UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Adler, C.P., 2000. Bones and bone tissue; normal anatomy and histology. *In* Bone Diseases. 1-30. *Springer-Verlag*. New York.

Agrawal, K. S., Gurbhinder.P.D.,and Prakash, S., 2011. Synthesis and Characterization of Hydroxyapatite Powder by Sol-Gel Method for Biomedical Application. *Journal of Minerals and Materials Characterization and Engineering*. 10. 10.4236/jmmce.2011.108057.

Ai-Aql, Z. S., Alagl, A. S., Graves, D. T., Gerstenfeld, L. C. and Einhorn, T. A., 2008, Molecular mechanisms controlling bone formation during fracture healing and distraction osteogenesis. *J. Dent. Res*. 87, 107–118.

Akram, M. R., Ahmed, I. Shakir, W.A., Ibrahim, W., Hussain, R., 2014. Extracting hydroxyapatite and its precursors from natural resources, *J. Mater. Sci*. 49: 1461–1475.

Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., Walter, P., 2002. Molecular Biology of the Cell, 4ed. *Garland Science*, New York.

Albrektsson, T., Johansson, C., 2001. Osteoinduction, osteoconduction and osseointegration. *Eur Spine J* 10, S96–S101. https://doi.org/10.1007/s005860100282.

Albrektsson, T., 2008. Hard tissue implant interface. *Aust Dent J*: 53(1):34-8. http://dx.doi.org/10.1111/j.1834-7819.2008.00039.x.

Albrektsson, T., and Johansson, C., 2001. Osteoinduction, osteoconduction and osseointegration. *European Spine Journal*; 10, S96-S101.

Amrina, Q.H., 2008. Sintesa Hidroksiapatit Dengan Memanfaatkan Limbah Cangkang Telur: Karakterisasi Difraksi Sinar-X Dan Scanning Electron Microscopy (SEM). *Skripsi*. Institut Pertanian Bogor. Bogor.

Anderson, J. M., Gristina, A.G., Hanson, S.R., Harker, L.A., Johnson, R.J,, Meritt, K., et al., 1996. Host reactions to biomaterials and their evaluation. In: Rattner BD, Hoffman AS, editors. *Biomaterials Science*. San Diego: Academic Press; p. 165-214. http://dx.doi.org/10.1016/B978-0-08-050014-0.50009-2.

Anderson, J. M., 1988. Inflammatory response to implants. Asaio Trans; 34(2):101-7. http://dx.doi.org/10.1097/00002480-198804000-00005.

Anderson, J. M., Gristina, A. G., Hanson, S. R., Harker, L. A., Johnson, R. J., Meritt, K., et al., 1996. Host reactions to biomaterials and their evaluation.

UNIVERSITAS GADJAH MADA
Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur Femur pada Kelinci Lokal
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

In: Rattner, B. D., Hoffman, A. S., editors. *Biomaterials Science*. San Diego: Academic Press; p. 165-214. http://dx.doi.org/10.1016/B978-0-08-050014-0.50009-2.

Anderson, J. M., Rodriguez, A., Chang, D. T., 2008. Foreign body reaction to biomaterials. *Semin Immunol*; 20(2):86-100.

Anderson, J.M., 1988. Inflammatory response to implants. *Asaio Trans*; 34(2):101-7. http://dx.doi.org/10.1097/00002480-198804000-00005.

Andika, R., Fadli, A., Irdoni, H.S., 2015. Pengaruh Waktu *Ageing* dan Kecepatan Pengadukan Pada Sintesis Hidroksiapatit dari Cangkang Telur dengan Metode Presipitasi. *Jom Fteknik* Volume 2 No.1.

Andrew, J. G., Andrew, S. M., Freemont, A. J. and Marsh, D. R., 1994. Inflammatory cells in normal human fracture healing. *Acta Orthrop. Scand*. 65, 462-466.

Anis, D. U., 2015. Efektivitas *Demineralized Bovine Cortical Bone Xenogratf* (DBCBX) untuk Penanganan Fraktur Diafisis Tulang Femur Anjing. Tesis: Universitas Gadja Mada.

Annon, 1980. Guidetothecare and useof experimentalanimal. Vol.1. *Canadian Council of Animal Care.*

Arita, I.H., Castano, V.M. and Wilkinson, D.S., 1995. Synthesis and processing of hydroxyapatite ceramic tapes with controlled porosity. *J Mater Sci: Mater Med* 6, 19–23. https://doi.org/10.1007/BF00121241.

Athanasou, N. A., Quinn, J., Bulstrode, C. J. K., 1992. Resorption of bone by inflammatory cells derived from the joint capsule of hip arthroplasties. *J Bone Joint Surg* (Br); 74: 57- 62.

Aubin, J., and Triffitt, J., 2002. Mesenchymal Stem Cells and Osteoblast Differentiation. 10.1016/B978-012098652-1.50106-2.

