

DAFTAR PUSTAKA

- Aliasghari, A., Khorasgani, M.R., Vaezifar, S., Rahimi, F., Younesi, H. dan Khoroushi, M., (2016) Evaluation of antibacterial efficiency of chitosan and chitosan nanoparticles on cariogenic streptococci: an in vitro study. *Iranian Journal of Microbiology*. 8(2): 93-100.
- Alqahtani, F., Aleanizy, F., El Tahir, E., Alhabib, H., Alsaif, R., Shazly, G., AlQahtani, H., Alsarra, I. and Mahdavi, J., 2020. Antibacterial activity of chitosan nanoparticles against pathogenic *N. gonorrhoea*. *International Journal of Nanomedicine*. 15: 7877-7887
- Arsyi, N.Z., Nurjannah, E., Nurahlina, D. and Budiyati, E., 2018. Karakterisasi nano kitosan dari cangkang kerang hijau dengan metode gelasi ionik. *Jurnal Teknologi Bahan Alam*. 2(2):106-111.
- Avadi, M.R., Sadeghi, A.M.M., Mohammadpour, N., Abedin, S., Atyabi, F., Dinarvand, R. and Rafiee-Tehrani, M., (2010). Preparation and characterization of insulin nanoparticles using chitosan and Arabic gum with ionic gelation method. *Nanomedicine: Nanotechnology, Biology and Medicine*. 6(1): 58-63.
- Azizati, Z., (2019) Pembuatan dan Karakterisasi Kitosan Kulit Udang Galah. *Walisongo Journal of Chemistry*. 2(1): 10-16.
- Badawy, M.E. and Rabea, E.I., (2011) A biopolymer chitosan and its derivatives as promising antimicrobial agents against plant pathogens and their applications in crop protection. *International Journal of Carbohydrate Chemistry*. 2011: 1-29.
- Banas, J.A., (2004) Virulence Properties of *Streptococcus mutans*. *Front Biosci*. 9: 1267-1277
- Baxter, Alasdair & Dillon, Michael & Taylor, K.D.A. & Roberts, George. (1992). Improved method for I.R. determination of the degree of N-acetylation of chitosan. *International Journal of Biological Macromolecules*. 14. 166-9.
- Berg, J.H., (2006) The marketplace for new caries management products: dental caries detection and caries management by risk assessment. *In BMC Oral Health*. 6(1): 1-6.
- [BSN] Badan Standardisasi Nasional, (2013). *Kitosan–Syarat Mutu dan Pengolahan*. SNI No. 7949. Dewan Standardisasi Nasional. Jakarta.
- Couvreux P, Barratt G, Fattal E, Legrand P, Vauthier C. (2002) Nanocapsule technology: a review. *Critical Review in Therapeutic Drug Carrier Systems*. 19: 99–134
- Chaieb, K., Kouidhi, B., Jrah, H., Mahdouani, K., dan Bakhrouf, A., (2011) Antimicrobial activity of Thymoquinone, an active principle of *Nigella sativa* and its potency to prevent bacterial biofilm formation. *BMC Complementary*

and Alternative Medicine. 11: 29.

