DAFTAR PUSTAKA

Abdulla, A.A., 2014. Antimicrobial Activity of Lactobacillus acidophilus that carry the Bacteriocin Gene. *Int. J. Curr. Microbiol. App. Sci*, **3**: 269–276.

Adil, M., Singh, K., Verma, P.K., dan Khan, A.U., 2014. Eugenol-induced suppression of biofilm-forming genes in Streptococcus mutans: An approach to inhibit biofilms. *Journal of Global Antimicrobial Resistance*, **2**: 286–292.

Al-Bayati, F.A., 2009. Isolation and identification of antimicrobial compound from Mentha longifolia L. leaves grown wild in Iraq. *Annals of Clinical Microbiology and Antimicrobials*, **8**: 20.

Al-Hebshi, N.N., Nielsen, O., dan Skaug, N., 2005. In vitro effects of crude khat extracts on the growth, colonization, and glucosyltransferases of Streptococcus mutans. *Acta Odontologica Scandinavica*, **63**: 136–142.

Almirante, B., Rodríguez, D., Park, B.J., Cuenca-Estrella, M., Planes, A.M., Almela, M., dkk., 2005. Epidemiology and predictors of mortality in cases of Candida bloodstream infection: results from population-based surveillance, barcelona, Spain, from 2002 to 2003. *Journal of Clinical Microbiology*, **43**: 1829–1835.

Amiati, 2011. Pengaruh pasta gigi dengan kandungan buah anggur terhadap pembentukan plak gigi. *Jurnal Media Medica*, .

Ardani, M., Pratiwi, S., dan Hertiani, T., 2010. Efek campuran minyak atsiri daun cengkeh dan kulit batang kayu manis sebagai antiplak gigi. *Majalah Farmasi Indonesia*, **21**: 191–201.

Arvidsson, A., Mattisson, I., dan Blom, K., 2018. Evaluation of In Vitro Biofilm Formation on Titanium Nitride Specimens. *Biomaterials and Medical Applications*, **2017**: .

Ateş Duru, Ö., 2021. General Overview of Bacterial Exopolysaccharides Focused on Medical Applications. *Academia Letters*, .

Badet, C. dan Thebaud, N.., 2008. Ecology of Lactobacilli in the Oral Cavity: A Review of Literature. *The Open Microbiology Journal*, **2**: 38–48.

Bafadal, M., 2016. 'Efek Minyak Masoyi (Massoia aromatica Becc.) Terhadap Kultur Multispesies Biofilm', . Universitas Gadjah Mada.

Barocchi, M.A., Ries, J., Zogaj, X., Hemsley, C., Albiger, B., Kanth, A., dkk., 2006. A pneumococcal pilus influences virulence and host inflammatory responses. *Proceedings of the National Academy of Sciences of the United States of America*, **103**: 2857–2862.

Berger, D., Rakhamimova, A., Pollack, A., dan Loewy, Z., 2018. Oral Biofilms: Development, Control, and Analysis. *High-Throughput*, **7**: .

Bjarnsholt, T., Ciofu, O., Molin, S., Givskov, M., dan Høiby, N., 2013. Applying insights from biofilm biology to drug development - can a new approach be developed? *Nature Reviews. Drug Discovery*, **12**: 791–808.

Boratyński, F., Szczepańska, E., De Simeis, D., Serra, S., dan Brenna, E., 2020. Bacterial Biotransformation of Oleic Acid: New Findings on the Formation of γ-Dodecalactone and 10-Ketostearic Acid in the Culture of Micrococcus luteus. *Molecules*, **25**: 3024.

Bowles, B.L. dan Miller, A.J., 1993. Antibotulinal properties of selected aromatic and aliphatic aldehydes. *Journal of food protection (USA)*, .

Brailsford, S.R., Tregaskis, R.B., Leftwich, H.S., dan Beighton, D., 1999. The Predominant

Actinomyces spp. Isolated from Infected Dentin of Active Root Caries Lesions. *Journal of Dental Research*, **78**: 1525–1534.

Brook, I., 2001. *Recorvery of Anaerobic Bacteria From Four Children With Postthoracotomy Sternal Wound Infection*. Pediatrics.

Budin, G., Chung, H.J., Lee, H., dan Weissleder, R., 2012. A magnetic Gram stain for bacterial detection. *Angewandte Chemie (International Ed. in English)*, **51**: 7752–7755.

Burne, R.A., 1991. *Oral Ecological Disaster: The Role of Short-Term Extracellular Storage Polysaccharides*. University of Rochester Press, New York.

Cahill, T.J. dan Prendergast, B.D., 2016. Infective endocarditis. *Lancet (London, England)*, **387**: 882–893.

Caufield, P.W., Li, Y., Dasanayake, A., dan Saxena, D., 2007. Diversity of Lactobacilli in the Oral Cavities of Young Women with Dental Caries. *Caries research*, **41**: 2–8.

Celik, U., Tunac, A.T., Ates, M., dan Sen, B.H., 2016. Antimicrobial activity of different disinfectants against cariogenic microorganisms. *Brazilian Oral Research*, **30**: .

Cerca, N., Gomes, F., Pereira, S., Teixeira, P., dan Oliveira, R., 2012. Confocal laser scanning microscopy analysis of S. epidermidis biofilms exposed to farnesol, vancomycin and rifampicin. *BMC research notes*, **5**: 244.