Autefage, H., Briand-Mésange, F., Cazalbou, S., et al., 2009. Adsorption and release of BMP-2 on nanocrystalline apatite-coated and uncoated hydroxyapatite/β-tricalcium phosphate porous ceramics. *J Biomed Mater Res B Appl Biomater*; 91: 706–715.

Azis, Y., Novesar, J., Zultiniar, Syukri, A., and Hadi, N., 2015. Synthesis of Hydroxyapatite by Hydrothermal Method from Cockle Shell (*Anadara granosa). Journal of Chemical and Pharmaceutical Research,* 7(5), 798–804.

Balamurugan, A., Rebelo, A.H.S., Lemos, A.F., Rocha, J.H.G., Ventura, J.M.F., Ferreira., 2008. Suitability evaluation of sol-gel derived Si-substituted

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

hydroxyapatite for dental and maxillofacial applications through in vitro osteoblasts response, *Dent. Mater*. 24:1374–1380.

Balemans, W., Ebeling, M., Patel, N., 2001. Increased bone density in sclerosteosis is due to the deficiency of a novel secreted protein (SOST). *Hum Mol Genet*; 10(5):537–43

Barakat, N.A.M., Khalil, K.A., Sheikh, F.A., Omran, A.M., Gaihre, B., Khil, S. M., Kim, H.Y., 2008. Physiochemical characterizations of hydroxyapatite extracted from bovine bones by three different methods: extraction of biologically desirable Hap. Mater Sci Eng C 28:1381–1387. https://doi.org/10.1016/j.msec.2008.03.003.

Barnes, G. L., Kostenuik, P. J., Gerstenfeld, L. C., Einhorn, T. A., 1999. Growth factor regulation of fracture repair. *J Bone Miner Res*14: 1805–15.

Baron, R., Kneissel, M., 2013. WNT signaling in bone homeostasis and disease: from human mutations to treatments. *Nat Med*; 19(2):179–92.

Barrere, F., vander-Valk, C. M., Dalmeijer, R.A.J., Meijer, G., van-Blitterswijk, C.A., de-Groot, K., Layrolle, P., 2003. Osteogenecity of octacalcium phosphate coatings applied on porous metal implants. *J Biomed Mater Res A*; 66:779–788.

Bartl, R., Bartl, C., 2017. Bone Disorders: Biology, Diagnosis, Prevention, Therapy. Book: *Spinger.*

Barua, E., Deoghare, A.B., Deb, P., Lala, S. D., Chatterjee, S., 2018. Effect of Pretreatment and Calcination Process on Micro-Structural and Physico-Chemical Properties of Hydroxyapatite derived from Chicken Bone Bio-waste. *Materials* Today: Proceedings 15 (2019) 188–198.

Baslé, M.F., Rebel, A., Grizon, F. *et al.*, 1993. Cellular response to calcium phosphate ceramics implanted in rabbit bone. *J Mater Sci: Mater Med* 4, 273–280 (1993). https://doi.org/10.1007/BF00122280.

Bauer, T.W., Muschler, G.F., 2000. Bone graft materials. An overview of the basic science. *Clin. Orthop. Relat. Res*.371, 10–27.

Beamer, B., Hettrich, C., Lane, J., 2010. Vascular endothelial growth factor: an essential component of angiogenesis and fracture healing. *HSS J*. 6, 85-94.

Becker, W., Clokie C., Sannerby L., Urist, M.R., and Becker, B.B., 1998. Histologic finding after implantation and evaluation of different grafting materials and titanium micro screws into extraction socket: case reports. *J. Periodontal*. 69: 414-21.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Becker, W., Clokie C., Sannerby L., Urist, M.R., and Becker, B.B., 1998. Histologic finding after implantation and evaluation of different grafting materials and titanium micro screws into extraction socket: case reports. *J. Periodontal*. 69: 414-21.

Beloti, M. M., and Rosa, A.I., 2005. Osteoblast differentiation of human bone marrow cells under continuous and discontinuous treatment of dexamethasone. *Brax. Dent. J.* 16(2): 156-161.

Bernard, G. W., and Pease, D. C., 1969. Amer. J. *Anat.* 125, 271-290.

Bichard, S. J., Scerding R.D., 1994. Saunders Manual of Small Animal Practice. Philadelpia, p: 1346. Sm.

Bielby, R., Jones, E., McGonagle, D., 2007. The role of mesenchymal stem cells in maintenance and repair of bone.*Injury*38: S26–32.

Binyamin, G., Shafi, B.M., Mery, C.M,. 2006. Biomaterials: A primer for surgeons. *Semin Pediatr Surg*; 15(4):276-83.

Bloom and Fawcett., 1994. A textbook of histology. *Chapman and Hall*, New York, NY.