- Chandrasekaran, M., Kim, K.D., dan Chun, S.C. (2020). Antibacterial Activity of Chitosan Nanoparticles: A Review. *Processes*. 11(73): 1-21.
- Chávez de Paz, L.E., Resin, A., Howard, K.A., Sutherland, D.S. dan Wejse, P.L., (2011). Antimicrobial effect of chitosan nanoparticles on *Streptococcus mutans* biofilms. *Applied and Environmental Microbiology*. 77(11) : 3892-3895.
- Costa, E.M., Silva, S., Tavaría, F.K. dan Pintado, M.M., (2013) Study of the effects of chitosan upon *Streptococcus mutans* adherence and biofilm formation. *Anaerobe*. 20: 27-31.
- Divya, K., Vijayan, S., George, T.K. dan Jisha, M.S., (2017) Antimicrobial properties of chitosan nanoparticles: Mode of action and factors affecting activity. *Fibers and Polymers*. 18(2): 221-230.
- Donlan, R.M., (2001) Biofilm formation: a clinically relevant microbiological process. *Clinical Infectious Diseases*. 33(8): 1387-1392.
- El-Sheikh SMA, El-Alim AAFA, Ibrahim HAF, Mobarez EA, El-Masry DMA, El-Sayed WA. (2019) Preparation, characterization and antibacterial activity of chitosan nanoparticle and chitosan-propolis nanocomposite. *Advances in Animal and Veterinary Sciences*. 7(2): 183-190.
- Featherstone, J.D., (2000) The science and practice of caries prevention. *The Journal of the American Dental Association*. 131(7): 887-899.
- Ferrazzano, G., Amato, I., Ingenito, A., Zarrelli, A., Pinto, G., dan Pollio, A., (2011) Plant Polyphenols and Their Anti-Cariogenic Properties: A Review. *Molecules*. 16: 1486–1507.
- Flemming, H.C. and Wingender, J., (2010) The biofilm matrix. *Nature Reviews Microbiology*. 8(9): 623-633.
- Ge, Y., Caufield, P.W., Fisch, G.S. dan Li, Y., (2008) *Streptococcus mutans* and *Streptococcus sanguinis* colonization correlated with caries experience in children. *Caries Research*. 42(6): 444-448.
- Giri, T., (2016) *Nanoarchitectonics for Smart Delivery and Drug Targeting*. Philadelphia: Elsevier. <http://www.elsevierbooks.com> (09/09/2021)
- Goldberg, M., (2016) *Understanding Dental Caries: From Pathogenesis to Prevention and Therapy*. Switzerland: Springer.
- Goy, R., de Britto, D., dan Assis, (2009). A Review of The Antimicrobial Activity of Chitosan. *Polimeros: Ciencia e Tecnologia*. 19(3): 241-247.
- Hope, C. K. Dan Wilson. (2004). M. Analysis of The Effects of Chlorhexidine on Oral Biofilm Vitality and Structure Based on Viability Profiling and an Indicator of Membrane Integrity. *Antimicrob Agents Chemother*. 48: 1461–1468

- Huei, C.R. and Hwa, H.D., 1996. Effect of molecular weight of chitosan with the same degree of deacetylation on the thermal, mechanical, and permeability properties of the prepared membrane. *Carbohydrate Polymers*. 29(4): 353-358.
- Ifa, L., (2018). Pembuatan kitosan dari sisik ikan kakap merah. *Journal Of Chemical Process Engineering (JCPE)*. 3(1): 47-50
- Ihsani, S.L. dan Widyastuti, C.R., (2014) Sintesis biokoagulan berbasis Kitosan dari kulit udang untuk pengolahan air sungai yang tercemar limbah industri jamu dengan kandungan Padatan Tersuspensi Tinggi. *Jurnal Bahan Alam Terbarukan*. 3(2): 66-70.
- Ikono, R., Vibriani, A., Wibowo, I., Saputro, K.E., Muliawan, W., Bachtiar, B.M., Mardiyati, E., Bachtiar, E.W., Rochman, N.T., Kagami, H. and Xianqi, L., 2019. Nanochitosan antimicrobial activity against *Streptococcus mutans* and *Candida albicans* dual-species biofilms. *BMC Research Notes*. 12(1): 1-7
- Indarjo, A., Anggoro, S., Salim, G., Handayani, K.R., Nugraeni, C.D. and Ransangan, J., (2021). *Domestikasi Udang Galah (Macrobrachium rosenbergii) Estuaria*. Aceh: Syiah Kuala University Press.
- Iñiguez-Moreno, M., Gutiérrez-Lomelí, M., Guerrero-Medina, P.J. and Avila-Novoa, M.G., (2018). Biofilm formation by *Staphylococcus aureus* and *Salmonella* spp. under mono and dual-species conditions and their sensitivity to cetrimonium bromide, peracetic acid and sodium hypochlorite. *Brazilian Journal of Microbiology*. 9: 310-319.
- Jeevanandam, J., Barhoum, A., Chan, Y.S., Dufresne, A. and Danquah, M.K., (2018). Review on nanoparticles and nanostructured materials: history, sources, toxicity and regulations. *Beilstein Journal of Nanotechnology*. 9 (1): 1050-1074.
- Kalimuthu, K., Selvaraj, B.M., Sureshbabu, R.K., Venkataraman, D; Sangiliyandi, G., (2010). Silver nanoparticles impede the biofilm formation by *Pseudomonas aeruginosa* and *Staphylococcus epidermidis*. *Biointerface* 79(2): 340–344.
- Katsikogianni, M. dan Missirlis, Y.F., (2004) Concise review of mechanisms of bacterial adhesion to biomaterials and of techniques used in estimating bacteria-material interactions. *European Cells & Materials*. 8: 37–57.
- Kementerian Kesehatan Republik Indonesia, (2019) *Laporan Nasional Riskesdas 2018*. Jakarta. 204.
- Koo, H., Falsetta, M.L. dan Klein, M.I., (2013) The exopolysaccharide matrix: a virulence determinant of cariogenic biofilm. *Journal of Dental Research*. 92(12): 1065-1073.
- Koo, H., Xiao, J., Klein, M., dan Jeon, J., (2010) Exopolysaccharides Produced by *Streptococcus mutans* Glucosyltransferases Modulate the Establishment of Microcolonies within Multispecies Biofilm. *Journal of Bacteriology*.

