

## DAFTAR PUSTAKA

1. Kementerian Kesehatan RI. Riskendas 2018. Lap Nas Riskesndas 2018 [Internet]. 2018;44(8):181–222. Available from: [http://www.yankes.kemkes.go.id/assets/downloads/PMK No. 57 Tahun 2013 tentang PTRM.pdf](http://www.yankes.kemkes.go.id/assets/downloads/PMK_No_57_Tahun_2013_tentang_PTRM.pdf)
2. Siagian K V. Kehilangan sebagian gigi pada rongga mulut. *e-CliniC*. 2016;4(1).
3. R S, Puspitadewi. Perawatan Prosthodontik Pada Kondisi Ridge Yang Kurang Menguntungkan. *J B-Dent*. 2015;2(2):133–42.
4. Alqutaibi AY, Kaddah AF. Attachments used with implant supported overdenture. *Int Dent Med J Adv Res - Vol 2015*. 2016;2(1):1–5.
5. Cheng T, Ma L, Liu XL, Sun GF, He XJ, Huo JY, et al. Use of a single implant to retain mandibular overdenture: A preliminary clinical trial of 13 cases. *J Dent Sci*. 2012;7(3):261–6.
6. Nazir O, Pandey KK, Katiyar P, Tarranum F, Tiwari H. *IP Annals of Prosthodontics and Restorative Dentistry* Implant supported overdenture : A case report. 2021;7(1):50–4.
7. Suryanto D, Kitinolitik EB, Genetik K, Penyandi G, Pada K, Jenis B. *USU Repository* © 2006. 2006;
8. Tetelepta R, Machmud E. Pengaruh penambahan bahan bioaktif pada implan gigi berdasarkan pemeriksaan histologi ( Effect of addition of bioactive materials on dental implant based on the histology examination ). 2015;4(4):135–42.
9. Branemark. *Tissue Integrated Prosthesis. Osteointegratiom Clin Dent* 1 st Ed. 1987;
10. Shah FA, Thomsen P, Palmquist A. Osseointegration and current interpretations of the bone-implant interface. *Acta Biomater*. 2019;84:1–15.
11. Ardani IGAW, Nugraha AP, Suryani MN, Pamungkas RHP, Vitamamy DG, Susanto RA, et al. Molecular doking of polyether ether ketone and nano-hydroxyapatite as biomaterial candidates for orthodontic mini-implant fabrication. *J Pharm Pharmacogn Res*. 2022;10(4):676–86.

12. Ferdi. Persembuhan Luka yang Ditetesi Ekstrak *Chlorella* (*Chlorella vulgaris*) pada Mencit. 2006;
13. Lu W, Wang Z, Wang X, Yuan Z. Cultivation of *Chlorella* sp. using raw dairy wastewater for nutrient removal and biodiesel production: Characteristics comparison of indoor bench-scale and outdoor pilot-scale cultures. *Bioresour Technol* [Internet]. 2015;192:382–8. Available from: <http://dx.doi.org/10.1016/j.biortech.2015.05.094>
14. Coronado-Reyes JA, Salazar-Torres JA, Juarez-Campos B, Gonzalez-Hernandez JC. *Chlorella vulgaris*, a microalgae important to be used in Biotechnology: a review. *Food Sci Technol*. 2020;
15. Dharmautama M, Manggau MA, Tetelepta R, Malik A, Muchtr M, Amiruddin M, et al. The effectiveness of *Sargassum polycystum* extract against *Streptococcus mutans* and *Candida albicans* as denture cleanser. *J Int Dent Med Res*. 2019;12(2):528–32.
16. Hasanah. Mikroenkapsulasi Biomassa *Porphyridium cruentum*. Bogor: Institut Pertanian Bogor.; 2011.
17. Nur'Aenah N. Pengaruh Metode Ekstraksi Senyawa Bioaktif Intraseluler *Chlorella* Sp Terhadap Pertumbuhan *L. Bulgaricus*. *Pros Pertem Ilm dan Semin Nas MPHP*. 2011;41–50.
18. Queiroz MLS, da Rocha MC, Torello CO, de Souza Queiroz J, Bincoletto C, Morgano MA, et al. *Chlorella vulgaris* restores bone marrow cellularity and cytokine production in lead-exposed mice. *Food Chem Toxicol*. 2011;49(11):2934–41.
19. Chia SR, Chew KW, Zaid HFM, Chu DT, Tao Y, Show PL. Microalgal Protein Extraction From *Chlorella vulgaris* FSP-E Using Triphasic Partitioning Technique With Sonication. *Front Bioeng Biotechnol*. 2019;7(December):1–13.
20. Canelli G, Tarnutzer C, Carpine R, Neutsch L, Bolten CJ, Dionisi F, et al. Biochemical and Nutritional Evaluation of *Chlorella* and *Auxenochlorella* Biomasses Relevant for Food Application. *Front Nutr*. 2020;7(September):1–9.
21. Hasan H, Machmud E, Alpiyanti P. The effect of *Chlorella vulgaris* salep