Bluteau, G., Julien, M., Magne, D., Mellein-Gerin, F., Weiss, P., Daculsi, G., Guicheux, J., 2007. VEGF and VEGF receptors are differentially expressed in chondrocytes. *Bone* 40, 568-576.

Bolander, M. E., 1992. Regulation of fracture repair by growth factors. Proc. Soc. Exp. Biol. Med. 200(2)165–170.

Bonewald, L.F., 2013. Osteocytes. In: Rosen CJ, editor. Primer on the metabolic bone dis-eases and disor ders of mineral metabolism. 8th ed. New York: *Wiley*: p. 34-41.

Boskey, A. L, 2013. Bone composition: relationship to bone fragility and antiosteoporotic drug effects. *BoneKey*, *Rep*. Vol (2). doi: 10.1038/bonekey.2013.181.

Bouler, J. M., Pilet, P., Gauthier, O., and Verron, E., 2017. *Biphasic calcium phosphate ceramics for bone reconstruction: A review of biological response. Acta Biomaterialia, 53, 1–12.* doi:10.1016/j.actbio.2017.01.076.

Bourgeois, B., Laboux, O., Obadia, L., Gauthier, O., Betti, E., Aguado, E., Daculsi, G., Bouler, J. M., 2003. Calcium-deficient apatite: A first in vivo study concerning bone ingrowth. *J Biomed Mater Res A*;65:402–428.

Brandi, M. L., 2010. How innovations are changing our management of osteoporosis. Medicographia; 32, 1-6.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Broughton, G., Janis, J. E., Attinger, C. E., 2006. Wound healing: An overview. *Plast Reconstr Surg*; 117 Suppl 7:1-32.

Buasri, A., Nattawut, C., Vorrada, L., Chaiwat, W., and Saranpong, K., 2013. Application of Eggshell Wastes as a Heterogeneous Catalyst for Biodiesel Production. *Sustainable Energy*; 1(2):7-13 doi: 10.12691/rse-1-2-1.

Buckwalter, J. A., Einhorn, T. A., Marsh, L. J., 2001. Bone and joint healing. In Rockwood Jr CA, Green DP, Buchloz RW, Heckman JD eds.Fractures in adults, 5th edn. Lippincott Williams & Wilkins: Philadelphia, 245–271.

Buenzli, P. R, Sims, N. A., 2015. Quantifying the osteocyte network in the human skeleton. Bone; 75:144–50.

Burr, D. B., Akkus, O., 2014. Bone morphology and organization. In: Burr DB, Allen MR, editors. Basic and applied bone biology. San Diego: Academic;p. 3–25.

Cahyaningrum, S. E., Herdyastuty, N., Supangat, D., and Devina, B., 2017. Sintesis Hydroxyapatite Dari Cangkang Telur Menggunakan Metode Pengendapan Basah," in *Seminar Nasional Kimia 2017*, Prosiding Seminar Nasional Kimia UNY, edited by N. Aznam et al. (Jurusan Pendidikan Kimia, FMIPA, UNY, Karangmalang, Yogyakarta), pp. 367–370.

Cameron, J.A., Derek J.M., Jung, S. L., Jianjun, C., Nicholas, X.F., and Iwona, M.J., 2012. *Employing the Biology of Successful Fracture Repair to Heal Critical Size.* Bone Defects Current Topics in Microbiology and Immunology. 367: 113–132.

Canfield, A. E., Doherty, M.J., Ashton, B.A., 2000. Osteogenic potential of vascular pericytes. En: Davies JE ed. *Bone Engineering*. Toronto: Davies JE ed;p. 143-51.

Capuccini, C., Torricelli, P., Sima, F., Boanini, E., Ristoscu, C., Bracci, B., Socol, G., Fini, M., Mihailesca, I.N., Bigi, A., 2008. Strontium-substituted hydroxyapatite coatings synthesized by pulsed-laser deposition: in vitro osteoblast and osteoclast response, *Acta Biomater*. 4:1885–1893.

Carneiro, E., Garcia, R. B., Oliviera, R. C., Moraes, F. G., Menezes, R., Letra, A., Canova, G. C., Cestari, C. M., and Grajiero, J. M., 2005. Microscopic and Radiograpic Analysis of The Effect of Particle Size of Demineralized Bovine Cancellous Bone Matrix on The Repair of Bone Defects in Femurs of Rabbits. J. *Appl. Oral. Sci*; 13 (2): 157-62.

Champagne, C. M., Takebe, J., Offenbacher, S., Cooper, L. F., 2002. Macrophage cell lines produce osteoinductive signals that include bone morphogenic protein-2. *Bone* 30, 26-31.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Chen, L., Mccrate, J. M., Lee, J., and Hao. L., 2011. The role of surface charge on the uptake and biocompatibility of hydroxyapatite nanoparticles with osteoblast cells. *Nanotechnology*. 22. 105708. 10.1088/0957-4484/22/10/105708.

