

DAFTAR PUSTAKA

- Abdou, E.S., Osheba, A.S. and Sorour, M.A., 2012, Effect of Chitosan and Chitosan-Nanoparticles as Active Coating on Microbiological Characteristics of Fish Fingers, *Int. J.Appl.Sci.Tec.*, 7(2), 158-169.
- Agmawarnida, 2014, Studi Pelepasan In Vitro dari Nanopartikel Kitosan dengan Asam Laurat sebagai Surfaktan, *Tesis*, Departemen Kimia FMIPA UGM, Yogyakarta.
- Alborzi, S., 2012, Encapsulation of Fenolic Acid in Sodium Alginate-Pektin-Poly (Ethylene Oxide) Electrospun Fibers to Increase Its Stability, *Dissertation*, University of Guelph, Ontario.
- Anonim, 2001, *Human Vitamin and mineral requirements, Report of a joint FAO and WHO expert consultation*, Food and Nutrition Division FAO Rome, Bangkok.
- Bansal, V., Sharma, P.K., Sharma, N., Pal, O.P. and Malviya, R., 2011, Applications of Chitosan and Chitosan Derivatives in Drug Delivery, *Adv.Bio.Res.*, 5(1), 28-37.
- Beppu, M.M., Vieira, R.S., Aimoli, C.G. and Santana, C.C., 2007, Crosslinking of Chitosan Membranes Using Glutaraldehyde: Effect on Ion Permeability and Water Absorbtion, *J.Membr.Sci.*, 301, 126-30.
- Berger, J., Reist, M., Mayer, J.M., Felt, O. and Gurny, R., 2004, Structure and Interactions in covalently and Ionically Crosslinked Chitosan Hidrogels for Biomedical apications, *Eur.J.Pharm.Biopharm.*, 57, 19-34.
- Bhumkar, D.R. and Pokharkar, V.B., 2006, Studies on Effect pH on Crosslinking of Chitosan with Sodium Tripolyphosphate: A Technical Note, *AAPS PharmSciTech.*, 2(7), 138-143.
- Calvo, P., Remun, A., Vila-Jato, J.L. and Alonso, M.J., 1997, Novel Hydrophilic Chitosan-Polyethylene Oxide Nanoparticles as Protein Carriers, *J.Appl.Polym.Sci.*, 63, 125-32.
- Chan, L., Jin, Y. and Heng, P., 2002, Cross-linking mechanisms of calcium and zinc in production of alginate microspheres, *Int.J.Pharm.*, 242, 255–258.
- Danarto, Y.C., 2020, Studi Proses Mikroenkapsulasi Vitamin B₂ (Riboflavin) dengan Alginat dan Kitosan, *Disertasi*, Departemen Teknik Kimia UGM, Yogyakarta.

- Dash, S., Murthy, P.D., Nath, L. and Chowdhury, P., 2010, Kinetic Modeling on Drug Release from Controlled Drug Delivery Systems, *Acta Pol.Pharm.*, 3(67), 217-223.
- Finotelli, P.V., Silva, D.D., Sola-Penna, M., Rossi, A.M., Farina, M., Andrade, L.R., Takeuchi, A.Y. and Rocha-Leao, M.H., 2010, Microcapsule of Alginat/Kitosan Containing Magnetic Nanoparticles for Controlled Release of Insulin, *Colloids.Surf.B.*, 81, 206-211.
- Giri, K.T., Thakur, A., Alexander, A., Azajuddin, Badwaik, H. and Tripathi, K.D., 2012, Modified Chitosan Hydrogels as Drug Delivery and Tissue Engineering Systems: Present Status and Applications, *Acta Pharm.Sin.B.*, 2(5), 439-449.
- Grant, G.T., Morris, E.R. and Rees, D.A., 1973, Biological Interactions Between Polysaccharides and Divalent Cations: The Egg-Box Model, *FEBS Lett.*, 1(32), 195-198.
- Grasianto, 2014, Enkapsulasi Kurkumin Dalam Nanopartikel Kitosan-Pektin Tertaut Silang Glutaraldehida Dan Studi Pelepasannya Secara In Vitro, *Tesis*, Departemen Kimia FMIPA UGM, Yogyakarta.
- Hejazi, R. and Amiji, M., 2003, Chitosan-Based Gastrointestinal Delivery System, *J.Control Release*, 2(89), 151-165.
- Higuchi, T., 1963, Mechanism of Sustained-Action Medication. Theoretical Analysis of rate of Release of Solid Drugs Dispersed in Solid Matrices, *J.Pharm.Sci.*, 52, 1145-1149.
- Horikoshi, S. and Serpone, N., 2013, *Introduction to Nanoparticles: Microwaves in Nanoparticle Synthesis*, 1st Ed., Wiley-VCH, New York.
- Illum, L., Farraj, N.F. and Davis, S.S., 1994, Chitosan as Novel Nasal Delivery System for Peptides Drugs, *Pharm.Res.*, 11, 1186-1189.
- Irawan, D., 2014, Optimasi dan Karakterisasi Nanopartikel Kitosan-Naringenin dengan Variasi pH dan Konsentrasi Natrium Tripolifosfat, *Skripsi*, Fakultas Farmasi, Universitas Jember.
- Jeong, J.C., Lee, J. and Cho, K., 2003, Effects of Crystalline Microstructure on Drug Release Behavior of Poly(Q-Caprolactone) Microspheres, *J.Control Release*, 92, 249-258.
- Kaban, J., 2009, Modifikasi Kimia dari Kitosan dan Aplikasi Produk yang Dihasilkan, *Tesis*, Fakultas MIPA, Universitas Sumatera Utara.
- Kaban, J., Bangun, H., Dawolo, A.K. dan Daniel, 2006, Pembuatan Membran Kompleks Polielektrolit Alginat-Kitosan, *J.Kim.Sains Apl.*, 1(10), 10-16.