Chaieb, K., Kouidhi, B., Jrah, H., Mahdouani, K., dan Bakhrouf, A., 2011. Antibacterial activity of Thymoquinone, an active principle of Nigella sativa and its potency to prevent bacterial biofilm formation. *BMC Complementary and Alternative Medicine*, **11**: 29.

Choi, H.M., Han, K., Park, Y.G., dan Park, J.-B., 2016. Associations between the number of natural teeth and renal dysfunction. *Medicine*, **95**: .

Devi, K.P., Nisha, S.A., Sakthivel, R., dan Pandian, S.K., 2010. Eugenol (an essential oil of clove) acts as an antibacterial agent against Salmonella typhi by disrupting the cellular membrane. *Journal of Ethnopharmacology*, **130**: 107–115.

Dewi, Z.Y., Nur, A., dan Hertriani, T., 2015. Efek antibakteri dan penghambatan biofilm ekstrak sereh (Cymbopogon nardus L.) terhadap bakteri Streptococcus mutans. *Majalah Kedokteran Gigi Indonesia*, **1**: 136–141.

Dhifi, W., Bellili, S., Jazi, S., Bahloul, N., dan Mnif, W., 2016. Essential Oils' Chemical Characterization and Investigation of Some Biological Activities: A Critical Review. *Medicines*, **3**: .

Djauleha, F., 2009. Khasiat Infusa Daun Kaca Piring sebagai Obat Kumur terhadap Keberadaan Candida albicans. *Dentistry Journal*, **32**: 32–36.

Donlan, R.M., 2002. Biofilms: microbial life on surfaces. *Emerging Infectious Diseases*, **8**: 881–890.

Doyle, R.J., 2000. Contribution of the hydrophobic effect to microbial infection. *Microbes and Infection*, **2**: 391–400.

Duarte, M.C.T., Duarte, R.M.T., Rodrigues, R. a. F., dan Rodrigues, M.V.N., 2017. Essential Oils and Their Characteristics, dalam: *Essential Oils in Food Processing*. John Wiley & Sons, Ltd, hal. 1–19.

Dullah, E.C. dan Ongkudon, C.M., 2017. Current trends in endotoxin detection and analysis of endotoxin–protein interactions. *Critical Reviews in Biotechnology*, **37**: 251–261.

El Atki, Y., Aouam, I., El Kamari, F., Taroq, A., Gourch, A., Lyoussi, B., dkk., 2019. Antibacterial efficacy of Thymol, Carvacrol, Eugenol and Menthol as alternative

agents to control the growth of nosocomial infection-bacteria. *Journal of Pharmaceutical Sciences and Research*, **11**: 306–309.

Eley, B.M., Sorry M., dan Manson, J.D., 2010. *Periodontic 6th Ed*. Elsevier, Sauders.

Espinosa-Cristóbal, L.F., Holguín-Meráz, C., Zaragoza-Contreras, E.A., Martínez-Martínez, R.E., Donohue-Cornejo, A., Loyola-Rodríguez, J.P., dkk., 2019. Antimicrobial and Substantivity Properties of Silver Nanoparticles against Oral Microbiomes Clinically Isolated from Young and Young-Adult Patients. *Journal of Nanomaterials*, **2019**: 1–14.

Estela dan Alejandro, 2012. *Biofilms: A Survival and Resistance Mechanism of Microorganisms*. IntechOpen Limited, London.

Fathilah, A. razak, Md Yusoff, M., dan Zubaidah, R., 2009. The effect of Psidium guajava and Piper betle extracts on the morphology of dental plaque bacteria. *Pak J Med Sci*, **25**: .

Featherstone, J.D.B., 2003. The Caries Balance: Contributing Factors and Really Detection **13**: .

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.

Ferretti, J.J. dan Ward, M., 1976. Susceptibility of Streptococcus mutans to Antimicrobial Agents. *Antimicrobial Agents and Chemotherapy*, **10**: 274–276.

Flemming, H.-C. dan Wingender, J., 2010. The biofilm matrix. *Nature Reviews Microbiology*, **8**: 623–633.

Freires, I., Denny, C., Benso, B., de Alencar, S., dan Rosalen, P., 2015a. Antibacterial Activity of Essential Oils and Their Isolated Constituents against Cariogenic Bacteria: A Systematic Review. *Molecules*, **20**: 7329–7358.

Freires, I., Denny, C., Benso, B., de Alencar, S., dan Rosalen, P., 2015b. Antibacterial Activity of Essential Oils and Their Isolated Constituents against Cariogenic Bacteria: A Systematic Review. *Molecules*, **20**: 7329–7358.

Gabrilska, R.A. dan Rumbaugh, K.P., 2015. Biofilm models of polymicrobial infection. *Future Microbiology*, **10**: 1997–2015.

García-Salinas, S., Elizondo-Castillo, H., Arruebo, M., Mendoza, G., dan Irusta, S., 2018. Evaluation of the Antimicrobial Activity and Cytotoxicity of Different Components of Natural Origin Present in Essential Oils. *Molecules : A Journal of Synthetic Chemistry and Natural Product Chemistry*, **23**: .

Garg, N. dan Garg, A., 2013a. *Texbook of Endodontics*. Jaypee Brothers Medical Publishers, New Delhi.

