemistry and engineering of mussel-inspired glue matrix for tissue adhesive and hemostatic. *Journal of Industrial and Engineering Chemistry* 80: 749-756.
- Poursamar, S.A., A.N. Lehner, M. Azami, S. Ebrahimi-Barough, A. Samadikuchaksaraei, and A.P.M. Antunes. 2016. The effect of crosslinkers on physical, mechanical, and cytotoxic properties of gelatin sponge prepared via in-

situ gas foaming method as a tissue engineering scaffold. *Materials Science and Engineering C* 63: 1-9.

- Purba, F., O. Suparno, A. Suryani, dan I. Fatimah. 2018. Hidrolisat kolagen dari limbah padat kulit samak sebagai *coating superabsorbent* pada pupuk lambaturai. *Jurnal Teknologi Industri Pertanian* 28(1): 82-93.
- Rahayu, L.H. dan S. Purnavita. 2007. Optimasi pembuatan kitosan dari kitin limbah cangkang rajungan (*Portunus pelagicus*) untuk adsorben ion logam merkuri. *Jurnal Reaktor* 11(1): 45-49.
- Rasyid, A. 2003. Beberapa catatan tentang karagenan. *Oseana* 28(4): 1-6.
- Ratnawulan, A., E. Noor, dan P. Suptijah. 2018. Pemanfaatan kitosan dalam daur ulang air sebagai aplikasi teknik produksi bersih. *Jurnal Pengolahan Hasil Perikanan Indonesia*, 21(2): 276-286.
- Schutz, C., L.J. Jeanneret, P. Kauper, and C. Wandrey. 2011. Cell response to the exposure to chitosan-TPP//alginate nanogels. *Biomacromolecules* 12: 4153-4161.
- Sedayu, B.B., M.J. Cran, and S.W. Bigger. 2019. A review of property enhancement techniques for carrageenan-based films and coating. *Carbohydrate Polymers* 216: 287-302.
- Sularsih. 2013. Pengaruh viskositas kitosan gel terhadap penggunaannya di proses penyembuhan luka. *Jurnal Materian Kedokteran Gigi* 2(1): 60-67.
- Sumarni, W., A.T. Prasetya, dan E.F. Rahayu. 2017. Effect of glycerol on physical properties of biofilm gambili starch (*Dioscorea esculenta*)-chitosan. *Proceeding of Chemistry Conferences* 2.
- Sun, A., X. He, X. Ji, D. Hu, M. Pe, L. Zhang, Z. Qian. 2021. Current research progress of photopolymerized hydrogels in tissue engineering. *Chinese Chemical Letters*.
- Surjowardojo, P., Tri, E., dan Gabriel, R. 2015. Daya hambat deok kulit apel manalagi (*Malus sylvesters mill.*) terhadap pertumbuhan staphylococcus aureus dan pseudomonas sp. Penyebab mastitis pada sapi perah. *Jurnal Ternak Tropika*. 16(2): 40-48.
- Trisnawati, E., D. Andesti, dan A. Saleh. 2013. Pembuatan kitosan dari limbah cangkang kepiting sebagai bahan pengawet buah duku dengan variasi lama pengawetan. *Jurnal Teknik Kimia* 2(19): 17-26.
- Tunjungsari, F., Jumaeri, dan W. Sumarni. 2019. Karakteristik adhesive polymer polivinil asetat termodifikasi butil akrilat untuk aplikasi transfer metalize. *Indonesian Journal of Chemical Science* 8(2).

- Ulfah, F. dan I. Nugraha. 2014. Pengaruh penambahan montmorillonit terhadap sifat mekanik komposit film karagenan-montmorilonit. *Molekul* 9(2): 155-165.
- Umar, S., W. Ningsih, dan M. Meliana. 2014. Formulasi granul mukoadhesif ketoprofen menggunakan polimer kitosan. *Jurnal Sains Farmasi & Klinis* 1(1): 48-53.
- Utomo, B.S.B., D. Fransiska, dan M. Darmawan. 2016. Formulasi hidrogel dari polivinil pirolidon dan  $\kappa/\iota$  karaginan untuk bahan pembalut luka. *JPB Kelautan dan Perikanan* 11(1): 55-66.
- Villanueva, J.G.V., P.A.S. Huertas, F.S. Galan, R.J.E. Rueda, J.C.B. Triana, and J.P.C. Rodriguez. 2019. Bio-adhesion evaluation of a chitosan-based bone bio-adhesive. *International Journal of Adhesion and Adhesive* 92: 80-88
- Wang, Y., C. Yuan, B. Cui, and Y. Liu. 2018. Influence of cations on texture, compressive elastic modulus, sol-gel transition and freeze-thaw properties of kappa-carrageenan gel. *Carbohydrate Polymers* 202: 503-535.
- Williams, C.G., A.N. Malik, T.K. Kim, P.N. Manson, J.H. Elisseff. 2005. Variable cytocompatibility of six cell lines with photoinitiators used for polymerizing hydrogels and cell encapsulation. *Biomaterials* 26: 1211-1218.
- Wurm, F., T. Pham, and T. Bechtold. 2019. Modelling of phase separation of alginate-carrageenan gels based on rheology. *Food Hydrocolloids* 89: 765-772.
- Yegappan, R., V. Selvaprithiviraj, S. Amirthalingam, and R. Jayakumar. 2018. Carrageenan based hydrogels for drug delivery, tissue engineering and wound healing. *Carbohydrate Polymer* 198: 385-400.
- Yu, H.C., H. Zhang, KF. Ren, Z. Ying, F. Zhu, J. Qian, J. Ji, Z.L. Wu, and Q. Zheng. 2018. Ultrathin  $\kappa$ -carrageenan/chitosan hydrogel films with high toughness and anti-adhesion property. *ACS Applied Materials & Interfaces*.
- Zhang, Y., X. Wang, C. Xu, W. Yan, Q. Tian, Z. Sun, H. Yao, and J. Gao. 2018. Fabrication of chitosan gel droplets via crosslinking of inverse pickering emulsifications. *Carbohydrate Polymers* 186: 1-8.
- Zhao, J., C. Sun, H Li, X. Dong, and X. Zhang. 2020. Studies on the physicochemical properties, gelling behavior and drug release performance of agar/ $\kappa$ -carrageenan mixed hydrogels. *International Journal of Biological Macromolecules* 154: 878-887.