Chen, L. X., Zhou, Z. R., Li, Y. L., Ning, G. Z., Zhang, T. S., Zhang, D., and Feng, S. Q., 2015. *Comparison of Bone Mineral Density in Lumbar Spine and Fracture Rate among Eight Drugs in Treatments of Osteoporosis in Men: A Network Meta-Analysis. PLOS ONE, 10(5), e0128032.*

Chen, Y., Wang, J., Zhu, X., et al., 2015. Enhanced effect of β-tricalcium phosphate phase on neovascularization of porous calcium phosphate ceramics: In vitroand in vivoevidence. *Acta Biomater;* 11: 435–448.

Cho, T. J., Gerstenfeld, L. C., and Einhorn, T. A., 2002. Differential temporal expression of members of the transforming growth factor βsuperfamily during murine fracture healing. *J. Bone Miner*. Res. 17, 513–520.

Cho-Chung, Y. S., 2006. Autoantibody biomarkers in the detection of cancer. *Biochimica et Biophysica Acta (BBA)-Molecular Basis of Disease*; 1762, 587-91.

Chouteau, J., Bignon, A., Chavassieux, P., Chevalier, J., Melin, M., Fantozzi, G., Boivin, G., Hartmann, D., Carret, J. P., 2003. Cellular culture of osteoblasts and fibroblastson porous calcium-phosphate bone substitutes, Rev. Chir. Orthop. *ReparatriceAppar. Mot*. 89 (1); 44–52.

Chraibi, S., Mous-sout, H., Boukhlifi, F., Ahlafi, H. and Alami, M., 2016. Utilization of Calcined Eggshell Waste as an Adsorbent for the Removal of Phenol from Aqueous Solution. Journal of Encapsulation and Adsorption Sciences, 6,132-146.http://dx.doi.org/10.4236/jeas.2016.64010.

Christensen, L., 2007. Normal and pathologic tissue reactions to soft tissue gel fillers. *Dermatol Surg*; 33 Suppl 2: S168-75. http://dx.doi.org/10.1097/00042728-200712001-00009.

Chung, R., Cool, J. C., Scherer, M. A., Foster, B. K., Xian, C. J., 2006. Roles of neutrophil mediated inflammatory response in the bone repair of injured growth plate cartilage in young rats. *J. Leukoc. Biol.* 80, 1271-1280.

Civitelli, R., Beyer, E.C. Warlow, P.M., Robertson, A.J., Geist, S.T., Steinberg, T.H., 1993. Conexin 43 mediates direct intercellular communication in human osteoblastic cells networks. *J Clin Invest*; 91:1888-96.

Claes, L., Reusch, M., Gockelmann, M., Ohnmacht, M., Wehner, T., Amling, M., et al., 2011. Metaphyseal fracture healing follows similar biomechanical rules as diaphyseal healing. *J Orthop Res*; 29 (3): 425-32.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Claes, I., Recknagel, S., Ignatius, A., 2012. Fracture healing under healthy and inflammatory conditions, Nat. Rev. Rheumatol. 8; 133-143.

Cohen, R., Mullarky, R., Noble, B., Comeau, R., and Neiders, M., 1994. Phenotypic characterisation of mononuclear cells following anorganic bovine bone implantation in rats. *J. Periodontol*. 65: 1008-15.

Coles, E. H., 1986. *Veterinary Clinical Pathology*. Ninth edition. W. B. Saunders company. Philadelphia.

Cook, S. D., Thomas, K. A., Dalton, J. E., Kay, J. F., 1991. Enhanced bone ingrowth and fixation strength with hydroxyapatite-coated porous implants. *Semin Arthroplasty*; 2 (4): 268-79.

Cornu, O., 2012. "Influence of freeze-drying and irradiinion on mechanical properties of human cancellous bone: applicinion to impaction bone grafting," *in Bone Grafting*, A.Zorzi, Ed.,pp. 41–58.

Courtney, J.M., Irvine, L., Jones, C., Mosa, S. M., Robertson, L.M., Srivastava, S., 1993. Biomaterials in medicine – A bioengineering perspective. *Int J Artif Organs*;16(3):164-71.

Cox, S. C., Walton, R. I., and Mallick, K. K., 2015. *Comparison of techniques for the synthesis of hydroxyapatite. Bioinspired, Biomimetic and Nanobiomaterials, 4(1), 37–47.* doi:10.1680/bbn.14.00010.

Currey, J. D., 2006. Bones: structure and mechanics. *Princeton University Press*, Princeton.

Dahlan, K., Dewi, S. U., Nurlaila, A., & Soejoko, D., 2012. Synthesis and characterization of calcium phosphate/chitosan composites. International Journal of Basic and Applied Sciences,12(1), 50-57.

Deckers, M. M., Van Bezooijen, R. L., van der Horst, G., Hoogendam, J., van Der Bent, C., Papapoulos, S. E., Lowik, C. W., 2002. Bone morphogenetic proteins stimulate angiogenesis through osteoblast-derrived vascular endothelial growth factor A. *Endocrinology* 143, 1545-1553.