Gavali, N., Patil, V., Mali, A., dan Waghmare, P., 2018. World Journal of Pharmaceutical and Life Sciences.

Gupta, C., Garg, A.P., Uniyal, R.C., dan Kumari, A., 2008. Antimicrobial activity of some herbal oils against common food-borne pathogens. *African Journal of Microbiology Research*, **2**: 258–261.

Gursoy, U.K., Gursoy, M., Gursoy, O.V., Cakmakci, L., Könönen, E., dan Uitto, V.-J., 2009. Anti-Biofilm Properties of Satureja Hortensis L. Essential Oil Against Periodontal Pathogens. *Anaerobe*, **15**: 164–167.

Hammer, Ø., Harper, D.A., dan Ryan, P.D., 2001. PAST: Paleontological statistics software package for education and data analysis. *Palaeontologia electronica*, **4**: 9.

Hamzah, H., 2017a. Efek C-10 masoia lakton terhadap kultur multispesies biofilm. *Tesis*, MSc, Fakultas Farmasi, Universitas Gadjah Mada, Yogyakarta

Hamzah, H., Hertiani, T., Pratiwi, S.U.T., dan Nuryastuti, T., 2020a. Potensi antibiofilm polimikroba senyawa dari tumbuhan: studi aktivitas terhadap Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli, Candida albicans. *Disertasi*, Dr., Fakultas Farmasi, Universitas Gadjah Mada, Yogyakarta

Hamzah, H., Hertiani, T., Utami Tunjung Pratiwi, S., Nuryastuti, T., dan Gani, A.P., 2020b. Antibiofilm Studies of Zerumbone against Polymicrobial biofilms of Stapylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, and Candida albicans. *International Journal of Pharmaceutical Research*, **1**: 1–8.

Hamzah, H., Pratiwi, S.U.T., dan Hertiani, T., 2017b. 'Efek C-10 masoia lakton terhadap kultur multispesies biofilm', . Universitas Gadjah Mada.

Hayashi, M.A., Bizerra, F.C., dan Da Silva, P.I., 2013. Antimicrobial compounds from natural sources. *Frontiers in Microbiology*, **4**: .

He, Z., Huang, Z., Jiang, W., dan Zhou, W., 2019. Antimicrobial Activity of Cinnamaldehyde on Streptococcus mutans Biofilms. *Frontiers in Microbiology*, **10**: .

Hertiani, T., Pratiwi, S.U.T., Irianto, I.D.K., Adityaningrum, D., dan Pranoto, B., 2011. Effect of Indonesian medicinal plants essential oils on Streptococcus mutansbiofilm. *Indonesian Journal of Pharmacy*, 174–181.

Hilson, 2014. *Tooth Development in Human Evolution*. Cambridge University Press, UK.

Hobley, L., Harkins, C., MacPhee, C.E., dan Stanley-Wall, N.R., 2015. Giving structure to the biofilm matrix: an overview of individual strategies and emerging common themes. *FEMS microbiology reviews*, **39**: 649–669.

Huang, R., Li, M., dan Gregory, R.L., 2011. Bacterial interactions in dental biofilm. *Virulence*, **2**: 435–444.

Hung, H.T., Ye, D.Q., dan Lai, C.H., 2016. Comparison of the adhesion of Streptococcus sanguinis to commonly used dental alloys stratified by gold content. *Journal of Dental Sciences*, **11**: 437–442.

Jakubovics, N.S., Kerrigan, S.W., Nobbs, A.H., Strömberg, N., van Dolleweerd, C.J., Cox, D.M., dkk., 2005. Functions of cell surface-anchored antigen I/II family and Hsa polypeptides in interactions of Streptococcus gordonii with host receptors. *Infection and Immunity*, **73**: 6629–6638.

Jakubovics, N.S. dan Palmer, R.J., 2013. *Oral Microbial Ecology*. Caister Academic Press, Norflok.

Jia, P., Xue, Y.J., Duan, X.J., dan Shao, S.H., 2011. Effect of cinnamaldehyde on biofilm formation and sarA expression by methicillin-resistant Staphylococcus aureus. *Letters in Applied Microbiology*, **53**: 409–416.

Jin, Y., Zhang, T., Samaranayake, Y.H., Fang, H.H.P., Yip, H.K., dan Samaranayake, L.P., 2005. The use of new probes and stains for improved assessment of cell viability and extracellular polymeric substances in Candida albicans biofilms. *Mycopathologia*, **159**: 353–360.

Jorgensen, J.H. dan Ferraro, M.J., 1998. Antimicrobial susceptibility testing: general principles and contemporary practices. *Clinical Infectious Diseases: An Official Publication of the Infectious Diseases Society of America*, **26**: 973–980.

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.

Keller, L. dan Surette, M.G., 2006. Communication in bacteria: an ecological and evolutionary perspective. *Nat Rev Microbiol*, **4**: 249–258.

Khan, S.T., Khan, M., Ahmad, J., Wahab, R., Abd-Elkader, O.H., Musarrat, J., dkk., 2017. Thymol and carvacrol induce autolysis, stress, growth inhibition and reduce the biofilm formation by Streptococcus mutans. *AMB Express*, **7**: 49.

Kidd,E.A.M.Bechal, E.A.M.K., Sally Joyston, 1991. *Dasar Dasar Karies*. EGC.

