## DAFTAR PUSTAKA


A. Ashman, 2000a. Postextraction ridge preservation using a synhetic alloplast. Implant Dent 9, 168–176.

A. Ashman, 2000b. Ridge preservation: important buzzwords in dentistry. Gen Dent 48, 304–312.

Ana, I.D., Matsuya, S., Ishikawa, K., 2010. Engineering of Carbonate Apatite Bone Substitute Based on Composition-Transformation of Gypsum and Calcium Hydroxide. Engineering 02, 344–352. https://doi.org/10.4236/eng.2010.25045

Andryukov, B.G., Besednova, N.N., Kuznetsova, T.A., Zaporozhets, T.S., Ermakova, S.P., Zvyagintseva, T.N., Chingizova, E.A., Gazha, A.K., Smolina, T.P., 2020. Sulfated polysaccharides from marine algae as a basis of modern biotechnologies for creating wound dressings: Current achievements and future prospects. Biomedicines 8. https://doi.org/10.3390/biomedicines8090301

Araújo M.G, Silva C.O, Misawa M, 2015. Alveolar socket healing: What can we learn? Periodontol 2000 68, 122–134.

Athanasiou KA, Shah AR, Hernandez RJ, 2001. Basic science of articular cartilage repair. Clin Sports Med 20, 223–47.

Aufan, M.R., Daulay, A., Indriani, D., Nuruddin, A., Purwasasmita, 2021. Sintesis Scaffold Alginat- Kitosan-Karbobat Apatit sebagai Bone Graft menggunakan metode Freeze drying. Jurnal Biofisika 8, 16–24.

Beck-Broichsitter B.E, Werk A.N, Smeets R, 2015. Targeting gene expression during the early bone healing period in the mandible: A base for bone tissue engineering. J. Craniomaxillofac. Surg 43, 1452–1460.

Bhatt, R.A., Rozental, T.D., 2012. Bone Graft Substitutes. Hand Clin 28, 457–468.

Boyan B D, Ranly D M, Mc Millan J, 2006. Osteoinductive ability of human allograft formulations. J Periodontol 77, 1555–1563.

Brun, P., Zamuner, A., Battocchio, C., Cassari, L., Todesco, M., Graziani, V., Iucci, G., Marsotto, M., Tortora, L., Secchi, V., Dettin, M., 2021. Bio-functionalized chitosan for bone tissue engineering. Int J Mol Sci 22. https://doi.org/10.3390/ijms22115916

C. H. Hammerle, M. G. Araujo, M. Simion, 2012. Evidence based knowledge on the biology and treatment of extraction sockets. Clin Oral Implants Res 23, 80–82.

C. Masaki, T. Nakamoto, T. Mukaibo, 2015. Strategies for alveolar ridge reconstruction and preservation for implant therapy. J Prosthodont Res 59, 220–228.

Caecilia W, Komara I, 2015. Socket Preservation. Padjadjaran Journal of Dentistry 27, 133.

Camargo PM, Lekovic V, Weinlaender M, 2005. A reentry study on the use of bovine porous bone min- eral, GTR, and platelet-rich plasma in the regenerative treatment of intrabony defects in humans. J Periodontics Restorative Dent 25, 49–59.

Carlsson GE, Persson G, 1967. Morphologic changes of the man- dible after extraction and wearing of dentures. A longitudinal, clinical, and X-ray cephalometric study covering 5 years. Odontol Revy 18, 27–54.

Chu, T.M., Orton, D.G., 2002. Mechanical and in vivo performance of hydroxyapatite implants with controlled architectures. Biomaterials 23, 1283–1293.

Cunha, L., Grenha, A., 2016. Sulfated seaweed polysaccharides as multifunctional materials in drug delivery applications. Mar Drugs 14. https://doi.org/10.3390/md14030042

de Sousa Gomes P, Daugela P, Poskevicius L, 2019. Molecular and Cellular Aspects of Socket Healing in the Absence and Presence of Graft Materials and Autologous Platelet Concentrates: A Focused Review. J. Oral Maxillofac. Res 10, e2.

Devi G.V, Y., Nagendra, A.H., Shenoy P, S., Chatterjee, K., Venkatesan, J., 2022a. Fucoidan-Incorporated Composite Scaffold Stimulates Osteogenic Differentiation of Mesenchymal Stem Cells for Bone Tissue Engineering. Mar Drugs 20. https://doi.org/10.3390/md20100589

Devi G.V, Y., Nagendra, A.H., Shenoy P, S., Chatterjee, K., Venkatesan, J., 2022b. Fucoidan-Incorporated Composite Scaffold Stimulates Osteogenic Differentiation of Mesenchymal Stem Cells for Bone Tissue Engineering. Mar Drugs 20. https://doi.org/10.3390/md20100589

Devlin H, Sloan P, 2002. Early bone healing events in the human extraction socket. Int. J. Oral Maxillofac. Surg 31, 641–645.

Di Martino, A., Sittinger, M., Risbud, M. V., 2005. Chitosan: A versatile biopolymer for orthopaedic tissue-engineering. Biomaterials 26, 5983–5990. https://doi.org/10.1016/j.biomaterials.2005.03.016

Dornish M, Kaplan D, 2001. Standards and guidelines for biopolymers in tissue-engineered medical products. Ann N Y Acad Sci 944, 388–97.

Draget, K.I., Taylor, C., 2011. Chemical, physical and biological properties of alginates and their biomedical implications. Food Hydrocoll 25, 251–256.

Elkayar, A., Elshazly, Y., Assaad, M., 2009. properties of Hydroxyapatite from Bovine Teeth. Bone Tissue Regen Insights 2, 31–36.

Eshwar, S., Kranthi, K., Manvi, S., Ashok, P., Surana, Y.S., Sangeetha, R., Jain, V., 2021a. Histological Assessment of Fucoidan Gelatine Chitosan Compound Injectable Hydrogel for Bone Regeneration in Wistar Rats. Indian J Pharm Sci 83, 1254–1260. https://doi.org/10.36468/pharmaceutical-sciences.880

Eshwar, S., Kranthi, K., Manvi, S., Ashok, P., Surana, Y.S., Sangeetha, R., Jain, V., 2021b. Histological Assessment of Fucoidan Gelatine Chitosan Compound Injectable Hydrogel for Bone Regeneration in Wistar Rats. Indian J Pharm Sci 83, 1254–1260. https://doi.org/10.36468/pharmaceutical-sciences.880

F. Van der Weijden, F. Dell'Acqua, 2009. Alveolar bone dimensional changes of post-extraction sockets in humans: a systematic review. Journal of Clinical Periodontol- ogy 36, 1048–1058.

Farina R, Trombelli L, 2011. Wound healing of extraction sockets. Endod Top 16–18.

Fiorillo, L., 2019. Chlorhexidine gel use in the oral district: A systematic review. Gels 5, 1–16. https://doi.org/10.3390/gels5020031

G. E. Carlsson, G. Persson, 1967. Morphologic changes of the mandible after extraction and wearing of dentures. A longitudinal, clinical, and x-ray cephalometric study covering 5 years. Odontol Revy 18, 27–54.

G.Huynh-Ba, B.E.Pjetursson, M.Sanzetal, 2010. Analysisofthe socket bone wall dimensions in the upper maxilla in relation to immediate implant placement. Clin Oral Implants Res 21, 37–42.

H. Devlin, P. Sloan, 2002. Early bone healing events in the human extraction socket. International Journal of Oral and Maxillofacial Surgery 31, 641–645.

Handrini Dewi, A., Dewi Ana, I., 2018. The use of hydroxyapatite bone substitute grafting for alveolar ridge preservation, sinus augmentation, and periodontal bone defect: A systematic review. Heliyon 4, 884. https://doi.org/10.1016/j.heliyon.2018

Hao, Y., Zhao, W., Zhang, L., Zeng, X., Sun, Z., Zhang, D., Shen, P., Li, Z., Han, Y., Li, P., Zhou, Q., 2020. Bio-multifunctional alginate/chitosan/fucoidan sponges with enhanced angiogenesis and hair follicle regeneration for promoting full-thickness wound healing. Mater Des 193. https://doi.org/10.1016/j.matdes.2020.108863

Hassan KS, Kassim A, Al Ogaly AU, 2008. A comparative evaluation of immediate dental implant with autogenous versus synthetic guided bone regeneration. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 106, 8–15.

Howe L Geoffrey, 1971. Minor Oral Surgery, 2nd ed.

Husain, S., Al-Samadani, K.H., Najeeb, S., Zafar, M.S., Khurshid, Z., Zohaib, S., Qasim, S.B., 2017. Chitosan biomaterials for current and potential dental applications. Materials 10, 1–20. https://doi.org/10.3390/ma10060602

Igondjo Tchen Changotade, S., Korb, G., Bassil, J., Barroukh, B., Willig, C., Colliec-Jouault, S., Durand, P., Godeau, G., Senni, K., 2008. Potential effects of a low-molecular-weight fucoidan extracted from brown algae on bone biomaterial osteoconductive properties. J Biomed Mater Res A 87, 666–675. https://doi.org/10.1002/jbm.a.31819

Indonesia KKR, 2018. Laporan Nasional RISKESDAS, Badan Penelitian dan Pengembangan Kesehatan. Badan Penelitian dan Pengembangan Kesehatan, Jakarta.

Indrani, J., Budianto, E., 2013. A study of extraction and characterization of alginates obtained from brown macroalgae Sargassum duplicatum and Sargassum crassifolium from Indonesia. Dent. J (Maj. Ked. Gigi) 46, 65–70.

Irinakis, T., 2006. Rationale for Socket Preservation after Extraction of a Single-Rooted Tooth when Planning for Future Implant Placement. J Can Dent Assoc 72, 917–22.

J. G. Mangos, 1941. The healing of extraction wounds: a microscopic and radiographic investigation. New Zeeland Dental Journal 37, 4–23.

Jayakumar, R., Menon, D., Manzoor, K., 2010. Biomedical applications of chitin and chitosan based nanomaterials—A short review. Carbohydr. Polym 82, 227–232.