Dewi, S. U., 2009. Pembuatan komposit kalsium fosfat-kitosan dengan metode sonikasi. Tesis, Sekolah Pascasarjana, Institut Pertanian Bogor, Bogor.

Dimitriou, R., Tsiridis, E., Giannoudis, P. V., 2005. Current concepts of molecular aspects of bone healing. *Injury* 36: 1392–404.

Dimitriou, R., Tsiridis, E., Gianoudis, P. V., 2005. Current concepts of molecular aspects of bone healing. *Injury* 36, 1392-1404.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Dobele, S., *et al*., 2010. The dynamic locking screw (DLS) can increase interfragmentary motion on the near cortex of locked plating constructs by reducing the axial stiffness. *Langenbeck's Arch. Surg*. 395 (4), 421–428.

Doblare, M., Garcia, J. M., Gomez, M. J., 2004. Modelling bone tissue fracture and healing: a review. *Engineering Fracture Mechanics*; 71, 1809-40.

Dorozhkin, S. V. 2015. *Calcium orthophosphates (CaPO4): occurrence and properties. Progress in Biomaterials, 5(1), 9–70.* doi:10.1007/s40204-015-0045-z.

Dorozhkin, S. V., 2010. Nanosized and nanocrystalline calcium orthophosphates. *Acta Biomater*. Mar;6(3):715-34. doi: 10.1016/j.actbio.2009.10.031. Epub 2009 Oct 25. PMID: 19861183.

Dorozhkin, S. V., 2016. *Multiphasic calcium orthophosphate (CaPO 4) bioceramics and their biomedical applications. Ceramics International, 42(6), 6529–6554.* doi:10.1016/j.ceramint.2016.01.062.

Dorozhkin, S., 2009. Calcium orthophosphates in nature. *Materials*. 2. 399-498.

Dorozhkin, S.V., 2010. Amorphous calcium (ortho)phosphates. *Acta Biomater*. 6, 4457–4475.

Ducy, P., Zhang, P. R., Geoffroy, V., *et al*., 1997. Osf2/Cbfa1: a transcriptional activator of osteoblast differentiation. Cell 89: 747–754.

Dupoirieux, L., 1999. Ostrich eggshell as a bone substitute: a preliminary report of its biological behaviour in animals a surgery British Journal of Oral and Maxillofacial Surgery1999 37, 467 471 possibility in facial reconstructive.

Dupoirieux, L., Pourquier, D., and Souyris, F., 1995. Powdered eggshell: a pilot study on a new bone substitute for use inmaxillofacial surgery. *Journal of Cranio Maxillo-Facial Surgery*;23, 187-194.

Dupoirieux, L., Neves, M., Pourquier, D., 2000. Comparison of pericranium and eggshell as space fillers used in combination with guided bone regeneration: An experimental study. *J. Oral Maxillofac. Surg*, 58, 40–46, discussion 47–48.

Dupoirieux, L., Pourquier, D., Neves, M., and Te´ot, L., 2001. Scientific Foundations Resorption Kinetics of Eggshell:An In Vivo Study. The journal of craniofacial surgery / vol. 12, number.

Eanes, E. D., Termine, J. D., Nylen, M. U., 1973. An electron microscopic study of the formation of amorphous calcium phosphate and its transformation to

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

crystalline apatite. *Calcif Tissue Res*;12:143–158. doi: 10.1007/BF02013730.

Einhorn, T. A., 1988. The cell and molecular biology of fracture healing. *Clinical orthopedics and related research*; 355, S7-S21.

Einhorn, T. A., 1998. The cell and molecular biology of fracture healing. Clin. Orthop. Relat. Res., 355(Suppl.), S7–S21.

Einhorn, T. A., 2005. The science of fracture healing. *J Orthop Trauma*; 19(10 Suppl):S4-6. doi: 10.1097/00005131-200511101-00002. PMID: 16479221.

Elizabeth, J.B., Lawrence, D.F.M., Reena, J. P., Von, R. K., Gavin, S.B., Preena, N. P., Fawcett, J. W., Stephen, B. M., 2002. Chondroitinase ABC promotes functional recovery after spinal cord injury. *Nature Publishing Group*. Volume: 416 (6881). pp. 636-640.

Elkayar, A., Elshazly, Y., and Assad, M., 2009. Bone and Tissue Regeneration Insights properties of Hap from Bovine Teeth. *Bone and Tissue Regeneration Insights*, 2, 31-36.

Eroschenko, V. P., 2010. *Difiore's Atlas Histology with Functional Correlations.* Penerjemah : Brahm U.P. Jakarta: Penerbit Buku Kedokteran EGC.

Esposito, M., Grusovin, M. G., Worthington, H. V., 2013. Interventions for replacing missing teeth: Antibiotics at dental implant placement to prevent complications. *Cochrane Database Syst Rev*; 7:CD004152.

