

DAFTAR PUSTAKA

- Abdelmohsen UR, Cheng C, Viegelmann C, Zhang Y, Grkovic T, Ahmed S, *et al.* Dereplication strategies for targeted isolation of new microbial natural products. *Mar Drugs*. 2014;12(2):900-25.
- Abdallah NA, El-Diwany AI, El-Enany ME, *et al.* Screening and quantification of anti-quorum sensing and antibiofilm activity of Actinomycetes isolates against food spoilage biofilm-forming bacteria. *BMC Microbiol*. 2020;20(1):60.
- Adamczeski J, Kowalska-Dudek I, Nowak A, *et al.* Antibacterial metabolites from endophytic Streptomyces. *Antibiotics*. 2021;10(3):253.
- Badan Kebijakan Pembangunan Kesehatan. Survei Kesehatan Indonesia (SKI) 2023: Laporan Nasional. Jakarta: Kementerian Kesehatan RI; 2023.
- Badan Penelitian dan Pengembangan Kesehatan. Laporan Nasional Riset Kesehatan Dasar (RISKESDAS) 2018. Jakarta: Kementerian Kesehatan RI; 2018.
- Baker JL, Edlund A. Exploiting the oral microbiome to prevent and treat disease. *Pharmacol Res*. 2019;139:476–86.
- Balcázar JL, Subirá L, Borrego JJ. Biofilms: their role in microbial resistance. *Rev Environ Sci Biotechnol*. 2015;14(3):229–38.
- Baltz RH. Gifted microbes for genome mining and natural product discovery. *Journal of Industrial Microbiology and Biotechnology*. 2017;44(4-5):573-588.
- Barka EA, Vatsa P, Sanchez L, Gaveau-Vaillant N, Jacquard C, Meier-Kolthoff JP, *et al.* Taxonomy, physiology, and natural products of *Actinobacteria*. *Microbiol Mol Biol Rev*. 2016;80(1):1-43.

- Bowen WH, Burne RA, Wu H, Koo H. Oral biofilms: pathogens, matrix, and polymicrobial interactions in microenvironments. *Trends Microbiol.* 2018;26(3):229–42.
- Bowen WH, Koo H. Biology of *Streptococcus mutans*-derived biofilms. *Nat Rev Microbiol.* 2021;19(3):168-78.
- Cai JN, Jung JE, Dang MH, *et al.* Functional relationship between sucrose and a cariogenic biofilm formation. *PLoS One.* 2016;11(6):e0157184.
- Calderone RA, Clancy CJ. *Candida and Candidiasis.* 2nd ed. Washington, DC: ASM Press; 2012.
- Cavalcanti YW, Almeida RC, Padilha WWN, *et al.* Candida biofilms in oral mucosa: from pathogenesis to therapy. *J Fungi.* 2021;7(10):832.
- Cavalheiro M, Teixeira MC. Candida Biofilms: Threats, challenges, and promising strategies. *Pathogens.* 2021;10(7):629.
- Chen Y, Liu T, Sun H, Chen X, Lu Y. Antibiofilm potential of *Actinobacteria*-derived metabolites against oral pathogens. *Biotechnol Adv.* 2022;40:107538.
- Desouky SE, El-Kady MF, El-Baz AF, *et al.* Secondary Metabolites of Actinomycetales as Potent Quorum Sensing Inhibitors Targeting Gram-Positive Pathogens: In Vitro and In Silico Study. *Microorganisms.* 2022;10(3):603.
- Dühring S, Schuster S. Studying mixed-species biofilms of *Candida albicans* and *Staphylococcus aureus* using evolutionary game theory. *PLoS One.* 2024;19(3):e0297307.
- Egusa H, Okamoto-Shibayama K, Oida K, *et al.* Natural product-based oral antimicrobials: effectiveness & applications. *Int J Dent.* 2020;2020:8839943.