Kilian, M., MIKKELSEN, L., dan HENRICHSEN, J., 1989. Taxonomic study of viridans streptococci: description of Streptococcus gordonii sp. nov. and emended descriptions of Streptococcus sanguis (White and Niven 1946), Streptococcus oralis (Bridge and Sneath 1982), and Streptococcus mitis (Andrewes and Horder 1906). *International Journal of Systematic and Evolutionary Microbiology*, **39**: 471–484.

Koch, A.L., 1999. Diffusion through agar blocks of finite dimensions: a theoretical analysis of three systems of practical significance in microbiology. *Microbiology (Reading, England)*, **145 (Pt 3)**: 643–654.

Kokare, C.R., Chakraborty, S., Khopade, A.N., dan Mahadik, K.R., 2009. 'Biofilm: Importance and applications', .

Kon, K. dan Rai, M., 2014. *Microbiology for Surgical Infections: Diagnosis and Prognosis Treatment*. Elsevier, London.

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**: 7193–7203.

Kundu, M., Kundu, P.K., dan Damarla, S.K., 2017. *Chemometric Monitoring: Product Quality Assessment, Process Fault Detection, and Applications*. CRC Press, Taylor & Francis Group, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742.

Lapinska, B., Szram, A., Zarzycka, B., Grzegorczyk, J., Hardan, L., Sokolowski, J., dkk., 2020. An In Vitro Study on the Antimicrobial Properties of Essential Oil Modified Resin Composite against Oral Pathogens. *Materials*, **13**: 4383.

Li, B., Li, X., Lin, H., dan Zhou, Y., 2018. Curcumin as a Promising Antibacterial Agent: Effects on Metabolism and Biofilm Formation in *S. mutans*. *BioMed Research International*, **2018**: 1–11.

Li, X., Kolltveit, K.M., Tronstad, L., dan Olsen, I., 2000. Systemic Diseases Caused by Oral Infection. *Clinical Microbiology Reviews*, **13**: 547–558.

Lin, C.M., Preston, J.F.I., dan Wei, C.I., 2000. Antibacterial mechanism of allyl isothiocyanate. *J Food Prot*, **63**: 727–734.

Lobo, E., 2013. Comparative in vitro study of antimicrobial against oral biofilms of Streptococcus mutans. *CIBTech Journal of Microbiology*, **2**: 45–53.

Loimaranta, V., Mazurel, D., Deng, D., dan Söderling, E., 2020. Xylitol and erythritol inhibit real-time biofilm formation of Streptococcus mutans. *BMC Microbiology*, **20**: .

Lv, F., Liang, H., Yuan, Q., dan Li, C., 2011. In vitro antimicrobial effects and mechanism of action of selected plant essential oil combinations against four food-related microorganisms. *Food Research International*, **44**: 3057–3064.

Mandroli, P.S. dan Bhat, K., 2018. An in-vitro evaluation of antibacterial activity of curcumin against common endodontic bacteria. *Journal of Applied Pharmaceutical Science*, , 106-108 **3**: 3.

Manjunatha, H.C., 2013. A study of bremsstrahlung spectra and absorbed dose of beta in teeth enamel and dentin. *X-Ray Spectrometry*, **42**: 508–523.

Marsh, P.D., 2012. Contemporary perspective on plaque control. *British Dental Journal*, **212**: 601–606.

Matan, N., Rimkeeree, H., Mawson, A.J., Chompreeda, P., Haruthaithanasan, V., dan Parker, M., 2006. Antimicrobial activity of cinnamon and clove oils under modified atmosphere conditions. *International Journal of Food Microbiology*, **107**: 180–185.

Mieher, J.L., Larson, M.R., Schormann, N., dan Sangeetha, 2018. Glucan Binding Protein C of Streptococcus mutans Mediates both Sucrose-Independent and Sucrose-Dependent Adherence | Infection and Immunity. *J Biol Chem*, **40**: 5–8.

Miller, J.N. dan Miller, J.C., 2005. *Statistics and Chemometrics for Analytical Chemistry, 5th Edition*. Pearson Education Ltd., Edinburg.

Moein, M.R., Zomorodian, K., Pakshir, K., Yavari, F., Motamedi, M., dan Zarshenas, M.M., 2015. *Trachyspermum ammi* (L.) Sprague: Chemical Composition of Essential Oil and Antimicrobial Activities of Respective Fractions. *Journal of Evidence-Based Complementary & Alternative Medicine*, **20**: 50–56.

Morse, D.J., Wilson, M.J., Wei, X., Lewis, M.A.O., Bradshaw, D.J., Murdoch, C., dkk., 2018. Denture-associated biofilm infection in three-dimensional oral mucosal tissue models. *Journal of Medical Microbiology*, **67**: 364–375.

Mugao, L.G., Gichimu, B.M., Muturi, P.W., dan Mukono, S.T., 2020. Characterization of the Volatile Components of Essential Oils of Selected Plants in Kenya. *Biochemistry Research International*, **2020**: e8861798.

Nakano, K., Nomura, R., dan Ooshima, T., 2008. Streptococcus mutans and cardiovascular diseases. *Japanese Dental Science Review*, **44**: 29–37.

Newman, M., Takei, H., Klokkevold, P.R., dan Carranza, F.A., 2006. *Newman and Carranza's Clinical Periondontology*. Elsevier Health Sciences, California.