Feldman, B. F., Jain, C. N., and Zinkl, J. G., 2000. Schalm's Veterinary Hematology, fifth edition, Lea and febiger Philadelphia. Pp. 427-429.

Feng. X., McDonald, JM., 2011. Disorders of bone remodeling. Annual review of pathology; 6, 121.

Ferdiansyah., Rushadi, D., Rantham, F. A., Aulani'am., 2011. Regeneration in massive bone defect with bovine hydroxyapatite as a mesenchymal stem sell scaffold. JBP; 13;3-15.

Fernandez, M. P., Calvo, G, J.,Delgado-Ruiz, R., Val, J, Gómez-Moreno, Gerardo, G., and Guardia, Javier., 2010. Experimental model of bone response to xenografts of bovine origin (Endobon®): A radiological and histomorphometric study. *Clinical oral implants research*. 22. 727-34. 10.1111/j.1600-0501.2010.02052.x.

Finkemeier, C.G., 2002. Bone Grafting and Bone Graft substitutes. *J. Bone Joint Surg Am.*84: 454-464.

UNIVERSITAS GADJAH MADA
Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur Femur pada Kelinci Lokal
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Gadallah, S., El-Keiey, M., Shreen, S. A., and Amer, S. S., 2012. Experimental studies on cortical bone xenograft: Morphohistological assessment. Fac. Vet. Med-munifiyauniv. 7th scientific conference 24-27 April.

Gasser, J. A., and Kneissel, M., 2017. Bone physiology and Biology. *Springer International Publishing*. DOI: 10.1007/978-3-319-56192-9_2.

Gergely, G., Weber, F., Lukacs, I. E., Toth, A., 2010. Preparation and characterization of hydroxyapatite from eggshell. *Ceramics International*. 36(2):803-806.

Geris, L., Gerisch, A., Sloten, J. V. Weiner, R., Oosterwyck, H. V., 2008. Angiogenesis in bone fracture healing; a bioregulatory model. *J. Theor. Biol*. 251, 137-158.

Geris, L., Gerisch, A., Sloten, J. V., et al., 2008. Angiogenesis in bone fracture healing: a bioregulatory model. *J Theor Biol*; 251, 137-58.

Gerstenfeld, C. L., Yaser. M. A., Kaye, E., Fred, H. N., Stephanie, S. N., Jennifer. L. F., Bauer, M., Rayyan, K., Graves, D., Karl, J., Thomas, E., 2006. Three-dimensional Reconstruction of Fracture Callus Morphogenesis. The journal of histochemistry and cytochemistry : *official journal of the Histochemistry Society*. 54. 1215-28. 10.1369/jhc.6A6959.2006.

Gerstenfeld, L. C., Cullinane, D. M., Barnes, G. L., Graves, D. T., and Einhorn, T. A., 2003. Fracture healing as a post-natal developmental process: molecular, spatial, and temporal aspects of its regulation. *J. Cell. Biochem*. 88, 873–884.

Giannoudis, P. Tzioupis, C., Almalki, T., et al., 2007. Fracture healing in osteoporotic fractures: is it really different? A basic science perspective. Injury; 38, 90-9.

Glass, G. E., Chan, J.K., Freidin, A., et al., 2011. TNF-α promotes fracture repair by augmenting the recruitment and differentiation of muscle-derived stromal cells. Proceedings of the National Academy of Sciences; 108, 1585-90.

Gottlander, M., and Albrektsson, T., 1991. Histomorphometric studies of hydroxylapatite-coated and uncoated CP titanium threaded implants in bone. *Int J Oral Maxillofac Implants*; Winter;6(4):399-404. PMID: 1820308.

Goldhahn, J., Fron, J. M., Kanis, J., et al., 2012. Implications for fracture healing of current and new osteoporosis treatments: an ESCEO consensus paper. *Calcified tissue international*; 90, 343-53.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Greenbaum, M. A., Kanat, I. O., 1993. Current concepts in bone healing. Review of the literature. *J Am Podiat Med Assn*; 83, 123-29.

Greenwald, A.S., Boden, S. D., Goldberg, V. M., Khan, Y., Laurencin, C. T., Rosier, R. N., 2001. Bone-graft subtitutes: facts, fictions, and applications. The Journal of bone and joint surgery American volume; 83-A Suppl 2 Pt 2: 98-103.

Greenwald, A. S., Bode, S. D., Goldberg, V. M., Yaszemki, M., and Heim, C. S., 2008. Bonegraft substitutes: Fact, fictions and applications. 75th Annual Meeting American Academy of Orthopaedic Surgeons.

Grundnes, O., Reikeras, O., 1992. Blood flow and mechanical properties of healing bone femoral osteotomies studied in rats, *Acta Orthop. Scand*. 63. P: 487-491.