- extract on the formation of bone remodeling. *Makassar Dent J.* 2020;9(3):170–3.
22. Iraniza AD, Machmud E. The effect of application of *Chlorella vulgaris* extract gel on bone remodeling Pengaruh aplikasi gel ekstrak *Chlorella vulgaris* terhadap terjadinya remodeling tulang. :220–4.
  23. Schlick T, Portillo-Ledesma S. Biomolecular modeling thrives in the age of technology. *Nat Comput Sci.* 2021;1(5):321–31.
  24. Torres PHM, Sodero ACR, Jofily P, Silva-Jr FP. Key topics in molecular docking for drug design. *Int J Mol Sci.* 2019;20(18):4574.
  25. Purwanto BT, Siswandono, Kesuma D, Widiandani T, Siswanto I. Molecular modeling, admet prediction, synthesis and the cytotoxic activity from the novel n-(4-tert-butylphenylcarbamoyl) benzamide against hela. *Rasayan J Chem.* 2021;14(2):1341–50.
  26. Acharya A, Agarwal R, Baker MB, Baudry J, Bhowmik D, Boehm S, et al. Supercomputer-Based Ensemble Docking Drug Discovery Pipeline with Application to Covid-19. *J Chem Inf Model.* 2020;60(12):5832–52.
  27. Aljohani ASM, Alhumaydhi F, Rauf A, Hamad E, Rashid U. In Vivo and In Vitro Biological Evaluation and Molecular Docking Studies of Compounds Isolated from *Micromeria biflora* (Buch. Ham. ex D.Don) Benth. *Molecules.* 2022;27(11):1–13.
  28. Agrelli A, Vasconcelos NF, Silva RCS da, Mendes-Marques CL, Arruda IR de S, Oliveira PSS de, et al. Peptides for Coating TiO<sub>2</sub> Implants: An In Silico Approach. *Int J Mol Sci.* 2022;23(22).
  29. Cheng Z, Guo C, Dong W, He FM, Zhao SF, Yang GL. Effect of thin nano-hydroxyapatite coating on implant osseointegration in ovariectomized rats. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2012;113(3):48–53.
  30. Prahasanti C, Nugraha AP, Kharisma VD, Ansori ANM, Ridwan RD, Putri TPS, et al. A bioinformatic approach of hydroxyapatite and polymethylmethacrylate composite exploration as dental implant biomaterial. *J Pharm Pharmacogn Res.* 2021;9(5):746–54.
  31. Jeong J, Kim H, Choi J. In silico molecular docking and in vivo validation with *Caenorhabditis elegans* to discover molecular initiating events in

- adverse outcome pathway framework: Case study on endocrine-disrupting chemicals with estrogen and androgen receptors. *Int J Mol Sci.* 2019;20(5).
32. Datta HK, Ng WF, Walker JA, Tuck SP, Varanasi SS. The cell biology of bone metabolism. *J Clin Pathol.* 2008;61(5):577–87.
  33. Insua A, Monje A, Wang HL, Miron RJ. Basis of bone metabolism around dental implants during osseointegration and peri-implant bone loss. *J Biomed Mater Res - Part A.* 2017;105(7):2075–89.
  34. Rucci N. Molecular biology of bone remodelling. *Clin Cases Miner Bone Metab.* 2008;5(1):49–56.
  35. Shahi M, Peymani A, Sahmani M. Regulation of bone metabolism. *Reports Biochem Mol Biol.* 2017;5(2):73–82.
  36. Raggatt LJ, Partridge NC. Cellular and molecular mechanisms of bone remodeling. *J Biol Chem.* 2010;285(33):25103–8.
  37. Niedźwiedzki T, Filipowska J. Bone remodeling in the context of cellular and systemic regulation: The role of osteocytes and the nervous system. *J Mol Endocrinol.* 2015;55(2):R23–36.
  38. Y. A, Valds-Flores M, Orozco L, Velzquez-Cruz R. Molecular Aspects of Bone Remodeling. *Top Osteoporos.* 2013;1–28.
  39. Nandal DS, Ghalaut DP, Shekhawat DH, Nagar DP. Osseointegration in Dental Implants: A Literature Review. *Indian J Appl Res.* 2011;4(7):411–3.
  40. Jayesh RS, Dhinakarsamy V. Osseointegration. *J Pharm Bioallied Sci.* 2015;7(April):S226–9.
  41. Utami DP, Indrani DJ, Eriwati YK. <p>Peran metode modifikasi permukaan implan terhadap keberhasilan osseointegrasi</p><p></p><p>The role of implant surface modification method on the success of osseointegration</p>. *J Kedokt Gigi Univ Padjadjaran.* 2019;31(2):95–101.
  42. Vaidya P, Mahale S, Kale S, Patil A. Osseointegration- A Review. *IOSR J Dent Med Sci.* 2017;16(01):45–8.
  43. Tamimi F, Wu X. Osseointegration pharmacology. *JDR Clin Transl Res.* 2017;2(3):211–3.
  44. Terheyden H, Lang NP, Bierbaum S, Stadlinger B. Osseointegration - communication of cells. *Clin Oral Implants Res.* 2012;23(10):1127–35.