Jensen S S, Broggini N, Hjorting-Hansen E, 2006. one healing and graft resoprtion of autograft, anorganic bovine bone and ß- ticalcium

phosphate. A histologic and histomorphometric study in the mandibles of minipigs. Clin Oral Implants Res 17, 237–243.
Jeong, H.S., Venkatesan, J., Kim, S.K., 2013. Hydroxyapatite-fucoidan nanocomposites for bone tissue engineering. Int J Biol Macromol 57, 138–141. https://doi.org/10.1016/j.ijbiomac.2013.03.011
Jin, G., Kim, G., 2012. Multi-layered polycaprolactone-alginate-fucoidan biocomposites supplemented with controlled release of fucoidan for bone tissue regeneration: Fabrication, physical properties, and cellular activities. Soft Matter 8, 6264–6272. https://doi.org/10.1039/c2sm07256d
Jin, G., Kim, G.H., 2011. Rapid-prototyped PCL/fucoidan composite scaffolds for bone tissue regeneration: Design, fabrication, and physical/biological properties. J Mater Chem 21, 17710–17718. https://doi.org/10.1039/c1jm12915e
J.Pietrokovski, M.Massler, 1967a. Ridge remodeling after tooth extraction in rats. J Dent Res 46, 222–231.
J.Pietrokovski, M.Massler, 1967b. Alveolar ridge resorption following tooth extraction. J Prosthet Dent 17, 21–27.
K .Dedhia, D., R, V., Mahendra, J., C, B.N.K., 2020. SOCKET PRESERVATION- “HEALER OF THE EMPTY SOCKET”- AN OVERVIEW. Journal of Indian Dental Association Madras 50–57. https://doi.org/10.37841/jidam_2020_v7_i2_03
K. Johnson, 1969. A study of the dimensional changes occurring in the maxilla following tooth extraction. Aust Dent J 14, 241–244.
Kao, S.T., Scott, D.D., 2007. A Review of Bone Substitutes. Oral Maxillofac. Surg. Clin. North Am 19, 513–521.
Kim YK, Kim SG, Lim SC, 2010. A clinical study on bone formation using a demineralized bone matrix and resorbable membrane. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 109, 6–11.
Kim YK, Kim SG, Lim SC, 2007a. The comparative study of guided bone regeneration using various of bone graft materials. J Korean Assoc Oral Maxillofac Surg 33, 350–8.
Kim YK, Yun PY, Lim SC, Kim SG, 2007b. Guided bone regeneration using Regenaform(R) and Ossix(R) membrane: three case reports. J Korean Assoc Oral Maxillofac Surg 33, 648–53.
Ko HC, Milthorpe BK, McFarland CD, 2007. Engineering thick tissues–the vascularisation problem. Eur Cell Mater 14, 1–18.

Koh T.J, DiPietro L.A, 2011. Inflammation and wound healing: The role of the macrophage. Expert Rev. Mol. Med 13, e23.

Kojima, T., Amizuka, N., Suzuki, A., De Freitas, P.H.L., Yoshizawa, M., Kudo, A., Saito, C., Maeda, T., 2007. Histological examination of bone regeneration achieved by combining grafting with hydroxyapatite and thermoplastic bioresorbable plates. J Bone Miner Metab 25, 361–373. https://doi.org/10.1007/s00774-007-0763-y

Kolk, A., Handschel, J., Drescher, W., 2012. urrent trends and future perspectives of bone substitute materials—From space holders to innovative biomaterials. J. Cranio Maxillofac. Surg. 40, 114–124.

L. B. Osorio, L. M. de Menezes, J. H. Assaf, 2016. Post-extraction evaluation of sockets with one plate loss – a microtomographic and histological study. Clin Oral Implants Res 27, 31–38.

L. P. Garetto, J. Chen, J. A. Parr, 1995. Remodeling dynamics of bone supporting rigidly fixed titanium implants: a histomorphometric comparison in four species including humans. Implant Dent 4, 235–243.

L. Schropp, L. Kostopoulos, A. Wenzel, 2003. Bone healing following immediate versus delayed placement of titanium implants into extraction sockets: a prospective clinical study. International Journal of Oral and Maxillofacial Implants 18, 189–199.

L. Trombelli, R. Farina, A. Marzola, 2008. Modeling and remodeling of human extraction sockets. J Clin Periodontol 35, 630–639.

Langer R, 2000. Tissue engineering. Mol Ther 1, 12–15.

Le BT, Borzabadi-Farahani A, 2014. Simultaneous implant placement and bone grafting with particulate mineralized allograft in sites with buccal wall defects, a three-year follow-up and review of literature. J Craniomaxillofac Surg 42, 552–59.

Lee, J.S., Jin, G.H., Yeo, M.G., Jang, C.H., Lee, H., Kim, G.H., 2012. Fabrication of electrospun biocomposites comprising polycaprolactone/ fucoidan for tissue regeneration. Carbohydr Polym 90, 181–188. https://doi.org/10.1016/j.carbpol.2012.05.012

Lee, K.Y., Kong, H.J., Mooney, D.J., 2008. Quantifying Interactions between Cell Receptors and Adhesion Ligand-Modified Polymers in Solution. Macromol. Biosci 8, 140–145.

Lee, Kuen Yong, Mooney, D.J., 2012. Alginate: Properties and biomedical applications. Progress in Polymer Science (Oxford) 37, 106–126. https://doi.org/10.1016/j.progpolymsci.2011.06.003

Lee, K.Y, Mooney, D.J., 2012. Alginate: Properties and biomedical applications. Prog. Polym. Sci 37, 106–126.

Levengood, S.K.L., Zhang, M., 2014. Chitosan-based scaffolds for bone tissue engineering. J Mater Chem B 2, 3161–3184. https://doi.org/10.1039/c4tb00027g

Lin, H.K., Pan, Y.H., Salamanca, E., Lin, Y. Te, Chang, W.J., 2019. Prevention of bone resorption by ha/β-tcp + collagen composite after tooth extraction: A case series. Int J Environ Res Public Health 16. https://doi.org/10.3390/ijerph16234616

LM Sykes, C Bradfield, K Naidu, 2021. Alveolar bone resorption following tooth extraction characteristically illustrated. South African Dental Journal 76, 545–549.

L.Schropp, A.Wenzel, L.Kostopoulos, 2003. Bone healing and soft tissue contour changes following single- tooth extraction: a clinical and radiographic 12-month prospective study. International Journal of Periodontics and Restorative Dentistry 23, 313–323.

M. G. Araujo, J. Lindhe, 2005. Dimensional ridge alterations following tooth extraction. An experimental study in the dog. J Clin Periodontol 32, 212–218.

M. H. Amler, 1969. The time sequence of tissue regeneration in human extraction wounds. Oral Surgery, Oral Medicine, Oral Pathology 27, 309–318.

M, K., Pighinelli L, Tedesco MF, 2017. Chitosan-Properties and Applications in Dentistry. Advances in Tissue Engineering & Regenerative Medicine: Open Access 2, 205–211. https://doi.org/10.15406/atroa.2017.02.00035

Madihally SV, Matthew HWT, 1999. Porous chitosan scaffolds for tissue engineering. Biomaterials 20, 1133–42.

Marsich, E., Bellomo, F., Turco, G., Travan, A., Donati, I., Paoletti, S., 2013. Nano-composite scaffolds for bone tissue engineering containing silver nanoparticles: Preparation, characterization and biological properties. J Mater Sci Mater Med 24, 1799–1807. https://doi.org/10.1007/s10856-013-4923-4

Martinetti, R., Dolcini, L., Mangano, C., 2005. Physical and chemical aspects of a new porous hydroxyapatite. Anal Bioanal Chem 381, 634–638. https://doi.org/10.1007/s00216-004-2957-7

MAURICIO G. ARAUJO, CLEVERSON O. SILVA, MONICA MISAWA, 2015. Alveolar socket healing: what can we learn? Periodontol 2000 68, 122–134.

Miron R J, Hedbom N, Saulacic Y, 2011. Osteogenic Potential of Autogenous Bone Grafts Harvested with Four Different Surgical Techniques. J Dent Res 90, 1428.

Misch, C.E., Dietsh, F., 1993. Bone-grafting materials in implant dentistry. Implant Dent 2, 158–167.

Moore, W.R., E Graves, S., 2001. Synthetic bone graft substitutes. ANZ J. Surg 71, 354–361.

Mordenfeld A, Johansson CB, Albrektsson T, 2014. A ran- domized and controlled clinical trial of two different compositions of deproteinized bovine bone and autogenous bone used for lat- eral ridge augmentation. Clin Oral Implants Res 25, 310–20.

Murakami, K., Aoki, H., Nakamura, Shingo, Nakamura, Shin ichiro, Takikawa, M., Hanzawa, M., Kishimoto, S., Hattori, H., Tanaka, Y., Kiyosawa, T., Sato, Y., Ishihara, M., 2010. Hydrogel blends of chitin/chitosan, fucoidan and alginate as healing-impaired wound dressings. Biomaterials 31, 83–90. https://doi.org/10.1016/j.biomaterials.2009.09.031

Muzzarelli, R.A., 2009. Chitins and chitosans for the repair of wounded skin, nerve, cartilage and bone. Carbohydr. Polym 76, 167–182.

National Research Council, 1980. Committee on animal models for research on aging. Mammalian models for research on aging, 1st ed. National Academy Press, Washington DC.

Nurhikmawati, F., Manurung, M., Laksmiwati, A.A.I.A.M., 2014. Penggunaan kitosan dari limbah kulit udang sebagai inhibitor keasaman tuak. Jurnal Kimia 8, 191–197.

Ortiz, C., Boyce, M.C., 2008. Materials science: Bioinspired structural materials. Science (1979) 319, 1053–1054. https://doi.org/10.1126/science.1154295

P. J. Boyne, 1966. Osseous repair of the postextraction alveolus in man. Oral Surgery, Oral Medicine, Oral Pathology 21, 805–13.

Pajovich, H., Banerjee, I., 2017. Biomineralization of Fucoidan-Peptide Blends and Their Potential Applications in Bone Tissue

Regeneration. J Funct Biomater 8, 41. https://doi.org/10.3390/jfb8030041

Pallela, R., Venkatesan, J., Janapala, V.R., Kim, S.K., 2012. Biophysicochemical evaluation of chitosan-hydroxyapatite-marine sponge collagen composite for bone tissue engineering. J Biomed Mater Res A 100 A, 486–495. https://doi.org/10.1002/jbm.a.33292

Park, S.J., Lee, K.W., Lim, D.S., Lee, S., 2012. The sulfated polysaccharide fucoidan stimulates osteogenic differentiation of human adipose-derived stem cells. Stem Cells Dev 21, 2204–2211. https://doi.org/10.1089/scd.2011.0521

Passarelli, P.C., Pagnoni, S., Piccirillo, G.B., Desantis, V., Benegiamo, M., Liguori, A., Papa, R., Papi, P., Pompa, G., D'Addona, A., 2020. Reasons for tooth extractions and related risk factors in adult patients: A cohort study. Int J Environ Res Public Health 17. https://doi.org/10.3390/ijerph17072575

Phelps EA, Garcia AJ, 2009. Update on therapeutic vascularization strategies. Regen Med 4, 65–80.