Grundnes, O., Reikeras, O., 1993. The importance of the hematoma for fracture healing in rats. *Acta Orthop*. *Scand*. 64, 340-342.

Hamid-Shegarfi, O. R, 2009. Bone transplantinion and immune response,*Journal of Orthopaedic Surgery*,vol.17,no.2,pp.206– 211.

Hamish, R. D., Steven, J. B., 2000. A Guide to Canine and Feline Orthopaedic Surgery. 4th Ed. *Blackwell Science ltd.* Blackwell Publishing Company.

Harahap, H., Iriany., and Melda, Z., 2017. Characterization of Hydroxyapatite from Chicken Bone via Precipitation. *Key Engineering Materials.* ISSN: 1662 9795, Vol. 744, pp. 485-489.

Harwood, P. N., James, M., and Anthony. 2010. (ii) An update on fracture healing and non-union. *Orthopaedics and Trauma*. 24. 9-23.

Haverstock, B.D., Mandracchia, V. J., 1998. Cigarette smoking and bone healing: implications in foot and ankle surgery. *J Foot Ankle Surg*; 37, 69-74.

Hessle, L., Johnson, K.A., Anderson, H.C., et al., 2002. Tissue-nonspecifc alkaline phosphatase and plasma cell membrane glycoprotein-1 are central antagonistic regulators of bone mineralization. *Proc Natl Acad Sci* U S A; 99(14):9445–9.

Hietbrink, F., Koenderman, L., Rijkers, G., Leenen, L., 2006. Trauma: the role of the innate immune system. *World J. Emerg. Surg.* 1, 15.

Hincke, M.T.,Y., Nys,J.Gautron, K., Mann,A.B., Rodriguez-Navarro., and McKee. M. D., 2012. The eggshell: Structure, composition and mineralization. *Front*. *Biosci*. 17:1266–1280.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Hing, K. A., Revell, P. A., Smith, N., and Buckland, T., 2006. "Effect of silicon level on rate, quality and progression of bone healing within silicate-substituted porous hydroxyapatite scaffolds," *Biomaterials*, vol. 27, no. 29, pp. 5014–5026.

Histing, T., et al., 2011. Small animal bone healing models: standards, tips, and pitfalls results of a consensus meeting. *Bone* 49, 591–599.

Hoppe, A., Güldal, N. S., and Boccaccini, A. R., 2011. A review of the biological response to ionic dissolution products from bioactive glasses and glass-ceramics. *Biomaterials*; 32: 2757–2774.

Hosseinzadeh. E., Davarpanah, M., Hassanzadeh., Nemati, N., et al., 2014. Fabrication of a hard tissue replacement using natural hydroxyapatite derived from bovine bones by thermal decomposition method. *Int. J. Organ Transplant Med*; 5(1): 23-31.

Huddleston, P. M., Steckelberg, J. M., Hanssen, A. D, Rouse, M. S., Bolander, M. E., Patel. R., 2000. Ciprofloxacin inhibition of experimental fracture healing. *J Bone Jt Surg Am*;82:161-73. *Interface Science*; 328, 203–210.

Hurley, L., 2004. *Systemic and local regulators of bone remodeling.* In : Bronner F, Farach-Carson MC (eds). Topics in bone biology: bone formation. Springer *Verlag Lonton Ltd*. London: 44-70. Hydroxyapatite Powder by Sol-Gel Method for Biomedical Application. Journal of Minerals and Materials Characterization and Engineering, 10(8), pp. 727-734.

Isaksson, H., Comas, O., vanDonkelaar, C. C., et al., 2007. Bone regeneration during distraction osteogenesis: mechanoregulation by shear strain and fluid velocity. *J Biomech*; 40, 2002-11.

Ishikawa, K., Miyamoto, Y., Tsuchiya, A., Hayash,i K., Tsuru, K., and Ohe, G., 2018. Physical and Histological Comparison of Hydroxyapatite, Carbonate Apatite, and β-Tricalcium Phosphate Bone Substitutes. *Materials (Basel)*. 16;11(10):1993. doi: 10.3390/ma11101993. PMID: 30332751; PMCID: PMC6213161.

Jagodzinski, M., Krettek, C., 2007. Effect of mechanical stability on fracture healing–an update. Injury 38: S3–10.

Jarcho, M., 1981. Calcium phosphate ceramics as hard tissue prosthetics. *Clin Orthop Relat Res*;(157):259-78. PMID: 7018783.

Jayakumar, P., and Silvio, D. L., 2010. Osteoblast in Bone Tissue Engineering. *Journal of Engineering in Medicine*. 224: 1415.

Ji, D.-Y., Kuo, T.-F., Wu, H.-D., Yang, J.-C., Lee, S.-Y., 2012. A novel injectable chitosan/ polyglutamate polyelectrolyte complex hydrogel with

UNIVERSITAS GADJAH MADA
Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur Femur pada Kelinci Lokal
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

hydroxyapatite for soft-tissue augmentation. *Carbohydr. Polym*. 89, 1123–1130.