192(12): 3024-3032

- Koh SY, George S, Brozel V, Moxley R, Francis D, Kaushik RS. 2008. Porcine Intestinal Epithelial Cell Lines as a New in vitro Model for Studying Adherence and Pathogenesis of Enterotoxigenic Escherichia Coli. *Journal of Vetmic* 130(1-2): 191-197
- Kumari, S., Annamareddy, S.H., Abanti, S., dan Rath, P.K. (2017) Physicochemical Properties and Characterization of Chitosan Synthesized from Fish Scales, Crab, and Shrimp Shells. *International Journal of Biological Macromolecules*. 104(2017): 1697-1705.
- Kusumawati, N., (2009) Pemanfaatan Limbah Kulit Udang sebagai Bahan Baku Pembuatan Membran Ultrafiltrasi. *Inotek*. 13(2): 113-114
- Kravanja G, Primožič M, Knez Ž, Leitgeb M. (2019) Chitosan-Based (Nano)Materials for Novel Biomedical Applications. *Molecules*. 24(10):1960
- Kreth, J., Merritt, J., Shi, W., dan Qi, F., (2005) Competition and coexistence between *Streptococcus mutans* and *Streptococcus sanguinis* in the dental biofilm. *Journal of Bacteriology*. 187(21): 7193-7203.
- Kriebel, K., Hieke, C., Müller-Hilke, B., Nakata, M. and Kreikemeyer, B., (2018) Oral biofilms from symbiotic to pathogenic interactions and associated disease—connection of periodontitis and rheumatic arthritis by peptidylarginine deiminase. *Frontiers in Microbiology*. 9: 53.
- Krzyściak, W., Jurczak, A. and Piątkowski, J., (2016) The role of human oral microbiome in dental biofilm formation. *Microbial Biofilms—Importance and Applications*. *InTech Open Journal*: 329-382
- Limsuwan S, Homlaead S, Watcharakul S, Chusri S, Moosigapong K, Saising J, Voravuthikunchai SP. 2014. Inhibition of Microbial Adhesion to Plastic Surface and Human Buccal Epithelial Cells by *Rhodomyrtus tomentosa* Leaf Extract. *Arch Oral Biol* 59(12): 1256-1265.
- Loesche, W.J., (1986) Role of *Streptococcus mutans* in human dental decay. *Microbiological Reviews*. 50(4): 353-380.
- Magalhães, T.C., Barbosa, L.L., Lopes, A.G., Costa, B.P., Santos, R.L., Munchow, E.A., Carlo, H.L. and de Carvalho, F.G., 2021. Antibacterial Effect of Chitosan Against *Streptococcus mutans*: An Alternative for Mouthrinse on Dental Caries Control and Prevention. *Brazilian Journal of Dentistry*. 78:1-9
- Manzer, H.S., Nobbs, A.H., dan Doran, K.S., (2020) The Multifaceted Nature of Streptococcal Antigen I/II Proteins in Colonization and Disease Pathogenesis. *Frontiers in Microbiology*. 11: 1-11
- Marsh, P. dan Martin, M., (2009) *Oral Microbiology 4th edition*. Wright: Oxford, Halaman 94
- Mikx, F.H.M., Van Der Hoeven, J.S., Plasschaert, A.J.M. and König, K.G., (1975)