- Ellepola K, Liu Y, Cao T, Koo H, Seneviratne CJ. Bacterial–fungal interactions in oral biofilms. *Trends Microbiol.* 2022;30(6):567–80.
- Falsetta ML, Klein MI, Colonne PM, Scott-Anne K, Gregoire S, Pai CH, *et al.* Symbiotic relationship between *Streptococcus mutans* and *Candida albicans* synergizes virulence of plaque biofilms in vivo. *Infect Immun.* 2014;82(5):1968–81.
- Flemming HC, Wingender J, Szewzyk U, Steinberg P, Rice SA, Kjelleberg S. Biofilms: an emergent form of bacterial life. *Nat Rev Microbiol.* 2016;14(9):563–75.
- Garcia R, Muller R. The family Streptomycetaceae. In: Rosenberg E, *et al.*, editors. *The Prokaryotes: Actinobacteria*. Springer; 2014. p. 889–1010.
- Genilloud O. Actinomycetes: Still a source of novel antibiotics. *Nat Prod Rep.* 2017;34(10):1203–32.
- Genilloud O. Actinomycetes secondary metabolites: mechanisms & discovery. *Drug Discov Today.* 2018;23(8):1208-14.
- Genilloud O. Streptomyces: The biofactory of secondary metabolites. *Front Microbiol.* 2022;13:968053.
- Goldstein JI, Newbury DE, Joy DC, Lyman CE, Echlin P, Lifshin E, *et al.* *Scanning Electron Microscopy and X-ray Microanalysis*. Springer; 2017.
- Gulati M, Nobile CJ. *Candida albicans* biofilms: development, regulation, and molecular mechanisms. *Microbes Infect.* 2016;18(5):310–21.
- Hwang G, Liu Y, Kim D, Li Y, Krysan DJ, Koo H. *Candida albicans* mannans mediate *Streptococcus mutans* exoenzyme GtfB binding to modulate cross-kingdom biofilm development in vivo. *PLoS Pathog.* 2017;13(6):e1006407.

- Hwang G, Liu Y, Kim D, Li Y, Krysan DJ, Koo H. *Candida albicans* synergizes with *Streptococcus mutans* in enhanced biofilm formation and increased resistance to antimicrobial agents. *mBio*. 2021;12(1):e03335–20.
- Ikeda T, Morita Y, Hasegawa T. Metabolites from *Streptomyces* species as potential antibiofilm agents: mechanisms and challenges. *Appl Microbiol Biotechnol*. 2021;105(23):9065–9080.
- Institute for Health Metrics and Evaluation (IHME). Global Burden of Disease Study 2021 (GBD 2021) Results. Seattle, United States: IHME, 2023. Available from: <https://vizhub.healthdata.org/gbd-results/>
- Jakubovics NS, Koo H, Jenkinson HF. Mixed-species biofilms: oral ecology, control and opportunities. *J Oral Biosci*. 2021;63(1):56-61.
- James P, Worthington HV, Parnell C, Harding M, Lamont T, Cheung A, *et al*. Chlorhexidine mouthrinse as an adjunctive treatment for gingival health. *Cochrane Database Syst Rev*. 2017;3:CD008676.
- Jose PA, Jha B. *Actinobacteria* in natural products research: progress and prospects. *Microbiol Res*. 2016;192: 30-38.
- Khan F, Lee JW, Javaid A, Kim YM. Current understanding on adhesion and biofilm development in *Streptococcus mutans*: A mini-review. *Front Cell Infect Microbiol*. 2020;10:1–14.
- Kim D, Park S, Jeong SH, *et al*. Synergistic biofilm formation enhances antimicrobial tolerance. *Front Microbiol*. 2020;11:588339.
- Kim D, Sengupta A, Niepa THR, Lee BH, Weljie A, Freitas-Blanco VS, *et al*. *Candida albicans* stimulates *Streptococcus mutans* microcolony development via cross-kingdom biofilm-derived metabolites. *Microorganisms*. 2021;9(8):1647.