- Kim, S., Chen, J., Cheng, T., Gindulyte, A., He, J., He, S., Li, Q., Shoemaker, B. A., Thiessen, P. A., Yu, B., Zaslavsky, L., Zhang, J. and Bolton, E. E., 2022, PubChem 2023 update, *Nucleic Acids Res.*, 51(D1), 1373–1380.
- Kim, S., Fernandes, M.M., Matamá, T., Loureiroa, A., Gomes, A.C. and Paulo, A.C., 2013, Chitosan-Lignosulfonates sono-chemically prepared Nanoparticles: Characterization and Potential Applications, *Colloids.Surf.B.*, 103, 1-8.
- Ko, J.A., Park, J.H., Park, S.Y., Hwang, J.S., and Park, B.J., 2003, Chitosan Microparticle Preparation for Controlled Drug Release by Response Surface Methodology, *J.Microencapsul.*, 6(20), 791-797.
- Li, P., Wang, Y., Peng, Z., Shea, F. and Kong, L., 2011, Development of Chitosan Nanoparticles as Drug Delivery Systems for 5-fluorouracil and leucovorin Blends, *Carbohydr. Polym.*, 85, 698-704.
- Liu, P. and Krishnan, T.R., 1999, Alginate-Pectin-Poly-L-lysine Particulates as a Potential Controlled Release Formulation, *J.Pharm.Pharmacol.*, 51, 141-149.
- Luppi, B., Bigucci, F., Abruzzo, A., Corace, G., Teresa Cerchiara, T. and Zecchi, V., 2010, Freeze-Dried Chitosan/Pectin Nasal Inserts for Antipsychotic Drug Delivery, *Eur.J.Pharm.Biopharm.*, 75, 381-387.
- Ma, J. and Sahay, Y., 2013, Chitosan biopolymer for fuel cell applications, *Carbohydr.Polym.*, 2(92), 955-975.
- Margret, A. and S. Aishwarya, 2011, A Study on Biopolymeric Nanoparticles as an Effective Carrier for Antidepressant Drug Delivery System, *Int.J.Pharm.Sci. Res.*, 4(3), 1028-1036.
- Mishra, R.K., Banthia A.K. and Majeed, A., 2012, Pectin Based Formulations for Biomedical Applications: a review, *Asian J.Pharm.Clin.Res.*, 5, 1-7.
- Moffat, A.C., Osselton, M.D. and Widdop, B., 2004, *Clarke's Analysis of Drugs and Poisons*, 3rd Ed., Pharmaceutical Press, London.
- Mohanraj, V.J. and Chen, Y., 2006, Nanoparticles - A Review, *Trop.J.Pharm.Res.*, 5, 561-573.
- Mooney, S., Leuendorf, J.E., Hendrickson, C. and Hellmann, H., 2009, Vitamin B₆: a long-known compound of surprising complexity, *Molecules*, 1(14), 329-351.
- Morris, G.A., Kok, M.S., Harding, S.E. and Adam, G.A., 2010, Polysaccharide Drug Delivery Systems Based on Pectin and Chitosan, *Biotechnol.Genet.Eng.Rev.*, 27, 257-284.