Pinho, M.N., Roriz, V.L., Novaes, A.B.J., Taba, M.J., 2006. Titanium membranes in prevention of alveolar collapse after tooth extraction. Implant Dent 15, 53–61.

Porter, B.D., Oldham, J.B., 2000. Mechanical properties of a biodegradable bone regeneration scaffold. J Biomech Eng 122, 286–288.

Purohit, S.D., Singh, H., Bhaskar, R., Yadav, I., Bhushan, S., Gupta, M.K., Kumar, A., Mishra, N.C., 2020. Fabrication of Graphene Oxide and Nanohydroxyapatite Reinforced Gelatin–Alginate Nanocomposite Scaffold for Bone Tissue Regeneration. Front Mater 7, 1–10. https://doi.org/10.3389/fmats.2020.00250

Qasim, S.B., Zafar, M.S., Najeeb, S., Khurshid, Z., Shah, A.H., Husain, S., Rehman, I.U., 2018. Electrospinning of chitosan-based solutions for tissue engineering and regenerative medicine. Int J Mol Sci 19. https://doi.org/10.3390/ijms19020407

R.Guarnieri, L.Stefanelli, F.DeAngelis, 2017. Extraction socket preservation using porcine- derived collagen membrane alone or associated with porcine- derived bone. Clinical results of randomized controlled study. J Oral Maxillofac Res 8, e5.

Rodriguez, A.E., Nowzari, H., 2019. The long-term risks and complications of bovine-derived xenografts: A case series. J Indian Soc Periodontol 23, 487–492. https://doi.org/10.4103/jisp.jisp_656_18

Rodriguez-Jasso, R.M., Mussatto, S.I., Pastrana, L., Aguilar, C.N., Teixeira, J.A., 2011. Microwave-assisted extraction of sulfated polysaccharides (fucoidan) from brown seaweed. Carbohydr Polym 86, 1137–1144. https://doi.org/10.1016/j.carbpol.2011.06.006

Rucci, N., 2008. Molecular biology of bone remodelling. Clinical Cases in Mineral and Bone Metabolism.

Safadi, F.F., Barbe, M.F., Abdelmagid, S.M., Rico, M.C., Aswad, R.A., Litvin, J., Popoff, S.N., 2009. Bone structure, development and bone biology. Bone Pathology 1–50. https://doi.org/10.1007/978-1-59745-347-9_1

Sancilio, S., Gallorini, M., di Nisio, C., Marsich, E., di Pietro, R., Schweikl, H., Cataldi, A., 2018. Alginate/hydroxyapatite-based nanocomposite scaffolds for bone tissue engineering improve dental pulp biomineralization and differentiation. Stem Cells Int 2018. https://doi.org/10.1155/2018/9643721

Scala A, Lang N.P, Schweikert M.T, 2014. Sequential healing of open extraction sockets. An experimental study in monkeys. J. Craniomaxillofac. Surg 25, 288–295.

Schropp L, Wenzel A, Kostopoulos L, 2003. Bone healing and soft tissue contour changes following single-tooth extraction: a clinical and radiographic 12-month prospective study. Int J Periodontics Restorative Dent 23, 313–323.

Septianda Bhakti, W., Kandou, M.S., Kurnia, S., n.d. The 4 th Periodontics Seminar (PERIOS IV).

Shapiro, F., Wu, J.Y., 2019a. Woven bone overview: structural classification based on its integral role in developmental, repair and pathological bone formation throughout vertebrate groups. Eur Cell Mater 38, 137–167. https://doi.org/10.22203/ECM.V038A11

Shapiro, F., Wu, J.Y., 2019b. Woven bone overview: Structural classification based on its integral role in developmental, repair and pathological bone formation throughout vertebrate groups. Eur Cell Mater 38, 137–167. https://doi.org/10.22203/eCM.v038a11

Sharif, R.A., Chaturvedi, S., Suleman, G., Elmahdi, A.E., Elagib, M.F.A., 2020. Analysis of tooth extraction causes and patterns. Open Access

Maced J Med Sci 8, 36–41. https://doi.org/10.3889/OAMJMS.2020.3784

Shruthi Eshwar, K. Kranthi, Supriya Manvi, Purnima Ashok, Y. S. Surana, 2021. Histological Assessment of Fucoidan Gelatine Chitosan Compound Injectable Hydrogel for Bone Regeneration in Wistar Rats. Indian J Pharm Sci 83, 1254–1260.

Sinurat, E., Kusumawati, R., 2017. Optimasi Metode Ekstraksi Fukoidan dari Rumput Laut Cokelat Sargassum binderi Sonder. Jurnal Pascapanen dan Bioteknologi Kelautan dan Perikanan 12. https://doi.org/10.15578/jpbkp.v12i2.388

Song R, Murphy M, Li C, 2018. Current develop- ment of biodegradable polymeric materials for biomedical applications. Drug Des Devel Ther 12, 3117–45.

Sularsih, Soeprijanto, 2012. The Comparison of Osteoblast Cell Number in Bone Healing Between The Use of Kitosan Gel 1% and 2%. Jurnal Material Kedokteran Gigi 1, 145--152.

Sun, J., Tan, H., 2013. Alginate-based biomaterials for regenerative medicine applications. Materials 6, 1285–1309. https://doi.org/10.3390/ma6041285

Sun, Q.L., Li, Y., Ni, L.Q., Li, Y.X., Cui, Y.S., Jiang, S.L., Xie, E.Y., Du, J., Deng, F., Dong, C.X., 2020. Structural characterization and antiviral activity of two fucoidans from the brown algae Sargassum henslowianum. Carbohydr Polym 229. https://doi.org/10.1016/j.carbpol.2019.115487

Šupová, M., 2009. Problem of hydroxyapatite dispersion in polymer matrices: A review. J Mater Sci Mater Med 20, 1201–1213. https://doi.org/10.1007/s10856-009-3696-2

Sutanto, D., Satari, M.H., Hernowo, B.S., Priosoeryanto, B.P., Septawendar, R., Asri, L.A.T.W., Purwasasmita, B.S., 2021. In vivo histomorphologically evaluate of the initial bone healing in geopolymer-carbonated apatite nanocomposites as a potential dental implant material. Padjadjaran Journal of Dentistry 33, 63. https://doi.org/10.24198/pjd.vol33no1.28899

Tallgren, A., Dr, O., 1972. The continuing reduction of the residual alveolar ridges in complete denture wearers: A mixed-longitudinal study covering 25 years. J Prosthet Dent 27, 120–152.

Tao Yang, Peng Xie, Zhenzhen Wu, Yunmao Liao, 2020. The Injectable Woven Bone-Like Hydrogel to Perform Alveolar Ridge Preservation

With Adapted Remodeling Performance After Tooth Extraction. Front Bioeng Biotechnol 8.

Ten Heggeler, J.M.A.G., Slot, D.E., Van Der Weijden, G.A., 2011. Effect of socket preservation therapies following tooth extraction in non-molar regions in humans: A systematic review. Clin Oral Implants Res 22, 779–788. https://doi.org/10.1111/j.1600-0501.2010.02064.x

Thein-Han, W.W., Misra, R.D.K., 2009. Biomimetic chitosan-nanohydroxyapatite composite scaffolds for bone tissue engineering. Acta Biomater 5, 1182–1197. https://doi.org/10.1016/j.actbio.2008.11.025

Thomas, A., Johnson, E., Agrawal, A.K., Bera, J., 2019. Preparation and characterization of glass-ceramic reinforced alginate scaffolds for bone tissue engineering. J Mater Res 34, 3798–3809. https://doi.org/10.1557/jmr.2019.343

Trombelli L, Farina R, Marzola A, 2008a. Modeling and remodeling of human extraction sockets. J Clin Periodontol 35, 630–639.

Trombelli L, Farina R, Marzola A, Bozzi L, 2008b. Modeling and remodeling of human extraction sockets. J. Clin. Periodontol 35, 630–639.

Trombelli, L., Farina, R., Marzola, A., Bozzi, L., Liljenberg, B., Lindhe, J., 2008. Modeling and remodeling of human extraction sockets. J Clin Periodontol 35, 630–639. https://doi.org/10.1111/j.1600-051X.2008.01246.x

Tsiridis E, Ali Z, Bhalla A, 2009. In vitro proliferation and differentiation of human mesenchymal stem cells on hydroxyapatite versus human demineralised bone matrix with and without osteogenic protein-1. xpert Opin Biol Ther 9, 9–19.

Turco, G., Porrelli, D., Marsich, E., Vecchies, F., Lombardi, T., Stacchi, C., Lenarda, R. Di, 2018. Three-dimensional bone substitutes for oral and maxillofacial surgery: Biological and structural characterization. J Funct Biomater 9. https://doi.org/10.3390/jfb9040062

V. K., A.D., Udduttula, A., Jaiswal, A.K., 2023a. Unveiling the secrets of marine—derived fucoidan for bone tissue engineering—A review. Front Bioeng Biotechnol 10. https://doi.org/10.3389/fbioe.2022.1100164

V. K., A.D., Udduttula, A., Jaiswal, A.K., 2023b. Unveiling the secrets of marine—derived fucoidan for bone tissue engineering—A review.

Front Bioeng Biotechnol 10, 1–13. https://doi.org/10.3389/fbioe.2022.1100164

Valente, J.F.A., Valente, T.A.M., Alves, P., Ferreira, P., Silva, A., Correia, I.J., 2012. Alginate based scaffolds for bone tissue engineering. Materials Science and Engineering C 32, 2596–2603. https://doi.org/10.1016/j.msec.2012.08.001

Van der Weijden, Dell'acqua, F., Slot, D.E., 2009. Alveolar bone dimensional changes of post-extraction sockets in humans: a systematic review. J Clin Periodontol 36, 1048–1058.