- Koo H, Andes DR, Krysan DJ. Candida-streptococcal interactions in biofilms: a paradigm of mutualism and antagonism. *PLoS Pathog.* 2018;14(12):e1007304.
- Koo H, Allan RN, Howlin RP, Stoodley P, Hall-Stoodley L. Targeting microbial biofilms: Current and prospective therapeutic strategies. *Nat Rev Microbiol.* 2017;15(12):740-55.
- Kreth J, Giacaman RA, Raghavan R, Merritt J. The road less traveled: defining molecular commensalism with *Streptococcus mutans*. *J Dent Res.* 2021;100(4):373-82.
- Kurniati V, Haryono S, Wijaya A, et al. Screening of antibacterial metabolites from *Streptomyces* spp. *Indones Biomed J.* 2020;12(1):53-61.
- Lamont RJ, Koo H, Hajishengallis G. The oral microbiota: dynamic communities and host interactions. *Nat Rev Microbiol.* 2018;16(12):745–59.
- Lebeaux D, Ghigo JM, Beloin C. Biofilm-related infections: bridging the gap between clinical management and fundamental aspects of recalcitrance toward antibiotics. *Int J Antimicrob Agents.* 2020;55(6):105921.
- Lee KH, Kim DH, Park JH, Kim J. Novel antibiofilm strategies targeting *Streptococcus mutans* and *Candida albicans* biofilms. *Front Pharmacol.* 2024;15:1184256.
- Lemos JA, Palmer SR, Zeng L, Wen ZT, Kajfasz JK, Freires IA, Abranches J, Brady LJ. The biology of *Streptococcus mutans*. *Microbiology spectrum.* 2019 Feb 27;7(1):10-128.
- Li J, Wang Q, Han Y, et al. Interaction between *Streptococcus mutans* and *Candida albicans* in dual-species biofilm formation and cariogenicity. *Microbiol Spectr.* 2023;11(4):e01865-22.
- Li Y, Zhang Q, Huang Y, et al. Effect of sucrose concentration on *Streptococcus mutans* adhesion and biofilm formation. *Coatings.* 2023;13(2):165.

- Lobo CIV, Rinaldi TB, Christiano CMS, De Sales Leite L, Barbugli PA, Klein MI. Dual-species biofilms of *Streptococcus mutans* and *Candida albicans* exhibit more biomass and are mutually beneficial compared with single-species biofilms. *J Oral Microbiol.* 2019;11(1):1581520. doi:10.1080/20002297.2019.1581520
- Manivasagan P, Kang KH, Sivakumar K, Li-Chan EC, Oh HM, Kim SK. Marine actinobacteria: an overview. In: Kim SK, editor. *Springer Handbook of Marine Biotechnology*. Springer; 2015. p. 285-314.
- Manivasagan P, Venkatesan J, Sivakumar K, Kim SK. Marine *Streptomyces*: novel antibiotics against biofilm pathogens. *Microorganisms.* 2020;8(4):492.
- Marsh PD. Contemporary perspective on plaque control. *Br Dent J.* 2016;221(12):657-63.
- Mayer FL, Wilson D, Hube B. *Candida albicans* cell wall and antifungal resistance. *Pathogens.* 2019;8(2):78.
- Mayer FL, Wilson D, Hube B. *Candida albicans* pathogenicity mechanisms. *Virulence.* 2013;4(2):119–28.
- Miller T, Zhang W, Singh A, Kumar R. Antibiofilm properties of bioactive compounds from *Actinomycetes*: recent advances and future perspectives. *Front Microbiol.* 2022;13:1021457.
- Moussa TA, Almaghrabi OA, Abdel-Hadi AA, Mohamed MA. Antifungal and antibiofilm activity of *Streptomyces*-derived metabolites against *Candida albicans*. *J Fungi.* 2021;7(5):372.
- Muñoz JF, Gade L, Chow NA, Loparev V, Juieng P, Faron ML, et al. Genomic insights into multidrug-resistance, mating and virulence in *Candida auris* and related emerging species. *Nat Commun.* 2021;12:1–13.