Effect of *Actinomyces viscosus* on the establishment and symbiosis of *Streptococcus mutans* and *Streptococcus sanguis* in SPF rats on different sucrose diets. *Caries Research*. 9(1): 1-20.

Muhsin, J., Ufaq, T., Tahir, H. and Saadia, A., (2015) Bacterial biofilm: its composition, formation and role in human infections. *Journal of Microbiology and Biotechnology*. 4: 1-14.

Murtidjo BA. (1992). *Budidaya Udang Galah Sistem Monokultur*. Yogyakarta: Kanisius.

Neilands J, Sutherland D, Resin A, Wejse PL, Chávez de Paz LE. Chitosan nanoparticles affect the acid tolerance response in adhered cells of *Streptococcus mutans*. *Caries Research*. 2011;45(6):501-505

Newman, M.G., Takei, H., Klokkevold, P.R., dan Carranza, F.A., (2018) *Newman and Carranza's Clinical periodontology 13th edition*. Philadelphia: Elsevier. <http://www.elsevierbooks.com> (17/10/2020).

Nugrahani, N. A., Kunarti, S., dan Setyowatie, L. (2016). Konsentrasi Efektif Daya Antibiofilm Kitosan Cangkang Udang terhadap *Streptococcus Viridans* (The Effective Concentration of Antibiofilms Capacity from Shrimp Shells Chitosan towards *Streptococcus Viridans*). *Conservative Dentistry Journal*. 6 (2): 105-109.

Okahashi, N., Nakata M., Terao Y., Isoda R., Sakurai A., Kawabata S, dan Ooshima, T., (2011) Microbial pathogenesis Pili of oral *Streptococcus sanguinis* bind to salivary amylase and promote the biofilm formation. *Microbial Pathogenesis*. 50(2011): 148-154.

Ooshima, T., Matsumura, M., Hoshino, T., Kawabata, S., Sobue, S. and Fujiwara, T., (2001) Contributions of three glucosyltransferases to sucrose- dependent adherence of *Streptococcus mutans*. *Journal of Dental Research*. 80(7): 1672-1677.

Orgaz, B., Lobete, M.M., Puga, C.H. dan Jose, C.S., (2011) Effectiveness of chitosan against mature biofilms formed by food related bacteria. *International Journal of Molecular Sciences*. 12(1): 817-828.

Paik, S., Senty, L., Das, S., Noe, J.C., Munro, C.L. and Kitten, T., (2005) Identification of virulence determinants for endocarditis in *Streptococcus sanguinis* by signature-tagged mutagenesis. *Infection and Immunity*. 73(9): 6064-6074.

Peres, M.A., Macpherson, L.M., Weyant, R.J., Daly, B., Venturelli, R., Mathur, M.R., Listl, S., Celeste, R.K., Guarnizo-Herreño, C.C., Kearns, C. dan Benzian, H., (2019) Oral diseases: a global public health challenge. *The Lancet*. 394(10194): 249-260.

Putri, D.K.T., Kriswandini, I.L., dan Luthfi, M., (2016) Characterization of *Streptococcus sanguinis* molecular receptors for *Streptococcus mutans* binding molecules. *Dental Journal (Majalah Kedokteran Gigi)*. 49(4): 213-

216.

Ramos-Gomez, F.J., Crystal, Y.O., Ng, M.W., Crall, J.J., dan Featherstone, J.D.B., (2010) Pediatric dental care: prevention and management protocols based on caries risk assessment. *Journal of the California Dental Association*, 38: 746–761.