Venkatesan, J., Bhatnagar, I., Kim, S.K., 2014a. Chitosan-alginate biocomposite containing fucoidan for bone tissue engineering. Mar Drugs 12, 300–316. https://doi.org/10.3390/md12010300

Venkatesan, J., Bhatnagar, I., Kim, S.K., 2014b. Chitosan-alginate biocomposite containing fucoidan for bone tissue engineering. Mar Drugs 12, 300–316. https://doi.org/10.3390/md12010300

Venkatesan, J., Bhatnagar, I., Kim, S.K., 2014c. Chitosan-alginate biocomposite containing fucoidan for bone tissue engineering. Mar Drugs 12, 300–316. https://doi.org/10.3390/md12010300

Venkatesan, J., Bhatnagar, I., Kim, S.K., 2014d. Chitosan-alginate biocomposite containing fucoidan for bone tissue engineering. Mar Drugs 12, 300–316. https://doi.org/10.3390/md12010300

Venkatesan, J., Bhatnagar, I., Manivasagan, P., 2015. Alginate composites for bone tissue engineering: A review. Int. J. Biol. Macromol 72, 269–281.

Venkatesan, J., Nithya, R., Sudha, P.N., Kim, S.K., 2014e. Role of alginate in bone tissue engineering. Adv Food Nutr Res 73, 45–57. https://doi.org/10.1016/B978-0-12-800268-1.00004-4

W. L. Tan, T. L. T. Wong, M. C. M. Wong, N. P. Lang, 2012. A systematic review of post-extractional alveolar hard and soft tissue dimensional changes in humans. Clin Oral Implants Res 23, 1–21.

Wang, S.H., Huang, Chih Yu, Chen, C.Y., Chang, C.C., Huang, Chun Yung, Dong, C. Di, Chang, J.S., 2020. Structure and Biological Activity Analysis of Fucoidan Isolated from Sargassum siliquosum. ACS Omega 5, 32447–32455. https://doi.org/10.1021/acsomega.0c04591

Wang, W., Yeung, K.W., 2007. Bone grafts and biomaterials substitutes for bone defect repair: A review. Bioact. Mater 2, 224–247.

wen tao chen, da cheng han, pei xun zhang, 2015. A special healing pattern in stable metaphyseal fractures. acta orthop 86, 240.

Williams, D.W., Lee, C., Kim, T., Yagita, H., Wu, H., Park, S., Yang, P., Liu, H., Shi, S., Shin, K.H., Kang, M.K., Park, N.H., Kim, R.H., 2014. Impaired bone resorption and woven bone formation are associated with development of osteonecrosis of the jaw-like lesions by bisphosphonate and anti-receptor activator of NF-κB ligand antibody in mice. American Journal of Pathology 184, 3084–3093. https://doi.org/10.1016/j.ajpath.2014.07.010

Y. D. Hsieh, H. Devlin, C. Roberts, 1994. Early alveolar ridge osteogenesis following tooth extraction in the rat. Arch Oral Biol 39, 425–428.

Yang, S., Li, Y., Liu, C., Wu, Y., Wan, Z., Shen, D., 2022. Pathogenesis and treatment of wound healing in patients with diabetes after tooth extraction. Front Endocrinol (Lausanne) 13. https://doi.org/10.3389/fendo.2022.949535

Z. Sheikh, J., Qureshi, A.M., Alshahrani et al., 2017. Collagen based barrier membranes for periodontal guided bone regeneration applications. Odontology 105, 1–12.

Zhao, Rusin, Yang, R., Cooper, P.R., Khurshid, Z., Shavandi, A., Ratnayake, J., 2021. Bone grafts and substitutes in dentistry: A review of current trends and developments. Molecules 26. https://doi.org/10.3390/molecules26103007

Zhao, R, Yang, R., R. Cooper, P., Khurshid, Z., 2021. Bone graft and substitutes in dentistry. Molecules 26, 1–27.

# LAMPIRAN

Lampiran 1. Lembar Etik Penelitian

KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
UNIVERSITAS HASANUDDIN
FAKULTAS KEDOKTERAN GIGI
RUMAH SAKIT GIGI DAN MULUT
KOMITE ETIK PENELITIAN KESEHATAN
Sekretariat : Lantai 2, Gedung Lama RSGM Unhas
JL.Kandea No. 5 Makassar
Contact Person: drg. Muhammad Ikbal, Sp.Pros/Nur Aedah AR TELP. 081342971011/08114919191

**REKOMENDASI PERSETUJUAN ETIK**
Nomor: 0100/PL09/KEPK FKG-RSGM UNHAS/2023

Tanggal: 07 Juni 2023

Dengan ini menyatakan bahwa protokol dan dokumen yang berhubungan dengan protokol berikut ini telah mendapatkan persetujuan etik:

| | | | |
|---|---|---|---|
| No. Protokol | UH 17120839 | No Protokol Sponsor | |
| Peneliti Utama | Drg. Tira Nurfaizah | Sponsor | Pribadi |
| Judul Peneliti | Efektivitas Scaffold Kitosan Alginat Fucoidan terhadap Pembentukan Woven Bone dan Penebalan Tulang Trabekular pada Tindakan Socket Preservation Gigi Marmut (Cavia Cobaya) | | |
| No. Versi Protokol | 1 | Tanggal Versi | 25 Mei 2023 |
| No. Versi Protokol | | Tanggal Versi | |
| Tempat Penelitian | 1. Laboratorium Biofarmaka Universitas Hasanuddin,<br>2. Laboratorium Terpadu Fakultas MIPA Universitas Hasanuddin,<br>3. Klinik Hewan La Costae,<br>4. Labotatorium Patologi Anatomi Fakultas Kedokteran Universitas Hasanuddin,<br>5. Laboratorium Hispatologi RSPTN Universitas Hasanuddin | | |
| Dokumen Lain | | | |
| Jenis Review | ☐ Exempted<br>☒ Expedited<br>☐ Fullboard | Masa Berlaku<br>07 Juni 2023-07 Juni 2024 | Frekuensi Review Lanjutan |
| Ketua Komisi Etik Penelitian | Nama:<br>Dr. drg. Marhamah, M.Kes | Tanda Tangan | Tanggal |
| Sekretaris Komisi Etik Penelitian | Nama:<br>drg. Muhammad Ikbal, Sp.Pros | Tanda Tangan | Tanggal |

Kewajiban peneliti utama:

- Menyerahkan Amandemen Protokol untuk persetujuan sebelum diimplementasikan
- Menyerahkan laporan SAE ke Komisi Etik dalam 24 Jam dan dilengkapi dalam 7 hari dan lapor SUSAR dalam 72 jam setelah peneliti utama menerima laporan.
- Menyerahkan laporan kemajuan (*progress report)* setiap 6 bulan untuk penelitian resiko tinggi dan setiap setahun untuk penelitian resiko rendah.
- Menyerahkan laporan akhir setelah penelitian berakhir.
- Melaporkan penyimpangan dari protokol yang disetujui (*protocol deviation/violation)*
- Mematuhi semua aturan yang berlaku.

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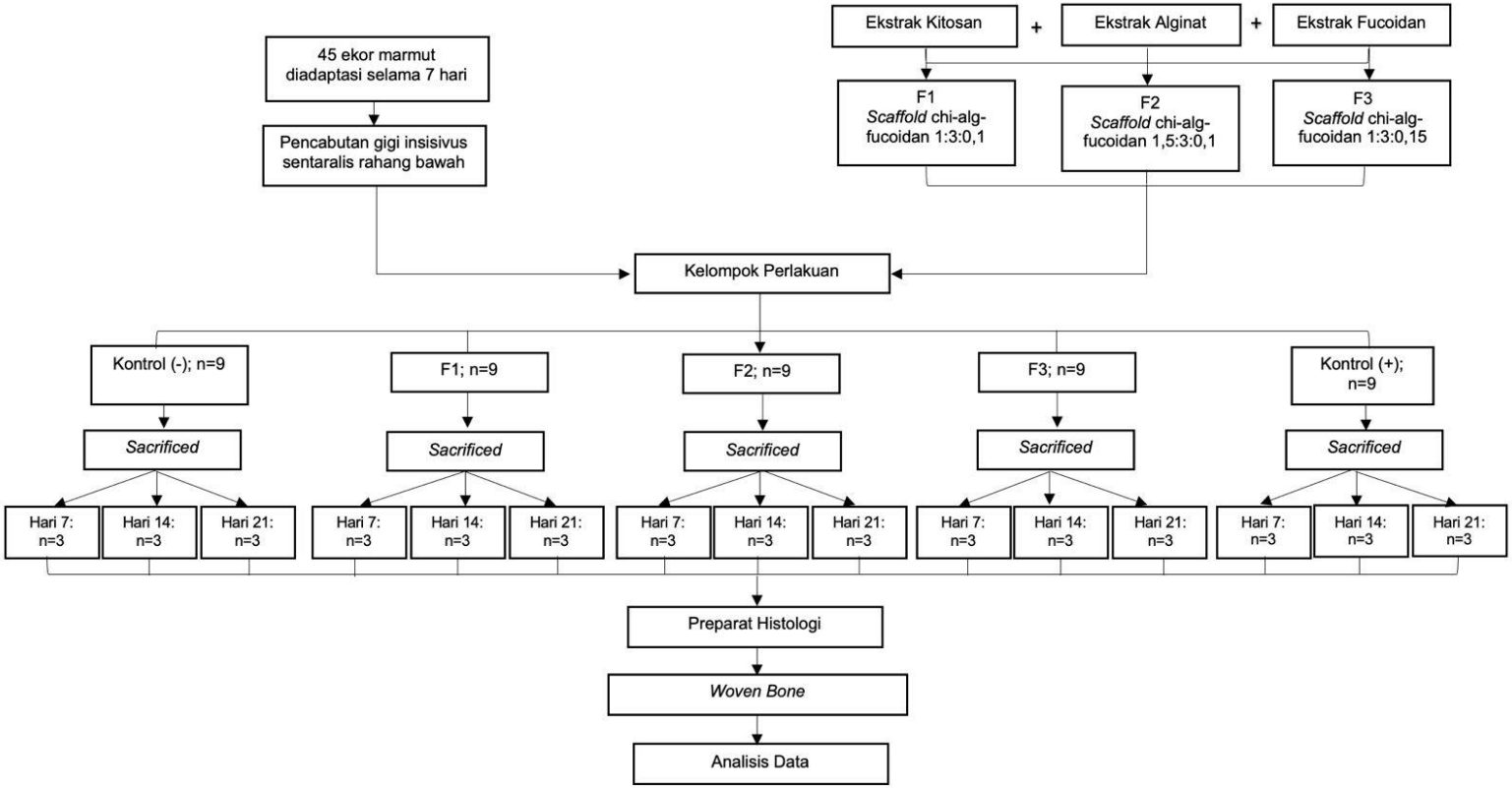
Lampiran 2. Lembar Perbaikan Ujian Seminar Hasil