- Nobile CJ, Johnson AD. *Candida albicans* biofilm: making it stick. *PLoS Pathog.* 2022;18(5):e1009811.
- Pappas PG, Kauffman CA, Andes DR, Clancy CJ, Marr KA, Ostrosky-Zeichner L, *et al.* Clinical practice guideline for the management of candidiasis: 2016 update by the Infectious Diseases Society of America. *Clin Infect Dis.* 2016;62(4):e1–50.
- Pattananandecha T, Sirilun S, Apichai S, Ouirungroj T, Uirungroj P, Ogata F, *et al.* Pharmaceutical incompatibility of lubricating gel formulation reduces antibacterial activity of chlorhexidine gluconate: In vitro study in northern Thailand. *Int J Environ Res Public Health.* 2022;19(19):12285.
- Peters BM, Jabra-Rizk MA, O'May GA, Costerton JW, Shirtliff ME. Polymicrobial interactions: impact on pathogenesis and human disease. *J Oral Microbiol.* 2023;15(1):2142098.
- Pfaller MA, Diekema DJ. Epidemiology of invasive candidiasis: a persistent public health problem. *Clin Microbiol Rev.* 2007;20(1):133–63.
- Pitts B, Franklin MJ, Stewart PS. Biofilm matrix composition and role in antimicrobial tolerance. *Trends Microbiol.* 2022;30(5):486–497.
- Pristov KE, Ghannoum MA. Resistance of *Candida* to azoles and echinocandins worldwide. *Clin Microbiol Infect.* 2019;25(7):792–8.
- Rajendran R, Sherry L, Nile CJ, Sherriff A, Johnson EM, Hanson MF, *et al.* Biofilm formation is a risk factor for mortality in critically ill patients infected with *Candida* species. *Nat Rev Microbiol.* 2020;18(2):107–20.
- Rakhmawatie MD, Darsih C, Lisdiyanti P, Jumina J, Mustofa M. Antimicrobial compounds from intracellular and extracellular extracts of *Actinobacteria* InaCC A759. *Biocatal Agric Biotechnol.* 2024;58:107762.
- Ramage G, Rajendran R, Sherry L, Williams C. Fungal biofilm drug resistance mechanisms. *Clin Microbiol Rev.* 2021;34(4):e00031-21.

- Santana JS, Delbem ACB, Pessan JP, et al. Dual-species biofilm of *Streptococcus mutans* and *Candida albicans* produces subsurface caries lesions on bovine enamel. *Arch Oral Biol.* 2024;166:106029.
- Septiana S, Bachtiar BM, Yuliana ND, Wijaya CH. Cajuputs candy impairs *Candida albicans* and *Streptococcus mutans* mixed biofilm formation in vitro. *BMC Complement Altern Med.* 2020;20(1):1–9. <https://doi.org/10.1186/s12906-020-02976-1>
- Setiawati ENS, Nuryastuti T, Jumina. Fraksinasi dan uji aktivitas senyawa antimikroba dan antibiofilm dari *Streptomyces* asli Indonesia [disertasi]. Yogyakarta: Universitas Gadjah Mada; 2021. Available from: <https://etd.repository.ugm.ac.id/penelitian/detail/204418>
- Setiawati S, Sholikhah EN, Nuryastuti T, Jumina J, Lisdiyanti P, Mustofa M. The potency of Actinomycetes InaCC A758 against dual-species biofilms: *Candida albicans* and *Staphylococcus aureus*. *J Appl Pharm Sci.* 2024;14(08):188–196.
- Setiawati S, Yusan R. Actinomycetes as a Source of Potential Antimicrobial and Antibiofilm Agents. *Med Health J.* 2022;1(2):50.
- Sharma A, Soni D, Hettiarachchi G, Cushnie T, O'Donnell L. Dual-species biofilm formation by *Streptococcus mutans* and *Candida albicans*: a synergistic interaction. *Microbiol Spectr.* 2023;11(2):e00523-23.
- Sharma D, Misba L, Khan AU. Antibiotics versus biofilm: an emerging battleground in microbial communities. *Arch Microbiol.* 2022;204(3):128.
- Sharma M, Gupta R, Singh S, et al. Antibacterial activity of actinomycetes against oral pathogens. *J Appl Microbiol.* 2019;127(2):446-58.
- Subramani R, Sipkema D. Marine rare actinomycetes: A promising source of structurally diverse and unique novel natural products. *Mar Drugs.* 2019;17(5):249.