Newman, M.G., Takei, H., Klokkevold, P.R., dan Carranza, F.A., 2018. *Newman and Carranza's Clinical Periodontology*. Elsevier Health Sciences.

Niu, C. dan Gilbert, E.S., 2004. Colorimetric method for identifying plant essential oil components that affect biofilm formation and structure. *Applied and Environmental Microbiology*, **70**: 6951–6956.

Noida, C.P.L., n.d. Astha Nigam1, Avnish Kumar2, Madhusudan HV1, and Neelam Bhola1.

Nomura, Y., Takeuchi, H., Kaneko, N., Matin, K., Iguchi, R., Toyoshima, Y., dkk., 2004. Feasibility of eradication of mutans streptococci from oral cavities. *Journal of Oral Science*, **46**: 179–183.

Nostro, M.A., Cannatelli, G., Musolino, A.D., Procopio, F., dan Alonzo, V., 2004. Modifications of hydrophobicity, in vitro adherence and cellular aggregation of Streptococcus mutans by Helichrysum italicum extract **38**: 423–426.

Obuekwe, C.O., Al-Jadi, Z.K., dan Al-Saleh, E.S., 2008. Comparative hydrocarbon utilization by hydrophobic and hydrophilic variants of Pseudomonas aeruginosa. *Journal of applied microbiology*, .

Okahashi, N., Nakata, M., Terao, Y., Isoda, R., Sakurai, A., Sumitomo, T., dkk., 2011. Pili of oral Streptococcus sanguinis bind to salivary amylase and promote the biofilm formation. *Microbial Pathogenesis*, **50**: 148–154.

Okuda, K., Adachi, M., dan Iijima, K., 1998. The efficacy of antimicrobial mouth rinses in oral health care. *The Bulletin of Tokyo Dental College*, **39**: 7–14.

Oliveira, R., Azeredo, J., Teixeira, P., dan Fonseca, A.P., 2001. *The Role of Hydrophocity in Bacterial Adhesion*. BioLine, USA.

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

Peeters, E., Nelis, H.J., dan Coenye, T., 2008. Comparison of multiple methods for quantification of microbial biofilms grown in microtiter plates. *Journal of Microbiological Methods*, **72**: 157–165.

Pelczar, M.J.J. dan Chan, E.C.S., 1998. *Dasar- Dasar Mikrobiologi 2. Cetakan 1*. Universitas Indonesia.

Peters, B.M., Ward, R.M., Rane, H.S., Lee, S.A., dan Noverr, M.C., 2013. Efficacy of Ethanol against Candida albicans and Staphylococcus aureus Polymicrobial Biofilms. *Antimicrobial Agents and Chemotherapy*, **57**: 74–82.

Pierce, C.G., Uppuluri, P., Tummala, S., dan Lopez-Ribot, J.L., 2010. A 96 well microtiter plate-based method for monitoring formation and antifungal susceptibility testing of Candida albicans biofilms. *Journal of Visualized Experiments: JoVE*, .

Pitts, N. dan Ekstrand, K., 2013. International Caries Detection and Assessment System (ICDAS) and its International Caries Classification and Management System (ICCMS) – methods for staging of the caries process and enabling dentists to manage caries. *Community dentistry and oral epidemiology*, **41**: e41–e52.

Pöllänen, M.T., Paino, A., dan Ihalin, R., 2013. Environmental stimuli shape biofilm formation and the virulence of periodontal pathogens. *International Journal of Molecular Sciences*, **14**: 17221–17237.

Pourhajibagher, M., Chiniforush, N., Parker, S., Shahabi, S., Ghorbanzadeh, R., Kharazifard, M.J., dkk., 2016. Evaluation of antimicrobial photodynamic therapy with indocyanine green and curcumin on human gingival fibroblast cells: An in vitro photocytotoxicity investigation. *Photodiagnosis and Photodynamic Therapy*, **15**: 13–18.

Prakash, B., Veeregowda, B.M., dan Krishnapa, G., 2003. A survival strategy of bacteria. *J. Curr Sci*, **85**: 10.

Pramesti, H.T., 2016. Streptococcus sanguinis as an opportunistic bacteria in human oral cavity: Adherence, colonization, and invasion. *Padjadjaran Journal of Dentistry*, **28**:

Pratiwi, D., 2007. *Gigi Sehat Merawat Gigi Sehari-Hari*. PT. Kompas, Jakarta.

Pratiwi, S.U.T., 2008. *Mikrobologi Farmasi*. Erlangga, Jakarta.

Pratiwi, S.U.T., Lagendijk, E.L., de Weert, S., Idroes, R., Hertiani, T., dan Van den Hondel, C., 2008. Original Research Effect of Cinnamomum burmannii Nees ex Bl. and Massoia aromatica Becc. Essential Oils on Planktonic Growth and Biofilm formation of Pseudomonas aeruginosa and Staphylococcus aureus In Vitro.

Pulido, D., Moussaoui, M., Andreu, D., Nogués, M.V., Torrent, M., dan Boix, E., 2012. Antimicrobial action and cell agglutination by the eosinophil cationic protein are modulated by the cell wall lipopolysaccharide structure. *Antimicrobial Agents and Chemotherapy*, **56**: 2378–2385.