Nama ; Tira Nurfaizah
NIM : J035211002
Tanggal Ujian : 22 Maret 2024
Judul : Efektivitas *Scaffold Chitosan*, Alginat dan *Fucoidan* Terhadap Jumlah pembentukan *Woven Bone* Pada Tindakan *Socket Preservation* Gigi Marmut (*Cavia Cobaya*)

| No. | Nama Dosen Penguji/ Pembimbing | Koreksi Tesis | Paraf |
|---|---|---|---|
| 1. | Prof. Dr. Sri Oktawati, drg.,Sp.Perio.,Subsp.R.P.I.D(K) | 1. Perbaiki kesimpulan sesuaikan dengan tujuan penelitian<br>**Jawaban** :<br>• Penulis sudah memperbaiki kesimpulan sesuai dengan tujuan penelitian | |
| 2. | Prof. Dr. Nurlindah Hamrun, drg., M. Kes | 1. Perbaiki kesimpulan disesuaikan dengan tujuan penelitian<br>**Jawaban** :<br>• Penulis sudah memperbaiki kesimpulan sesui saran pembimbing | |
| 3. | Surijana Mappangara, drg.,M. Kes., Sp.Perio (K) | 1. Perbaiki pembahasan harus teratur disesuaikan dengan tabel penelitian<br>2. Perhatikan spasi di latar belakang<br>**Jawaban** : | |

| | | | |
|---|---|---|---|
| | | • Penulis sudah memperbaiki pembahasan sesuai dengan tabel penelitian<br>• Penulis sudah memperbaiki spasi di latar belakang | |
| 4. | Dian Setiawati, drg., Sp. Perio., Subsp.M.P(K) | 1. Tambahkan pada bagian pembahasan kenapa harus melihat *woven bone* pada hari ke-7<br>**Jawaban** :<br>• Penulis sudah menambahkan kenapa *woven bone* harus dilihat pada hari ke-7 | |
| 5. | Sitti Raoda Juanita Ramadhan, drg., Sp. Perio | 1. Pindahkan pembacaan tabel penelitian ke pembahasan<br>Jawaban :<br>• Peneliti telah memperbaiki bagian pembahasan sesuai dengan tabel penelitian | |