- Suneetha V, Zaved H, Priya MJ, *et al.* Characterization of actinomycetes from rhizospheric soils and screening for antibacterial activity. *Braz J Microbiol.* 2018;49(2):320–8.
- Świecimska M, Golinska P, Sangal V, Wachnowicz B, Goodfellow M. *Streptantibioticus silvisoli* sp. nov., acidotolerant actinomycetes from pine litter, reclassification of *Streptomyces cocklensis*, *Streptomyces ferralitis*, *Streptomyces parmotrematis* and *Streptomyces rubrisoli* as *Actinacidiphila cocklensis* comb. nov., *Streptantibioticus ferralitis* comb. nov., *Streptantibioticus parmotrematis* comb. nov. and *Streptantibioticus rubrisoli* comb. nov., and emended descriptions of the genus *Streptantibioticus*, the family *Streptomycetaceae* and *Streptomyces iconiensis*. *Int J Syst Evol Microbiol.* 2023;73(7):005978.
- Sztukowska M, Jung YJ, Choi M, *et al.* Streptococcus mutans–Candida albicans interactions in biofilms. *Mol Oral Microbiol.* 2018;33(5):303-12.
- Takahashi N, Nyvad B. Ecological hypothesis of dentin and root caries. *Caries Res.* 2016;50(4):422–31.
- Takahashi N, Nyvad B. The role of bacteria in the caries process: ecological perspectives. *J Dent Res.* 2020;99(3):300–7.
- Weerasekera MM, Wijesinghe GK, Jayarathna TA, *et al.* Culture media profoundly affect *Candida albicans* and *Candida tropicalis* growth, adhesion and biofilm development. *Mem Inst Oswaldo Cruz.* 2016;111(11):697–702.
- World Health Organization. Global oral health status report: towards universal health coverage for oral health by 2030. Geneva: World Health Organization; 2022. Available from: <https://www.who.int/publications/i/item/9789240061484>

- Wu Y, Chen Y, Li Q, Zhang Z. Fungal biofilm formation and its regulatory mechanism: implications for antifungal resistance. *Heliyon*. 2024;10(7):e25991.
- Yamazaki Y, et al. Appropriate nutrient conditions for *Staphylococcus aureus* and *Candida albicans* dual-species biofilms. *Sci Rep*. 2024;14:23411.
- Zeng L, Burne RA. The route of sucrose utilization by *Streptococcus mutans* affects intracellular polysaccharide metabolism. *Front Microbiol*. 2021;12:788461.
- Zeng L, Das S, Burne RA. Utilization of different carbon sources influences *Streptococcus mutans* virulence and its ability to tolerate environmental stresses. *Front Microbiol*. 2017;8:6.
- Zhang Y, Chen Y, Chen T, Zhou Y, Zhang X. Antibiofilm activity and mechanism of action of phenazine derivatives produced by *Pseudomonas* and *Streptomyces* species. *Front Microbiol*. 2021;12:681299.
- Zhou Y, Song Y, Chen H, Zhang L, Guo Y. Synergistic and antagonistic interactions between *Candida albicans* and oral bacteria in biofilm formation. *Front Cell Infect Microbiol*. 2023;13:1167859.