Rinaudo, M. (2006) Chitin and Chitosan: Properties and Application. *Progress in Polymer Science*. 31(7):603-632

Rivera Aguayo, P., Bruna Larenas, T., Alarcón Godoy, C., Cayupe Rivas, B., González-Casanova, J., Rojas-Gómez, D. and Caro Fuentes, N., (2020). Antimicrobial and antibiofilm capacity of chitosan nanoparticles against wild type strain of *Pseudomonas* sp. isolated from milk of cows diagnosed with bovine mastitis. *Antibiotics*. 9(9): 551.

Rocha, R.G, Sims K.R Jr, Xiao, B., Klein, M.I., dan Benoit, DSW. (2021) Nanoparticle carrier co-delivery of complementary antibiofilm drugs abrogates dual species cariogenic biofilm formation in vitro. *Journal of Oral Microbiology*. 14(1):1997230.

Samar, M., El-Kalyoubi, M., Khalaf, M., dan El-Razik, A., (2013) Physicochemical, Functional, Antioxidant and Antibacterial Properties of Chitosan Extracted From Shrimp Wastes by Microwave Technique, *Annals of Agricultural Science*. 58(1): 33-41

Selwitz, R.H., Ismail, A.I. dan Pitts, N.B., (2007) Dental caries. *The Lancet*. 369(9555): 51-59

Setha, B., Rumata, F., Silaban, Bbr., (2019) Karakteristik kitosan dari kulit udang vaname dengan menggunakan suhu dan waktu yang berbeda dalam proses deasetilasi. *Jurnal Pengolahan Hasil Perikanan Indonesia*. 22(3): 498-507.

Shi, S.F., Jia, J.F., Guo, X.K., Zhao, Y.P., Chen, D.S., Guo, Y.Y. and Zhang, X.L., (2016) Reduced *Staphylococcus aureus* biofilm formation in the presence of chitosan-coated iron oxide nanoparticles. *International Journal of Nanomedicine*. 11: 6499-6506.

Suptijah P, Salamah E, Sumaryanto H, Purwaningsih S, Santoso J. (1992) Pengaruh berbagai isolasi khitin kulit udang terhadap mutunya. *Jurnal Penelitian Perikanan Indonesia*. 3(1): 1-9

Tahir, L. dan Nazir, R., (2018) *Dental Caries, Etiology, and Remedy through Natural Resources*. London: Intech Open. <https://www.intechopen.com/chapters/60503> (17/08/2021).

Xuedong, Z. (2016) *Dental Caries: Principles and Management*. Berlin: Springer-Verlag

Yoshida, Y., Konno, H., Nagano, K., Abiko, Y., Nakamura, Y., Tanaka, Y. dan Yoshimura, F., (2014) The influence of a glucosyltransferase, encoded by

gtfP, on biofilm formation by *Streptococcus sanguinis* in a dual-species model. *Journal of Pathology, Microbiology, and Immunology*. 122(10): 951-960.

Utami, Diyah., Sylvia, U.T., Tetiana, H., dan Triana, H (2021). Cinnamaldehyde's Potential Inhibitory Effect towards Planktonic and Biofilm of Oral Bacteria. *International Journal of Pharmaceutical Research*. 13(1): 1081-1086.

Xing, Y.; Wang, X.; Guo, X.; Yang, P.; Yu, J.; Shui, Y.; Chen, C.; Li, X.; Xu, Q.; Xu, L.; Bi, X.; Liu, X. (2021) Comparison of Antimicrobial Activity of Chitosan Nanoparticles against Bacteria and Fungi. *Coatings*. 11: 769.

Xuedong, Z. (2016) *Dental Caries: Principles and Management*. Berlin: Springer-Verlag

Zaura-Arite E, van Marle J, ten Cate JM. (2001). Confocal microscopy study of undisturbed and chlorhexidine-treated dental biofilm. *Journal of Dental Research*. 80:1436–1440.

Zhu, B., Macleod, LC., Kitten, T., dan Xu, P., (2018) *Streptococcus sanguinis* Biofilm Formation and Interaction with Oral Pathogens. *Future Microbiology*. 13(8):915-920.