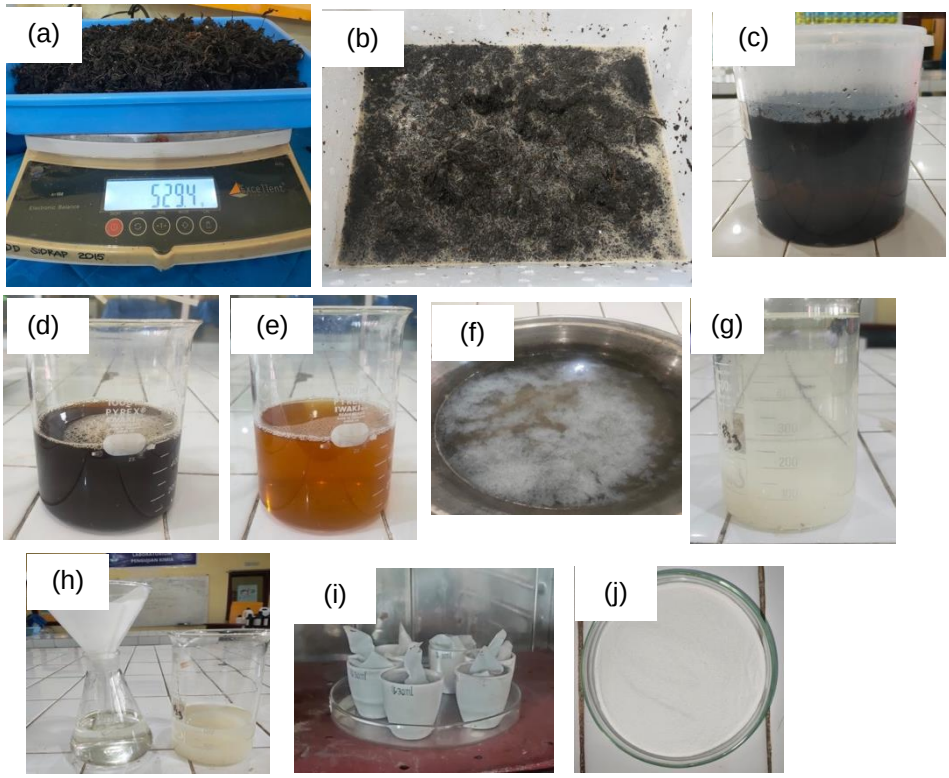
Lampiran 3a. Alur Penelitian



Lampiran 3b. Foto-Foto Proses Penelitian

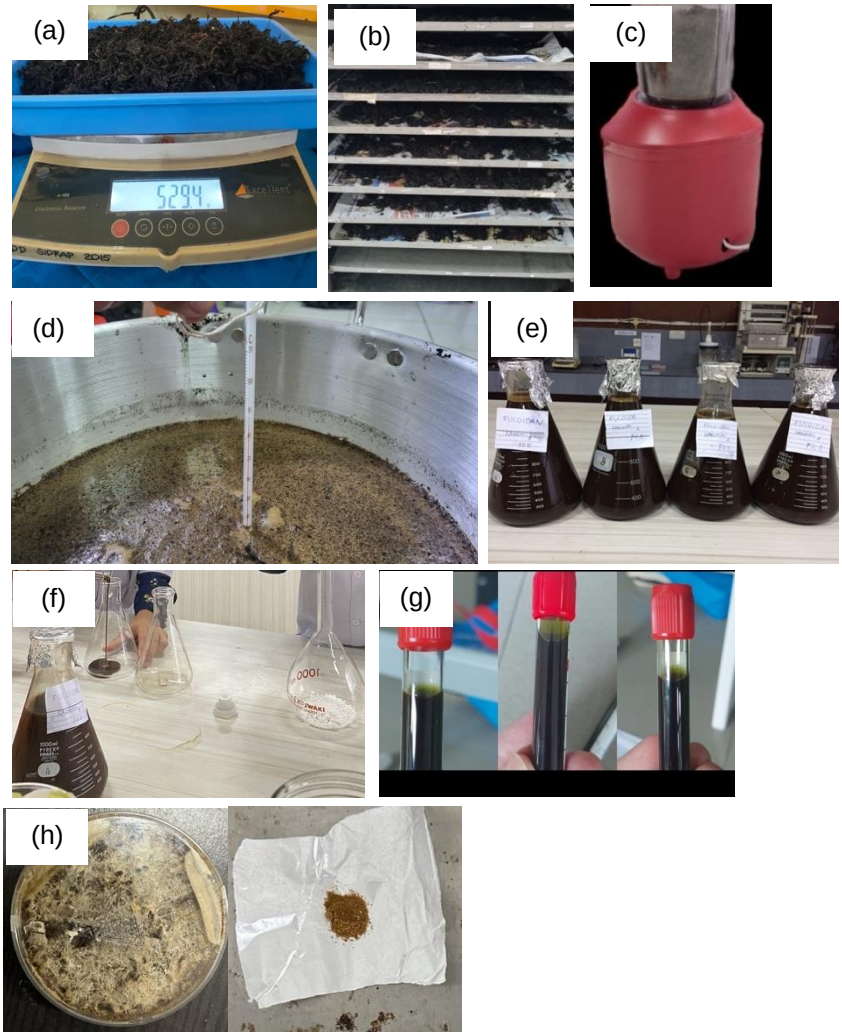
**Pembuatan Ekstrak**

**1. Ekstraksi Alginat**



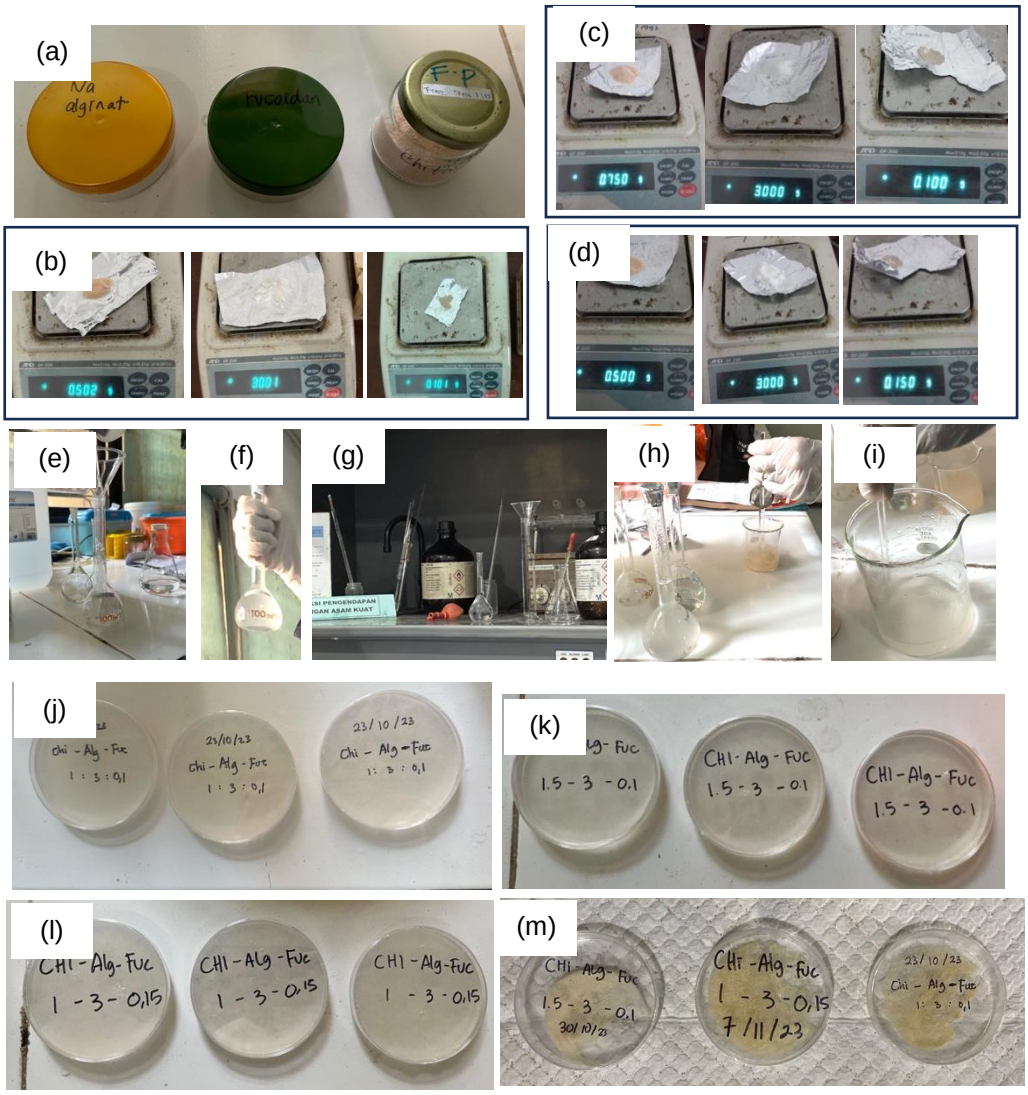

**Gambar 17.** (a) Sampel rumput laut jenis sargassum ditimbang dan dipotong seukuran 1 cm; (b) Rendam dalam air tawar selama 30 menit; (c) Setelah ditiriskan, sampel rendam dengan menggunakan KOH 0,8% (1:20) selama 30 menit pada suhu 60$^{o}$C; (d) Sample di cuci hingga pH netral lalu direndam dalam larutan HCl 5% (1:20) selama 60 menit pada suhu 60$^{o}$C; (e) Sampel dicuci hingga pH Netral, kemudian ditambah larutan $Na_2CO_3$ 7% (1:20) dan dipanaskan pada suhu 60$^{o}$C selama 2 jam. Larutan Sampel disaring; (f) Filtrat ditambahkan CaO 13% (1:1), kemudian ditambahkan HCl 5% (1:20) menghasilkan Asam Alginat. Larutan Asam Alginat diendapkan dengan NaOH 2%, dicuci hingga pH netral; (g) Tambahkan Ethanol 96% (1:5); (h) Saring endapan; (i) Dikeringkan dalam oven suhu 60$^{o}$C selama 24 jam; (j) Na-alginat berwarna putih

**2. Ekstraksi Fucoidan**



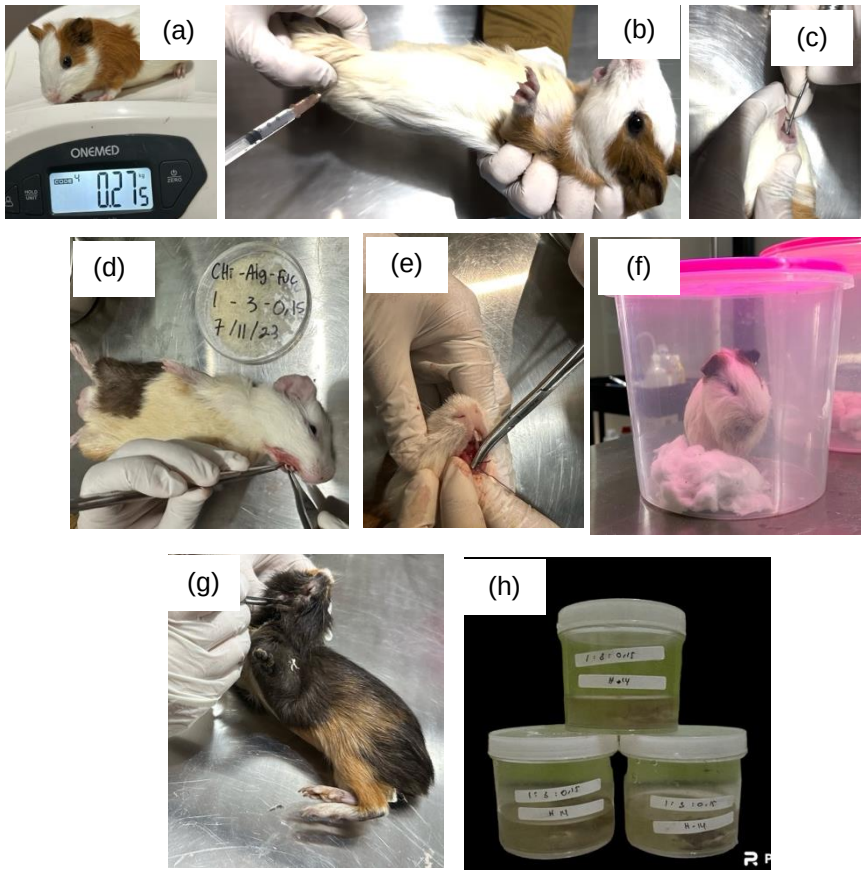

**Gambar 18.** (a) Sampel rumput laut jenis sargassum ditimbang; (b) Alga coklat jenis *Sargassum sp*. kemudian dikeringkan di atas talang aluminium; (c) Proses penepungan; (d) Sebanyak 15 gram tepung Alga coklat jenis *Sargassum sp*. diekstrak dengan HCl 0,1 N dalam air selama 5 jam pada suhu $85^0$C; (e) Disaring ke dalam erlenmeyer dengan menggunakan planktonet, diambil filtratnya; (f) Ditambahkan $CaCl_2$ 4 M untuk mengendapkan alginat yang dikandung oleh rumput laut cokelat; (g) Disentrifugasi dengan kecepatan 8000 rpm selama 30 menit untuk memisahkan endapan dari filtratnya; (h) Dibekukan dalam *freezer* kemudian dikeringkan menggunakan *freeze drying* hingga diperoleh ekstrak kasar *fucoidan* (*crude fucoidan*) dalam bentuk bubuk

**Persiapan dan Pembuatan *Scaffold***



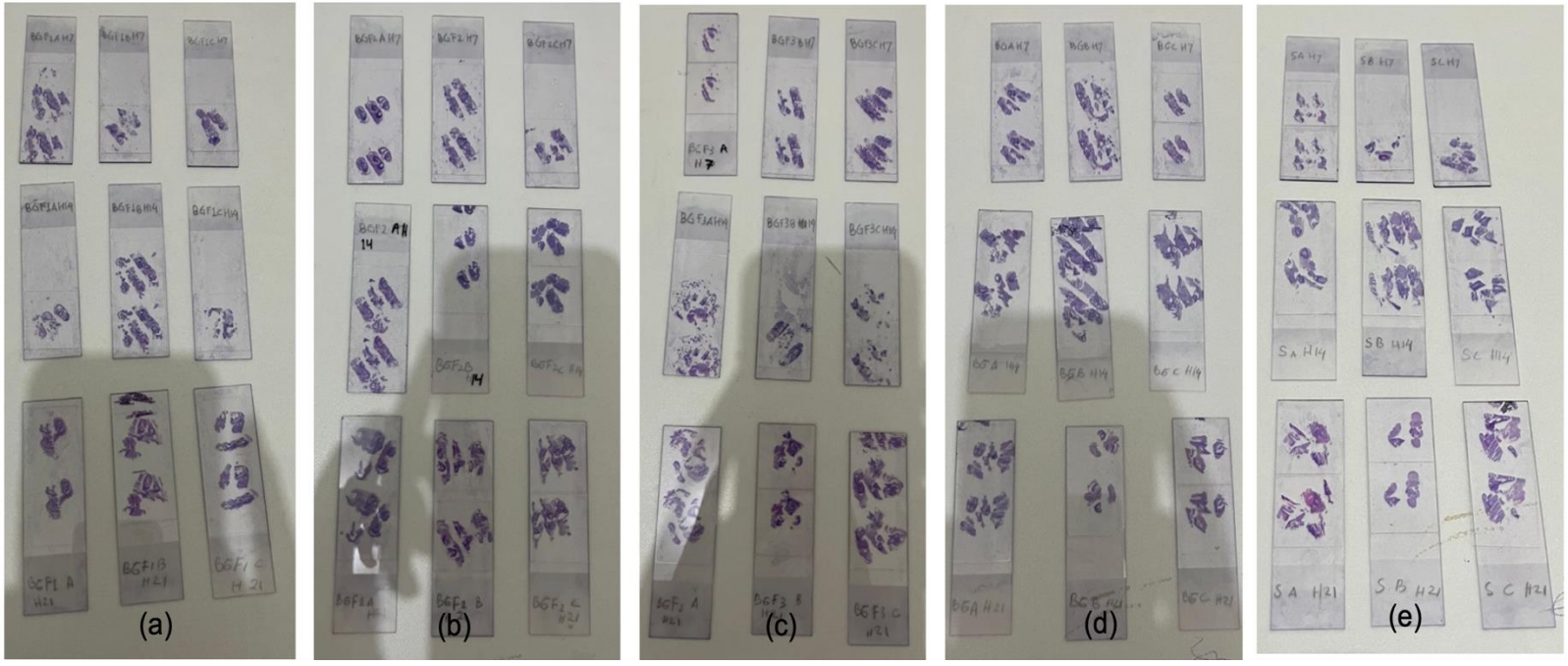

**Gambar 19.** (a) Ekstrak alginat, *fucoidan, chitosan*; (b) Perhitungan berat untuk Formula 1; (c) Perhitungan berat untuk Formula 2; (d) Perhitungan berat untuk Formula 3; (e) Alginat 3% (3 gr alginat dalam 100 ml aquades); (f) Alginat 3% digabungkan dengan *fucoidan* 0,1% atau 0,15% (b/100 ml) hingga merata; (g) Pembuatan Asam Asetat 1%; (h) *Chitosan* dilarutkan dalam asam asetat 50 ml dan diperoleh konsentrasi 1% dan 1,5% (b/v); (i) Larutan *chitosan* dan *fucoidan*+alginat disatukan dan diaduk hingga merata; (j) Formula 1 (chi:alg:fucoidan = 1:3:0,1) dimasukkan ke *freezer* dengan suhu -24$^0$C selama 24 jam; (k) Formula 2 (chi:alg:fucoidan = 1,5:3:0,1) dimasukkan ke *freezer* dengan suhu -24$^0$C selama 24 jam; (l) Formula 3 (chi:alg:fucoidan = 1:3:0,15) dimasukkan ke *freezer* dengan suhu -24$^0$C selama 24 jam; (m) Hasil Formula 1, 2 dan 3 setelah di *freeze dry,* 107$^0$C 0,005bar selama 8 jam.