45. Lin X, Patil S, Gao YG, Qian A. The Bone Extracellular Matrix in Bone Formation and Regeneration. *Front Pharmacol.* 2020;11(May):1–15.
46. O'Connor EM, Durack E. Osteocalcin: The extra-skeletal role of a vitamin K-dependent protein in glucose metabolism. *J Nutr Intermed Metab.* 2017;7:8–13.
47. Zoch ML, Clemens TL, Riddle RC. New insights into the biology of osteocalcin. *Bone.* 2016;82:42–9.
48. Icer MA, Gezmen-Karadag M. The multiple functions and mechanisms of osteopontin. *Clin Biochem.* 2018;59:17–24.
49. Lund SA, Giachelli CM, Scatena M. The role of osteopontin in inflammatory processes. *J Cell Commun Signal.* 2009;3(3–4):311–22.
50. Giachelli CM, Steitz S. Osteopontin: a versatile regulator of inflammation and biomineralization. *Matrix Biol.* 2000;19(7):615–22.
51. Lademann F, Hofbauer LC, Rauner M. The Bone Morphogenetic Protein Pathway: The Osteoclastic Perspective. *Front Cell Dev Biol.* 2020;8(October).
52. Maridas DE, Feigenson M, Renthal NE, Chim SM, Gamer LW, Rosen V. Bone morphogenetic proteins. *Princ Bone Biol.* 2019;5:1189–97.
53. Safi C, Zebib B, Merah O, Pontalier PY, Vaca-Garcia C. Morphology, composition, production, processing and applications of *Chlorella vulgaris*: A review. *Renew Sustain Energy Rev.* 2014;35:265–78.
54. Daliry S, Hallajisani A, Mohammadi Roshandeh J, Nouri H, Golzary A. Investigation of optimal condition for *Chlorella vulgaris* microalgae growth. *Glob J Environ Sci Manag.* 2017;3(2):217–30.
55. Yusof YAM, Basari JMH, Mukti NA, Sabuddin R, Muda AR, Sulaiman S, et al. Fatty acids composition of microalgae *Chlorella vulgaris* can be modulated by varying carbon dioxide concentration in outdoor culture. *African J Biotechnol.* 2011;10(62):13536–42.
56. Bock C, Krienitz L, Pröschold T. Taxonomic reassessment of the genus *Chlorella* (Trebouxiophyceae) using molecular signatures (barcodes), including description of seven new species. *Fottea.* 2011;11(2):293–312.
57. Yasukawa K, Akihisa T, Kanno H, Kaminaga T, Izumida M, Sakoh T, et al.