Pulimood, S., Ganesan, L., Alangaden, G., dan Chandrasekar, P., 2002. Polymicrobial candidemia. *Diagnostic Microbiology and Infectious Disease*, **44**: 353–357.

Putri, R.L., Hidayat, N., dan Rahmah, N.L., 2014. Pemurnian eugenol dari minyak daun cengkeh dengan reaktan basa kuat KOH dan Ba(OH)2 (kajian konsentrasi reaktan).

Industria: Jurnal Teknologi dan Manajemen Agroindustri, **3**: 1–12.

Quave, C.L., Plano, L.R.W., Pantuso, T., dan Bennett, B.C., 2008. Effects of extracts from Italian medicinal plants on planktonic growth, biofilm formation and adherence of methicillin-resistant Staphylococcus aureus. *Journal of Ethnopharmacology*, **118**: 418–428.

Rahman, H.S., Rasedee, A., Yeap, S.K., Othman, H.H., Chartrand, M.S., Namvar, F., dkk., 2014. 'Biomedical Properties of a Natural Dietary Plant Metabolite, Zerumbone, in Cancer Therapy and Chemoprevention Trials', , *Research article*, *BioMed Research International*. URL: https://www.hindawi.com/journals/bmri/2014/920742/ (diakses tanggal 15/10/2018).

Rali, T., Wossa, S.W., dan Leach, D.N., 2007. Comparative chemical analysis of the essential oil constituents in the bark, heartwood and fruits of Cryptocarya massoy (Oken) Kosterm. (Lauraceae) from Papua New Guinea. *Molecules (Basel, Switzerland)*, **12**: 149–154.

Ramadhan, A.G., 2010. *Serba Serbi Kesehatan Gigi Dan Mulut*. Bukune, Jakarta.

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.

Razak, F.A., Othman, R.Y., dan Rahim, Z.H.A., 2006a. The effect of Piper betle and Psidium guajava extracts on the cell-surface hydrophobicity of selected early settlers of dental plaque. *Journal of Oral Science*, **48**: 71–75.

Razak, F.A. dan Rahim, Z.H.A., 2003. The anti-adherence effect of Piper betle and Psidium guajava extracts on the adhesion of early settlers in dental plaque to saliva-coated glass surfaces. *Journal of Oral Science*, **45**: 201–206.

Rickard, A.H., Gilbert, P., High, N.J., Kolenbrander, P.E., dan Handley, P.S., 2003. Bacterial coaggregation: an integral process in the development of multi-species biofilms. *Trends in Microbiology*, **11**: 94–100.

Rodrigues, I.S.C., Tavares, V.N., Pereira, S.L. da S., dan Costa, F.N. da, 2009. Antiplaque and antigingivitis effect of Lippia Sidoides: a double-blind clinical study in humans. *Journal of applied oral science: revista FOB*, **17**: 404–407.

Rohman, A., 2014. *Spektroskopi Inframerah Dan Kemometrika Untuk Analisis Farmasi*. Pustaka Pelajar, Yogyakarta.

Rosan, B. dan Lamont, R.J., 2000. Dental plaque formation. *Microbes and Infection*, **2**: 1599–1607.

Rosenberg, M., 2006. Microbial adhesion to hydrocarbons: twenty-five years of doing MATH. *FEMS Microbiology Letters*, **262**: 129–134.

Rosenberg, M., Azevedo, N.F., dan Ivask, A., 2019. Propidium iodide staining underestimates viability of adherent bacterial cells. *Scientific Reports*, **9**: 6483.

Rout, K.K., Mishra, S.K., dan Sherma, J., 2009. Development and validation of an HPTLC method for analysis of zerumbone, the anticancer marker from *Zingiber zerumbet*. *Acta Chromatographica*, **21**: 443–452.

Roy, R., Tiwari, M., Donelli, G., dan Tiwari, V., 2017. Strategies for combating bacterial biofilms: A focus on anti-biofilm agents and their mechanisms of action. *Virulence*, **9**: 522–554.

Różalska, B., Sadowska, B., Żuchowski, J., Więckowska-Szakiel, M., Budzyńska, A., Wójcik, U., dkk., 2018. Phenolic and Nonpolar Fractions of Elaeagnus rhamnoides

(L.) A. Nelson Extracts as Virulence Modulators—In Vitro Study on Bacteria, Fungi, and Epithelial Cells. *Molecules*, **23**: 1498.

Rumbaugh, K.P. dan Sauer, K., 2020. Biofilm dispersion. *Nature Reviews Microbiology*, **18**: 571–586.

Rutherford, S.T. dan Bassler, B.L., 2012. Bacterial Quorum Sensing: Its Role in Virulence and Possibilities for Its Control. *Cold Spring Harbor Perspectives in Medicine*, **2**: .

Saeed, S. dan Tariq, P., 2008. In vitro antibacterial activity of clove against Gram negative bacteria. *Pak. J. Bot*, **40**: 2157–2160.

Samaranayake, L., 2011. *Essential Microbiology for Dentistry E-Book*. Elsevier Health Sciences.

Sa'roni, S. dan Adjirni, A., 1999. Efek antiinflamasi kulit batang Massoia aromaticum Becc. (Mayosi) pada tikus putih. *Warta Tumbuhan Obat Indonesia*, **5**: .