**Proses Pencabutan Gigi Marmut dan *Sacrificed***




**Gambar 20.** (a) Marmut ditimbang sebelum diberi perlakuan; (b) Anastesi menggunakan ketamin; (c) Proses pencabutan gigi insisivus rahang bawah marmut; (d) Aplikasi salah satu bahan (Formula 3); (e) Penjahitan bekas pencabutan; (g) Proses *sacrificed* setelah hari ke-7, 14 dan 21 dengan memasukkan marmut ke dalam wadah berisi eter; (i) Jaringan yang diambil dari rahang bawah bekas pencabutan dimasukkan ke dalam larutan buffer formalin 10% sebagai fiksasi.

**Pembuatan Preparat Histologi dan Pewarnaan Gram**




**Gambar 21.** (a) Formula 1; (b) Formula 2; (c) Formula 3; (d) Kontrol Positif; (e) Kontrol Negatif

Lampiran 4a. Output Uji Statistik *Woven Bone*

**Uji Normalitas Data Jumlah *Woven Bone***

**Hari 7, Hari 14 dan Hari 21 Kontrol Positif, Kontrol Negatif, Formula 1, 2 dan 3**

**Tests of Normality**

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | Kelompok | Statistic | df | Sig. | Statistic | df | Sig. |
| Hari7 | KP | .374 | 3 | . | .777 | 3 | .062 |
| | KN | .294 | 3 | . | .921 | 3 | .457 |
| | F1 | .219 | 3 | . | .987 | 3 | .780 |
| | F2 | .243 | 3 | . | .972 | 3 | .680 |
| | F3 | .264 | 3 | . | .955 | 3 | .591 |

a. Lilliefors Significance Correction

**Tests of Normality**

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | Kelompok | Statistic | df | Sig. | Statistic | df | Sig. |
| Hari14 | KP | .254 | 3 | . | .963 | 3 | .631 |
| | KN | .369 | 3 | . | .789 | 3 | .088 |
| | F1 | .318 | 3 | . | .886 | 3 | .342 |
| | F2 | .364 | 3 | . | .800 | 3 | .113 |
| | F3 | .178 | 3 | . | .999 | 3 | .956 |

a. Lilliefors Significance Correction

Tests of Normality

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | Kelompok | Statistic | df | Sig. | Statistic | df | Sig. |
| Hari21 | KP | .295 | 3 | . | .920 | 3 | .453 |
| | KN | .338 | 3 | . | .853 | 3 | .248 |
| | F1 | .357 | 3 | . | .815 | 3 | .151 |
| | F2 | .245 | 3 | . | .971 | 3 | .671 |
| | F3 | .175 | 3 | . | 1.000 | 3 | .996 |

a. Lilliefors Significance Correction

**Uji Beda Antara 2 Kelompok *Woven Bone***

**Hari 7**

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari7 | KP | 3 | 14.6867 | 2.17197 | 1.25398 |
| | KN | 3 | 4.2233 | 2.29705 | 1.32620 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari 7 | Equal variances assumed | .005 | .948 | 5.733 | 4 | .002 | .005 | 10.46333 | 1.82518 | 5.39582 | 15.53085 |
| | Equal variances not assumed | | | 5.733 | 3.988 | .002 | .005 | 10.46333 | 1.82518 | 5.38956 | 15.53711 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari7 | KP | 3 | 14.6867 | 2.17197 | 1.25398 |
| | F1 | 3 | 16.4200 | 1.13248 | .65383 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari7 | Equal variances assumed | 2.675 | .177 | -1.226 | 4 | .144 | .288 | -1.73333 | 1.41421 | -5.65980 | 2.19313 |
| | Equal variances not assumed | | | -1.226 | 3.013 | .154 | .307 | -1.73333 | 1.41421 | -6.22333 | 2.75666 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari7 | KP | 3 | 14.6867 | 2.17197 | 1.25398 |
| | F2 | 3 | 19.8833 | 4.34583 | 2.50907 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari7 | Equal variances assumed | 1.379 | .305 | -1.853 | 4 | .069 | .138 | -5.19667 | 2.80498 | -12.98453 | 2.59119 |
| | Equal variances not assumed | | | -1.853 | 2.940 | .081 | .163 | -5.19667 | 2.80498 | -14.22650 | 3.83317 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari7 | KP | 3 | 14.6867 | 2.17197 | 1.25398 |
| | F3 | 3 | 22.1767 | 4.86112 | 2.80657 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari7 | Equal variances assumed | 2.108 | .220 | -2.437 | 4 | .036 | .071 | -7.49000 | 3.07397 | -16.02472 | 1.04472 |
| | Equal variances not assumed | | | -2.437 | 2.768 | .050 | .100 | -7.49000 | 3.07397 | -17.75355 | 2.77355 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari7 | KN | 3 | 4.5867 | 1.91680 | 1.10667 |
| | F1 | 3 | 16.4200 | 1.13248 | .65383 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari7 | Equal variances assumed | 1.874 | .243 | -9.206 | 4 | <.001 | <.001 | -11.83333 | 1.28538 | -15.40213 | -8.26454 |
| | Equal variances not assumed | | | -9.206 | 3.245 | <.001 | .002 | -11.83333 | 1.28538 | -15.75495 | -7.91171 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari7 | KN | 3 | 4.2533 | 2.26144 | 1.30565 |
| | F2 | 3 | 19.8833 | 4.34583 | 2.50907 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari7 | Equal variances assumed | 1.258 | .325 | -5.526 | 4 | .003 | .005 | -15.63000 | 2.82845 | -23.48303 | -7.77697 |
| | Equal variances not assumed | | | -5.526 | 3.009 | .006 | .012 | -15.63000 | 2.82845 | -24.61592 | -6.64408 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari7 | KN | 3 | 4.2533 | 2.26144 | 1.30565 |
| | F3 | 3 | 22.1767 | 4.86112 | 2.80657 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari7 | Equal variances assumed | 1.949 | .235 | -5.790 | 4 | .002 | .004 | -17.92333 | 3.09541 | -26.51757 | -9.32910 |
| | Equal variances not assumed | | | -5.790 | 2.827 | .006 | .012 | -17.92333 | 3.09541 | -28.12439 | -7.72227 |

**Hari 14**

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari14 | KP | 3 | 17.8167 | 8.05992 | 4.65339 |
| | KN | 3 | 10.5500 | 4.25665 | 2.45758 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari14 | Equal variances assumed | 1.317 | .315 | 1.381 | 4 | .120 | .239 | 7.26667 | 5.26249 | -7.34434 | 21.87768 |
| | Equal variances not assumed | | | 1.381 | 3.035 | .130 | .260 | 7.26667 | 5.26249 | -9.37175 | 23.90509 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari14 | KP | 3 | 17.8167 | 8.05992 | 4.65339 |
| | F1 | 3 | 19.8800 | 8.33462 | 4.81200 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari14 | Equal variances assumed | .026 | .880 | -.308 | 4 | .387 | .773 | -2.06333 | 6.69398 | -20.64880 | 16.52214 |
| | Equal variances not assumed | | | -.308 | 3.996 | .387 | .773 | -2.06333 | 6.69398 | -20.65703 | 16.53037 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari14 | KP | 3 | 17.8167 | 8.05992 | 4.65339 |
| | F2 | 3 | 19.7867 | 7.66629 | 4.42614 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari14 | Equal variances assumed | .000 | .994 | -.307 | 4 | .387 | .774 | -1.97000 | 6.42221 | -19.80091 | 15.86091 |
| | Equal variances not assumed | | | -.307 | 3.990 | .387 | .774 | -1.97000 | 6.42221 | -19.81852 | 15.87852 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari14 | KP | 3 | 17.8167 | 8.05992 | 4.65339 |
| | F3 | 3 | 19.7633 | 3.64596 | 2.10500 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari14 | Equal variances assumed | 1.990 | .231 | -.381 | 4 | .361 | .722 | -1.94667 | 5.10736 | -16.12696 | 12.23363 |
| | Equal variances not assumed | | | -.381 | 2.786 | .365 | .730 | -1.94667 | 5.10736 | -18.93167 | 15.03834 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari7 | KN | 3 | 10.5500 | 4.25665 | 2.45758 |
| | F1 | 3 | 19.8800 | 8.33462 | 4.81200 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari7 | Equal variances assumed | 2.364 | .199 | -1.727 | 4 | .080 | .159 | -9.33000 | 5.40324 | -24.33180 | 5.67180 |
| | Equal variances not assumed | | | -1.727 | 2.977 | .092 | .183 | -9.33000 | 5.40324 | -26.60133 | 7.94133 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari14 | KN | 3 | 10.5500 | 4.25665 | 2.45758 |
| | F2 | 3 | 19.7867 | 7.66629 | 4.42614 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari7 | Equal variances assumed | 2.364 | .199 | -1.727 | 4 | .080 | .159 | -9.33000 | 5.40324 | -24.33180 | 5.67180 |
| | Equal variances not assumed | | | -1.727 | 2.977 | .092 | .183 | -9.33000 | 5.40324 | -26.60133 | 7.94133 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari14 | KN | 3 | 10.5500 | 4.25665 | 2.45758 |
| | F3 | 3 | 19.7633 | 3.64596 | 2.10500 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari14 | Equal variances assumed | .316 | .604 | -2.847 | 4 | .023 | .047 | -9.21333 | 3.23585 | -18.19749 | -.22918 |
| | Equal variances not assumed | | | -2.847 | 3.908 | .024 | .048 | -9.21333 | 3.23585 | -18.28174 | -.14492 |