- Inhibitory effects of sterols isolated from *Chlorella vulgaris* on 12-*O*-tetradecanoylphorbol-13-acetate-induced inflammation and tumor promotion in mouse skin. *Biol Pharm Bull.* 1996 Apr;19(4):573–6.
58. Agustini NWS, Setyaningrum M. Screening Fitokimia Uji Aktivitas Antimikroba dan Antioksidan serta Identifikasi. 2018;
  59. Setiawan H, Irawan MI. Kajian Pendekatan Penempatan Ligan Pada Protein Menggunakan Algoritma Genetika. *J Sains dan Seni ITS.* 2017;6(2):2–6.
  60. Aja PM, Agu PC, Ezeh EM, Awoke JN, Ogwoni HA, Deusdedit T, et al. Prospect into therapeutic potentials of *Moringa oleifera* phytochemicals against cancer upsurge: de novo synthesis of test compounds, molecular docking, and ADMET studies. *Bull Natl Res Cent.* 2021;45(1):99.
  61. Chaudhary KK, Mishra N. A review on molecular docking: novel tool for drug discovery. *Databases.* 2016;3(4):1029.
  62. De Azevedo J, Walter F. MolDock applied to structure-based virtual screening. *Curr Drug Targets.* 2010;11(3):327–34.
  63. Pujadas G, Vaque M, Ardevol A, Blade C, Salvado MJ, Blay M, et al. Protein-ligand docking: A review of recent advances and future perspectives. *Curr Pharm Anal.* 2008;4(1):1–19.
  64. Agu PC, Afiukwa CA, Orji OU, Ezeh EM, Ofoke IH, Ogbu CO, et al. Molecular docking as a tool for the discovery of molecular targets of nutraceuticals in diseases management. *Sci Rep.* 2023;13(1):13398.
  65. Gaba M, Gaba P, Singh S, Gupta GD. An overview on molecular docking. *Int J Drug Dev Res.* 2010;2(2):219–31.
  66. Eweas AF, Maghrabi IA, Namarneh AI. Advances in molecular modeling and docking as a tool for modern drug discovery. *Der Pharma Chem.* 2014;6(6):211–28.
  67. Suresh PS, Kumar A, Kumar R, Singh VP. An Insilco approach to bioremediation: Laccase as a case study. *J Mol Graph Model.* 2008;26(5):845–9.
  68. Dhanik A, McMurray JS, Kaviraki LE. DINC: a new AutoDock-based protocol for docking large ligands. *BMC Struct Biol.* 2013;13(1):1–14.
  69. Ferreira LG, Dos Santos RN, Oliva G, Andricopulo AD. Molecular docking

- and structure-based drug design strategies. *Molecules*. 2015;20(7):13384–421.
70. Luqman A, Kharisma VD, Ruiz RA, Götz F. In silico and in vitro study of Trace Amines (TA) and Dopamine (DOP) interaction with human alpha 1-adrenergic receptor and the bacterial adrenergic receptor QseC. *Cell Physiol Biochem*. 2020;54(5):888–98.
  71. Pantami HA, Bustamam MSA, Lee SY, Ismail IS, Faudzi SMM, Nakakuni M, et al. Comprehensive GCMS and LC-MS/MS metabolite profiling of *chlorella vulgaris*. *Mar Drugs*. 2020;18(7).
  72. Idu M, Ahiokhai MO, Imoni CA, Akokigho CE, Olali NC. Gas Chromatography-Mass Spectrometry (GC-MS) Analysis and Phytochemical Screening of Polyherbal Aqueous Leaves Extract (PALE). *J Complement Altern Med Res*. 2021;14(2):10–8.
  73. Lovestead TM, Urness K. *Gas Chromatography–Mass Spectrometry (GC–MS)*. 2019;
  74. Raman BV, Samuel LA, Saradhi MP, Rao BN, Krishna N V, Sudhakar M, et al. Antibacterial, antioxidant activity and GC-MS analysis of *Eupatorium odoratum*. *Asian J Pharm Clin Res*. 2012;5(2):99–106.
  75. Mandik YI, Maryuni AE, Asmuruf FA. Studi Potensi Antikanker dari Senyawa Bioaktif Mikroalga *Chlorella* sp. dengan Pendekatan Penambatan Molekuler. *J LPPM Bid SAINS DAN Teknol*. 2022;7(2):19–26.
  76. Padmini E, Valarmathi A, Rani MU. Comparative analysis of chemical composition and antibacterial activities of *Mentha spicata* and *Camellia sinensis*. *Asian J Exp Biol Sci*. 2010;1(4):772–81.
  77. Karunia SD, Supartono MA, Sumarni W. Analisis Sifat Antibakteri Ekstrak Biji Srikaya (*Annona squamosa* L) dengan pelarut organik. *Indones J Chem Sci*. 2017;6(1):56–60.
  78. Ramadhani NF, Nugraha AP, Rahmadhani D, Puspitaningrum MS, Rizqianti Y, Kharisma VD, et al. Anthocyanin, tartaric acid, ascorbic acid of roselle flower (*Hibiscus sabdariffa* L.) for immunomodulatory adjuvant therapy in oral manifestation coronavirus disease-19: An immunoinformatic approach. *J Pharm Pharmacogn Res*. 2022;418–28.