- Mouryaa, V.K., Nazma N., Inamdar and Tiwari, A., 2010, Carboxymethyl Chitosan and its Applications, *Adv.Mater.Lett.*, 1, 11-33.
- Nugroho, P.S.A., 2014, Pelepasan Kurkumin dari Nanopartikel Kitosan-Karboksimetil Selulosa-Glutaraldehyd, *Tesis*, Departemen Kimia FMIPA UGM, Yogyakarta.
- Pal, S.L., Jana, U., Manna, P.K., Mohanta, G.P. and Manavalan R., 2011, Nanoparticle: An Overview of Preparation and Characterization, *J.Appl.Pharm.Sci.*, 6, 228-234.
- Parra, M., Stahl, S. and Hellmann, H., 2018, Vitamin B₆ and Its Role in Cell Metabolism and Physiology, *Cells*, 7(7), 84
- Patel, M.P., Patel, R.R. and Patel, J.K., 2010, Chitosan Mediated Targeted Drug Delivery System: A Review, *J.Pharm.Pharm.Sci.*, 13(3), 536-557.
- Patil, J.S., Kamalapur, M.V., Marapur, S.C. and Kadam, D.V., 2010, Ionotropic Gelation and Polyelectrolyte Complexation: The Novel Techniques to Design Hydrogel Particulate Sustained, Modulated Drug Delivery System: a Review, *Dig.J.Nanomater.Biostructures*, 1(5), 241-248.
- Pavia, D.L., 2001, *Introduction Spectroscopy*, 3rd edition, Departement of Chemistry Western Washington University Bellingham, Washington.
- Pierog, M., Gierszewska-Drużyńska, M. and Ostrowska-Czubenko, J., 2009, Effect of Ionic Crosslinking Agents on Swelling Behaviour of Chitosan Hydrogel Membranes, *Phys.Chem.Physico.Polymer*, 14, 75-82.
- Puteri, C.I.A., 2019, Pembuatan Dan Evaluasi Cangkang Kapsul Alginat-Kitosan Mengandung Teofilin Menggunakan Metode Crosslink Tripolifosfat, *Tesis*, Fakultas Farmasi USU, Medan.
- Rakhmaningtyas, A.W., 2012, Preparasi dan karakterisasi nanopartikel sambung silang kitosan-natrium tripolifosfat dalam sediaan film bukal verapamil hidroklorida, *Skripsi*, Program Studi Ekstensi Farmasi Universitas Indonesia, Depok.
- Ramachandran, S., Nandhakumar, S. and Dhanaraju, M.D., 2011, Formulation and Characterization of Glutaraldehyde Cross-Linked Chitosan Biodegradable Microspheres Loaded with Famotidine, *Trop.J.Pharm.Res.*, 3(10), 309-316.
- Rastogi, R., Sultana, Y., Aqil, M., Ali, A., Kumar, S., Chuttani, K. and Mishra, A.K., 2007, Alginate Microspheres of Isoniazid for Oral Sustained Drug Delivery, *Int.J.Pharm.*, 334, 71-77.
- Ravi, P.R., Ganga, S. and Saha, R.N., 2007, Design and Study of Lamivudine Oral Controlled Release Tablets, *AAPS PharmSciTech.*, 4(8), 1-9.

- Redhead H.M., Davis S.S. and Illum L., 2001, Drug delivery in Poly (Lactide-co-Glycolide) Nanoparticles Surface Modified with Poloxamer 407 and Poloxamine 908: In Vitro Characterisation and In Vivo Evaluation, *J.Control Release*, 3(70), 353-363.
- Shu, Z.X. and Zhu, J.K., 2002, Controlled Drug Release Properties of Ionically Cross-linked Chitosan Beads: The Influence of Anion Structure, *Int.J.Pharm.*, 1(233), 217-225.
- Siepmann, J. and Peppas, N.A., 2011, Higuchi equation: Derivation, Applications, Use and Misuse, *Int.J.Pharm.*, 1(418), 6-12.
- Siepmann, J. and Peppas, N.A., 2012, Modeling of Drug Release from Delivery Systems Based on Hydroxypropyl Methylcellulose (HPMC), *Adv.Drug Deliv. Rev.*, 64, 163-174.
- Straccia, M.C., d'Ayala, G.G., Romano, I., Oliva, A. and Laurienzo, P., 2015, Alginate Hydrogels Coated with Chitosan for Wound Dressing, *Mar.Drugs.*, 13, 2890-2908.
- Sugita, P., Sjahriza, A., Wukrsari, T. dan Wahyono, D., 2009, *Kitosan: Sumber Biomaterial Masa Depan*, Penerbit IPB Press, Bogor.
- Szekalska, M., Sosnowska, K., Zakrzaska, A., Kasacka, I., Lewandowska, A. and Winnicka, K., 2017, The Influence of Chitosan Cross-linking on The Properties of Alginate Microparticles with Metformin Hydrochloride-In Vitro and In Vivo Evaluation, *Molecules*, 1(182), 1-20.
- Tiyaboonchai, W., 2003, Chitosan Nanoparticles: A Promising System for Drug Delivery, *Naresuan Univ.Eng.J.*, 3(11), 51-66.
- Wu, Y., Yang, W., Changchun, W., Jianhua, H., Fu, S., 2005, Chitosan nanoparticles as a novel delivery system for ammonium glycyrrhizinate, *Int.J.Pharm.*, 1-2(295), 235-245.