**Hari 21**

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari21 | KP | 3 | 22.0533 | 8.77276 | 5.06495 |
| | KN | 3 | 6.0833 | 3.24315 | 1.87243 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari21 | Equal variances assumed | 3.675 | .128 | 2.957 | 4 | .021 | .042 | 15.97000 | 5.39998 | .97726 | 30.96274 |
| | Equal variances not assumed | | | 2.957 | 2.537 | .037 | .073 | 15.97000 | 5.39998 | -3.13501 | 35.07501 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari21 | KP | 3 | 22.0533 | 8.77276 | 5.06495 |
| | F1 | 3 | 19.1100 | 11.99709 | 6.92652 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari21 | Equal variances assumed | .719 | .444 | .343 | 4 | .374 | .749 | 2.94333 | 8.58082 | -20.88084 | 26.76750 |
| | Equal variances not assumed | | | .343 | 3.663 | .375 | .750 | 2.94333 | 8.58082 | -21.76981 | 27.65648 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari21 | KP | 3 | 22.0533 | 8.77276 | 5.06495 |
| | F2 | 3 | 27.9400 | 3.58808 | 2.07158 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari21 | Equal variances assumed | 3.131 | .152 | -1.076 | 4 | .171 | .343 | -5.88667 | 5.47222 | -21.07998 | 9.30665 |
| | Equal variances not assumed | | | -1.076 | 2.651 | .185 | .370 | -5.88667 | 5.47222 | -24.67377 | 12.90044 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari21 | KP | 3 | 22.0533 | 8.77276 | 5.06495 |
| | F3 | 3 | 23.1967 | 5.70001 | 3.29090 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari21 | Equal variances assumed | .989 | .376 | -.189 | 4 | .430 | .859 | -1.14333 | 6.04018 | -17.91356 | 15.62690 |
| | Equal variances not assumed | | | -.189 | 3.433 | .430 | .861 | -1.14333 | 6.04018 | -19.06394 | 16.77727 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari21 | KN | 3 | 10.6667 | 4.50925 | 2.60342 |
| | F1 | 3 | 19.1100 | 11.99709 | 6.92652 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari21 | Equal variances assumed | 4.932 | .091 | -1.141 | 4 | .159 | .318 | -8.44333 | 7.39963 | -28.98799 | 12.10132 |
| | Equal variances not assumed | | | -1.141 | 2.554 | .175 | .349 | -8.44333 | 7.39963 | -34.49835 | 17.61168 |

**T-Test**

**Group Statistics**

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari21 | KN | 3 | 10.6667 | 4.50925 | 2.60342 |
| | F2 | 3 | 27.9400 | 3.58808 | 2.07158 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari21 | Equal variances assumed | .094 | .775 | -5.192 | 4 | .003 | .007 | -17.27333 | 3.32704 | -26.51068 | -8.03598 |
| | Equal variances not assumed | | | -5.192 | 3.808 | .004 | .007 | -17.27333 | 3.32704 | -26.69742 | -7.84924 |

**T-Test**

## Group Statistics

| | Kelompok | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Hari21 | KN | 3 | 10.6667 | 4.50925 | 2.60342 |
| | F3 | 3 | 23.1967 | 5.70001 | 3.29090 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Significance | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | One-Sided p | Two-Sided p | Mean Difference | Std. Error Difference | Lower | Upper |
| Hari21 | Equal variances assumed | .087 | .783 | -2.986 | 4 | .020 | .040 | -12.53000 | 4.19617 | -24.18043 | -.87957 |
| | Equal variances not assumed | | | -2.986 | 3.799 | .022 | .043 | -12.53000 | 4.19617 | -24.42787 | -.63213 |

**Uji Beda Antara 3 Kelompok *Woven Bone***

**Hari 7**
**Oneway**

**ANOVA**

Hari7

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 261.244 | 2 | 130.622 | 34.751 | <.001 |
| Within Groups | 22.553 | 6 | 3.759 | | |
| Total | 283.797 | 8 | | | |

**Post Hoc Tests**

**Multiple Comparisons**

Dependent Variable: Hari7
LSD

| (I) Kelompok | (J) Kelompok | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| KP | KN | 10.46333* | 1.58299 | <.001 | 6.5899 | 14.3368 |
| | F1 | -1.73333 | 1.58299 | .316 | -5.6068 | 2.1401 |
| KN | KP | -10.46333* | 1.58299 | <.001 | -14.3368 | -6.5899 |
| | F1 | -12.19667* | 1.58299 | <.001 | -16.0701 | -8.3232 |
| F1 | KP | 1.73333 | 1.58299 | .316 | -2.1401 | 5.6068 |
| | KN | 12.19667* | 1.58299 | <.001 | 8.3232 | 16.0701 |

*. The mean difference is significant at the 0.05 level.

**Oneway**

**ANOVA**

Hari7

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 381.722 | 2 | 190.861 | 19.826 | .002 |
| Within Groups | 57.760 | 6 | 9.627 | | |
| Total | 439.482 | 8 | | | |

**Post Hoc Tests**

**Multiple Comparisons**

Dependent Variable: Hari7
LSD

| (I) Kelompok | (J) Kelompok | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| KP | KN | 10.46333* | 2.53334 | .006 | 4.2645 | 16.6622 |
| | F2 | -5.19667 | 2.53334 | .086 | -11.3955 | 1.0022 |
| KN | KP | -10.46333* | 2.53334 | .006 | -16.6622 | -4.2645 |
| | F2 | -15.66000* | 2.53334 | <.001 | -21.8589 | -9.4611 |
| F2 | KP | 5.19667 | 2.53334 | .086 | -1.0022 | 11.3955 |
| | KN | 15.66000* | 2.53334 | <.001 | 9.4611 | 21.8589 |

*. The mean difference is significant at the 0.05 level.

**Oneway**

**ANOVA**

Hari7

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 487.904 | 2 | 243.952 | 21.766 | .002 |

| | | | | | |
|---|---|---|---|---|---|
| Within Groups | 67.249 | 6 | 11.208 | | |
| Total | 555.152 | 8 | | | |

**Post Hoc Tests**

**Multiple Comparisons**

Dependent Variable: Hari7
LSD

| (I) Kelompok | (J) Kelompok | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| KP | KN | 10.46333* | 2.73351 | .009 | 3.7747 | 17.1520 |
| | F3 | -7.49000* | 2.73351 | .034 | -14.1787 | -.8013 |
| KN | KP | -10.46333* | 2.73351 | .009 | -17.1520 | -3.7747 |
| | F3 | -17.95333* | 2.73351 | <.001 | -24.6420 | -11.2647 |
| F3 | KP | 7.49000* | 2.73351 | .034 | .8013 | 14.1787 |
| | KN | 17.95333* | 2.73351 | <.001 | 11.2647 | 24.6420 |

*. The mean difference is significant at the 0.05 level.

**Hari 14**
**Oneway**

**ANOVA**

Hari14

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 144.111 | 2 | 72.055 | 1.417 | .313 |
| Within Groups | 305.094 | 6 | 50.849 | | |
| Total | 449.205 | 8 | | | |

**Oneway**

**ANOVA**

Hari14

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 142.001 | 2 | 71.001 | 1.502 | .296 |
| Within Groups | 283.707 | 6 | 47.284 | | |
| Total | 425.708 | 8 | | | |

**Oneway**

**ANOVA**

Hari14

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 141.479 | 2 | 70.740 | 2.202 | .192 |
| Within Groups | 192.749 | 6 | 32.125 | | |
| Total | 334.228 | 8 | | | |

**Hari 21**
**Oneway**

**ANOVA**

Hari21

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 433.398 | 2 | 216.699 | 2.809 | .138 |
| Within Groups | 462.819 | 6 | 77.136 | | |
| Total | 896.217 | 8 | | | |

**Oneway**

**ANOVA**

Hari21

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 767.408 | 2 | 383.704 | 11.471 | .009 |

| | | | | | |
|---|---|---|---|---|---|
| Within Groups | 200.707 | 6 | 33.451 | | |
| Total | 968.115 | 8 | | | |

**Post Hoc Tests**

**Multiple Comparisons**

Dependent Variable: Hari21
LSD

| (I) Kelompok | (J) Kelompok | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| KP | KN | 15.97000* | 4.72237 | .015 | 4.4148 | 27.5252 |
| | F2 | -5.88667 | 4.72237 | .259 | -17.4419 | 5.6686 |
| KN | KP | -15.97000* | 4.72237 | .015 | -27.5252 | -4.4148 |
| | F2 | -21.85667* | 4.72237 | .004 | -33.4119 | -10.3014 |
| F2 | KP | 5.88667 | 4.72237 | .259 | -5.6686 | 17.4419 |
| | KN | 21.85667* | 4.72237 | .004 | 10.3014 | 33.4119 |

*. The mean difference is significant at the 0.05 level.

**Oneway**

**ANOVA**

Hari21

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 549.214 | 2 | 274.607 | 6.867 | .028 |
| Within Groups | 239.939 | 6 | 39.990 | | |
| Total | 789.153 | 8 | | | |

**Post Hoc Tests**

**Multiple Comparisons**

Dependent Variable: Hari21
LSD

| (I) Kelompok | (J) Kelompok | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| KP | KN | 15.97000* | 5.16332 | .021 | 3.3358 | 28.6042 |
| | F3 | -1.14333 | 5.16332 | .832 | -13.7775 | 11.4909 |
| KN | KP | -15.97000* | 5.16332 | .021 | -28.6042 | -3.3358 |
| | F3 | -17.11333* | 5.16332 | .016 | -29.7475 | -4.4791 |
| F3 | KP | 1.14333 | 5.16332 | .832 | -11.4909 | 13.7775 |
| | KN | 17.11333* | 5.16332 | .016 | 4.4791 | 29.7475 |

*. The mean difference is significant at the 0.05 level.

**Uji Beda Setiap Formula Berdasarkan Hari 7, 14 dan 21 *Woven Bone***

**Formula 1**
**Oneway**

**ANOVA**

Formula1

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 202.240 | 2 | 101.120 | 2.457 | .166 |
| Within Groups | 246.918 | 6 | 41.153 | | |
| Total | 449.158 | 8 | | | |

**Formula 2**
**Oneway**

**ANOVA**

Formula2

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 131.396 | 2 | 65.698 | 2.177 | .195 |

| | | | | | |
|---|---|---|---|---|---|
| Within Groups | 181.065 | 6 | 30.178 | | |
| Total | 312.461 | 8 | | | |

**Formula 3**
**Oneway**

**ANOVA**

Formula3

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 204.222 | 2 | 102.111 | .908 | .452 |
| Within Groups | 674.667 | 6 | 112.444 | | |
| Total | 878.889 | 8 | | | |