79. Badawy MEI, Marei GIK, Rabea EI, Taktak NEM. Antimicrobial and antioxidant activities of hydrocarbon and oxygenated monoterpenes against some foodborne pathogens through in vitro and in silico studies. *Pestic Biochem Physiol.* 2019;158:185–200.
80. Palin LP, Polo TOB, Batista FR de S, Gomes-Ferreira PHS, Garcia Junior IR, Rossi AC, et al. Daily melatonin administration improves osseointegration in pinealectomized rats. *J Appl Oral Sci.* 2018;26.
81. Li Y, Wang Z, Wei Q, Luo M, Huang G, Sumer BD, et al. Non-covalent interactions in controlling pH-responsive behaviors of self-assembled nanosystems. *Polym Chem.* 2016;7(38):5949–56.
82. Teng FY, Chen WC, Wang YL, Hung CC, Tseng CC. Effects of Osseointegration by Bone Morphogenetic Protein-2 on Titanium Implants In Vitro and In Vivo. *Bioinorg Chem Appl.* 2016;2016.
83. Gromolak S, Krawczenko A, Antończyk A, Buczak K, Kielbowicz Z, Klimczak A. Biological characteristics and osteogenic differentiation of ovine bone marrow derived mesenchymal stem cells stimulated with FGF-2 and BMP-2. *Int J Mol Sci.* 2020;21(24):9726.
84. Terefe EM, Ghosh A. Molecular Docking, Validation, Dynamics Simulations, and Pharmacokinetic Prediction of Phytochemicals Isolated from *Croton dichogamus* Against the HIV-1 Reverse Transcriptase. *Bioinform Biol Insights.* 2022;16:11779322221125604.
85. Sitasari PI, Narmada IB, Hamid T, Triwardhani A, Nugraha AP, Rahmawati D. East Java green tea methanolic extract can enhance RUNX2 and Osterix expression during orthodontic tooth movement in vivo. *J Pharm Pharmacogn Res.* 2020;8(4):290–8.
86. Syahputra G. Simulasi docking kurkumin enol, bisdemetoksikurkumin dan analognya sebagai inhibitor enzim 12-lipoksigenase. *J Biofisika.* 2014;10(1).
87. Raha K, Peters MB, Wang B, Yu N, Wollacott AM, Westerhoff LM, et al. The role of quantum mechanics in structure-based drug design. *Drug Discov Today.* 2007;12(17–18):725–31.
88. Pantsar T, Poso A. Binding affinity via docking: fact and fiction. *Molecules.* 2018;23(8):1899.



89. Harder E, Damm W, Maple J, Wu C, Reboul M, Xiang JY, et al. OPLS3: a force field providing broad coverage of drug-like small molecules and proteins. *J Chem Theory Comput.* 2016;12(1):281–96.
90. Owoloye AJ, Ligali FC, Enejoh OA, Musa AZ, Aina O, Idowu ET, et al. Molecular docking, simulation and binding free energy analysis of small molecules as Pf HT1 inhibitors. *PLoS One.* 2022;17(8):e0268269.
91. Qian B, Raman S, Das R, Bradley P, McCoy AJ, Read RJ, et al. High-resolution structure prediction and the crystallographic phase problem. *Nature.* 2007;450(7167):259–64.
92. Watkins BA, Lippman HE, Le Bouteiller L, Li Y, Seifert MF. Bioactive fatty acids: role in bone biology and bone cell function. *Prog Lipid Res.* 2001;40(1–2):125–48.
93. Pantami HA, Ahamad Bustamam MS, Lee SY, Ismail IS, Mohd Faudzi SM, Nakakuni M, et al. Comprehensive GCMS and LC-MS/MS metabolite profiling of chlorella vulgaris. *Mar Drugs.* 2020;18(7):367.
94. Alekos NS, Moorer MC, Riddle RC. Dual effects of lipid metabolism on osteoblast function. *Front Endocrinol (Lausanne).* 2020;11:578194.
95. Khotib J, Lasandara CSC, Budiatin AS. Acceleration of bone fracture healing through the use of natural bovine hydroxyapatite implant on bone defect animal model. *Folia Medica Indones.* 2019;55(3):176–87.
96. Iraniza AD, Machmud E. The effect of application of Chlorella vulgaris extract gel on bone remodeling. *Makassar Dent J.* 2020;9(3):220–4.
97. Dammar I, Tanti I, Amir LR. Analysis of Polyphenol and Antioxidant Chlorella Vulgaris Extract: Preliminary Study. *J Int Dent Med Res.* 2023;16(1):149–53.
98. Jubhari EH, Dammar I, Launardo V, Goan Y. Implant Coating Materials to Increase Osseointegration of Dental Implant: A Systematic Review. *Syst Rev Pharm.* 2020;11(12).

# Lampiran