Sasidharan, S., Yoga Latha, L., dan Angeline, T., 2010. Imaging in vitro anti-biofilm activity tonvisualize the ultrastructural changes. *Microscopy: Science, Technology, Applications and Education*, 622–626.

Shafahi, M. dan Vafai, K., 2010. 'Biofilm Growth Within Porous Media', . Dipresentasikan pada Porous media and its applications in Science, engineering and Industry: 3rd International Conference, Montecatini (Italy), hal. 193–197.

Sharma, S., Khan, I.A., Ali, I., Ali, F., Kumar, M., Kumar, A., dkk., 2009. Evaluation of the Antimicrobial, Antioxidant, and Anti-Inflammatory Activities of Hydroxychavicol for Its Potential Use as an Oral Care Agent. *Antimicrobial Agents and Chemotherapy*, **53**: 216–222.

Shin, D.-S. dan Eom, Y.-B., 2019. Efficacy of zerumbone against dual-species biofilms of Candida albicans and Staphylococcus aureus. *Microbial Pathogenesis*, **137**: 103768.

Shinde, S., Pai, V., dan Naik, Rv., 2017. An In vitro assessment of antibacterial activity of three self-etching primers against oral microflora. *APOS Trends in Orthodontics*, **7**: 181.

Short, F.L., Murdoch, S.L., dan Ryan, R.P., 2014. Polybacterial human disease: the ills of social networking. *Trends in Microbiology*, **22**: 508–516.

Silva, T.M. da, Pinheiro, C.D., Orlandi, P.P., Pinheiro, C.C., dan Pontes, G.S., 2017a. Zerumbone From Zingiber zerumbet (L.) Smith: A Potential Prophylactic and Therapeutic Agent Against The Cariogenic Bacterium Streptococcus mutans. *bioRxiv*, 187906.

Silva, T.M. da, Pinheiro, C.D., Orlandi, P.P., Pinheiro, C.C., dan Pontes, G.S., 2017b. Zerumbone From Zingiber zerumbet (L.) Smith: A Potential Prophylactic and Therapeutic Agent Against The Cariogenic Bacterium Streptococcus mutans. *bioRxiv*, 187906.

Simionatto, E., Porto, C., Stüker, C.Z., Dalcol, I.I., dan Silva, U.F. da, 2007. Chemical composition and antimicrobial activity of the essential oil from Aeolanthus suaveolens Mart. ex Spreng. *Química Nova*, **30**: 1923–1925.

Slack, J. dan Gerencser, M.A., 1975. *Bacteria: Biology and Pathogenicity*. Burgess Publishing Company, Minneapolis.

Stepanovic, S., Vukovic, D., Dakic, I., Savic, B., dan Svabic-Vlahovic, M., 2000. A modified microtiter-plate test for quantification of staphylococcal biofilm formation. *Journal of Microbiological Methods*, **40**: 175–179.

Swoboda, J.G., Campbell, J., Meredith, T.C., dan Walker, S., 2010. Wall Teichoic Acid

Function, Biosynthesis, and Inhibition. *Chembiochem : a European journal of chemical biology*, **11**: 35–45.

Szafrański, S.P., Deng, Z.-L., Tomasch, J., Jarek, M., Bhuju, S., Rohde, M., dkk., 2017. Quorum sensing of Streptococcus mutans is activated by Aggregatibacter actinomycetemcomitans and by the periodontal microbiome. *BMC Genomics*, **18**: 238.

Ta, T.M.N., Cao-Hoang, L., Phan-Thi, H., Tran, H.D., Souffou, N., dan Gresti, J., 2010. New insights into the effect of medium-chain-length lactones on yeast membranes. Importance of the culture medium. *Applied Microbiology and Biotechnology*, **87**: 1089–1099.

Tahmorespour, A., Kermanshahi, R.K., Salehi, R., dan Nabinejad, A., 2008. The Relationship between Cell Surface Hidrofobicity and Antibiotic Resistance of Streptococcal Strains Isolated from Dental Caries and Plaque. *IJBMS*, **10**: 251–252.

Tan, K.H. dan Nishida, R., 2012. Methyl Eugenol: Its Occurrence, Distribution, and Role in Nature, Especially in Relation to Insect Behavior and Pollination. *Journal of Insect Science*, **12**: .

Trombetta, D., Castelli, F., Sarpietro, M.G., Venuti, V., Cristani, M., dan Daniele, C., 2005. Mechanisms of Antibacterial Action of Three Monoterpenes. *Antimicrobial Agents and Chemotherapy*, **49**: 2474–2478.

Urmann, K., Arshavsky-Graham, S., Walter, J.G., Scheper, T., dan Segal, E., 2016. Whole-cell detection of live lactobacillus acidophilus on aptamer-decorated porous silicon biosensors. *The Analyst*, **141**: 5432–5440.

Vainstein, A., Lewinsohn, E., Pichersky, E., dan Weiss, D., 2001. Floral fragrance. New inroads into an old commodity. *Plant physiology*, **127**: .

Vamneter, K.C., Vanmeter, W.G., dan Hubert, R.J., 2010. *Microbiology for the Health Profesional*. Elsevier, Philadelphia.

Vestby, L.K., Grønseth, T., Simm, R., dan Nesse, L.L., 2020. Bacterial Biofilm and its Role in the Pathogenesis of Disease. *Antibiotics*, **9**: .

Villanueva Bermejo, D., Angelov, I., Vicente, G., Stateva, R.P., Rodriguez García-Risco, M., Reglero, G., dkk., 2015. Extraction of thymol from different varieties of thyme plants using green solvents. *Journal of the Science of Food and Agriculture*, **95**: 2901–2907.

Wang, Y., Zhang, Y., Shi, Y.-Q., Pan, X.-H., Lu, Y.-H., dan Cao, P., 2018. Antibacterial effects of cinnamon (Cinnamomum zeylanicum) bark essential oil on Porphyromonas gingivalis. *Microbial Pathogenesis*, **116**: 26–32.

Wangi, R.P.L., Suswati, E., dan Wisudanti, D.D., 2017. Aktivitas Ekstrak Metanol Bawang Putih (Allium sativum) sebagai Penghambat Pembentukan Biofilm pada Pseudomonas aeruginosa (The Activity of Methanolic Extract of Garlic (Allium sativum) in Inhibiting Growth of Biofilm in Pseudomonas aeruginosa). *Pustaka Kesehatan*, **5**: 537–543.

Wasia, N.H., Sudarma, I.M., Savalas, L.R.T., dan Hakim, A., 2017. Isolasi senyawa sinamaldehid dari batang kayu manis (Cinnamomum burmanii) dengan metode kromatografi kolom. *Jurnal Pijar Mipa*, **12**: 91–94.

Welch, K., Cai, Y., dan Strømme, M., 2012. A Method for Quantitative Determination of Biofilm Viability. *Journal of Functional Biomaterials*, **3**: 418–431.

Wen, Z.T., Yates, D., Ahn, S.-J., dan Burne, R.A., 2010. Biofilm formation and virulence

expression by Streptococcus mutans are altered when grown in dual-species model. *BMC microbiology*, **10**: 111.

Widodo, H., Sismindari, S., Asmara, W., dan Rohman, A., 2019. Antioxidant activity, total phenolic and flavonoid contents of selected medicinal plants used for liver diseases and its classification with chemometrics. *Journal of Applied Pharmaceutical Science*, **9**: 99–105.

Wiegand, I., Hilpert, K., dan Hancock, R.E.W., 2008. Agar and broth dilution methods to determine the minimal inhibitory concentration (MIC) of antimicrobial substances. *Nature Protocols*, **3**: 163–175.

Winias, S., 2011. Effect of cynammyldehyde from cinnamon extract as a natural preservative alternative to the growth of Staphylococcus aureus bacteria. *Indonesian Journal of Tropical and Infectious Disease*, **2**: 38–41.

Xiao, Y.-H., Chen, J.-H., Fang, M., Xing, X.-D., Wang, H., Wang, Y.-J., dkk., 2008. Antibacterial effects of three experimental quaternary ammonium salt (QAS) monomers on bacteria associated with oral infections. *Journal of Oral Science*, **50**: 323–327.

Xu, C.H., Busscher, H.J., Van der Mei, H.C., dan Norde, W., 2012. *Spesific and Non Spesific Interactions between Salivary Proteins and Streptococcus Mutans*. JACS, Washington.

Yadav, K. dan Prakash, S., 2017. Dental Caries: A Microbiological Approach. *Journal of Clinical Infectious Diseases & Practice*, **02**: .

Yamaguchi, M., Terao, Y., Ogawa, T., Takahashi, T., Hamada, S., dan Kawabata, S., 2006. Role of Streptococcus sanguinis sortase A in bacterial colonization. *Microbes and Infection*, **8**: 2791–2796.

Yang, H., Bi, Y., Shang, X., Wang, M., Linden, S.B., Li, Y., dkk., 2016. Anti-biofilm activities of a novel chimeolysin against *S. mutans* in physiological and cariogenic conditions. *Antimicrobial Agents and Chemotherapy*, AAC.01872-16.

Yang, M., Meng, F., Gu, W., Li, F., Tao, Y., Zhang, Z., dkk., 2020. Effects of Natural Products on Bacterial Communication and Network-Quorum Sensing. *BioMed Research International*, **2020**: e8638103.

Yoshida, A. dan Kuramitsu, H.K., 2002. Streptococcus mutans biofilm formation: utilization of a gtfB promoter-green fluorescent protein (PgtfB::gfp) construct to monitor development. *Microbiology (Reading, England)*, **148**: 3385–3394.

Yoshida, Y., Konno, H., Nagano, K., Abiko, Y., Nakamura, Y., Tanaka, Y., dkk., 2014. The influence of a glucosyltransferase, encoded by gtfP, on biofilm formation by Streptococcus sanguinis in a dual-species model. *APMIS: acta pathologica, microbiologica, et immunologica Scandinavica*, **122**: 951–960.

Zhang, X. dan Bishop, P.L., 2003. Biodegradability of biofilm extracellular polymeric substances. *Chemosphere*, **50**: 63–69.

Zhu, B., Macleod, L.C., Kitten, T., dan Xu, P., 2018a. Streptococcus sanguinis biofilm formation & interaction with oral pathogens. *Future Microbiology*, **13**: 915–932.

Zita, A. dan Hermansson, M., 1997. Determination of bacterial cell hydrophobicity of single cels in cultures and in wastewater insitu. *FEMS Microbiology Letters*, **152**: 299–306.