Joschek, S. N., Berthold, K. R., and Göferich, A., 2000. Chemical and Physicochemical Characterization of Porous Hydroxapatite Ceramics Made of Natural Bone. *Biomaterials.* 21. 1645-58. 10.1016/S0142-9612(00)00036-3.

Kalfas, I.H., 2001. Principles of Bone Healing, *Neurosurg Focus*, 10(4), Article 1-2.

Kalia, P., Vizcay-Barrena, G., Fan, J. P., Warley, A., DI-Silvio, L., and Huang, J., 2014. Nanohydroxyapatite shape and its potensial role in bone formation: An analytical study. *J. R. Soc. Interface*., 11 (93): 20140004.

Kanczler, J. M., Oreffo, R. O., 2008. Osteogenesis and angiogenesis: the potential for engineering bone. Eur Cell Mater; 15, 100-14.

Kattimani, V. S., Chakravarthi, P. S., Kanumuru, N. R., Subbarao, V. V., Sidharthan, A., Kumar, T. S., & Prasad, L. K., 2014. Eggshell derived hydroxyapatite as bone graft substitute in the healing of maxillary cystic bone defects: a preliminary report. *Journal of international oral health : JIOH*, *6*(3), 15–19.

Kattimani, V., Lingamaneni, K. P., Chakravarthi, P. S., Kumar, T. S. S., and ddharthan, A., 2016. *Eggshell-Derived Hydroxyapatite. Journal of Craniofacial Surgery,* 27(1), 112–117. doi:10.1097/scs.0000000000002288.

Kattimani, V., Lingamaneni, K. P., Yalamanchili, S., Mupparapu, M., 2019. Use of eggshell-derived nano-hydroxyapatite as novel bone graft substitute–A randomized controlled clinical study. *Journal of Biomaterials Applications*;34(4):597-614. doi:10.1177/0885328219863311.

Kenney, E.B., Lekovic, V., Han, T., Carranza,Jr., F.A., and Dimitrijevic, B., 1985. The use a porous hydroxyapatite implant in periodontal defect. *J. Periodontol*, 56:82.

Keramaris, N. C., Calori, G. M., Nikolaou, V. S., et al., 2008. Fracture vascularity and bone healing: a systematic review of the role of VEGF. *Injury*; 39, 45-57.

Ketenjian, A. Y., Arsenis, C., 1975. Fracture callus cartilage differentiation in vitro. In Vitro;11(1):35-40. doi: 10.1007/BF02615319. PMID: 1126736.

Khan,S. N., Cammisa, F. P., Sandhu, H. S., Ashish, D., Girardi, F. D., Lane, M. J., 2005. The Biology of Bone Grafting. *The Journal of the American*

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Academy of Orthopaedic Surgeons. 13. 77-86. 10.5435/00124635-200501000-00010.

Khoshniat, S., Bourgine, A., Julien, M., Petit, M., Pilet, P., Rouillon, T., Masson, M., Gatius, M., Weiss, P., Guicheux, J., Beck, PL., 2011. Phosphate-dependent stimulation ofMGP and OPN expression in osteoblasts via the ERK1/2 pathway is modulatedby calcium, Bone 48 (4); 894–902.

Kim, S. H., Kim, W., Cho, J. H., Oh, N. S., Lee, M. H., Lee, S. J., 2008. Comparison of bone formation in rabbits using hydroxyapatite and β‐tricalcium phosphate scaffolds fabricated from egg shells. *Adv Mater Res*;47‐50:999‐1002.

Kini, U., Nandeesh, B.N., 2012. *Physiology of Bone Formation, Remodelling and Metabolism*. Fogelman, I., Gnanasegaran, G., VanDer., Wall, H. *Radionuclide and Hybrid Bone Imaging*. Springer. Berlin. Heidelberg. P: 29 – 57.

Knothe., Tate, M. L., Adamson, J. R., Tami, A.E., et al., 2004. The osteocyte. *Int J Biochem Cell Biol*; 36:1–8.

Kolar, P., Schmidt, B. K., Schell, H., Gaber, T., Toben, D. 2010. Schmidmaier G, Perka C, Buttgereit F, Duda GN. The early fracture hematoma and its potential role in fracture healing. *Tissue Eng* Part B Rev;16(4):427–434. doi: 10.1089/ten.teb.2009.0687.

Komatsua, D. E., and Warden, S. J., 2010. The control of fracture healing and its therapeutic targeting: improving upon nature. *J Cell Biochem* 109:302–311.

Kon, T. et al., 2001. Expression of osteoprotegerin, receptor activator of NF-κB ligand (osteoprotegerin ligand) and related proinflammatory cytokines during fracture healing. *J. Bone Miner. Res*. 16, 1004–1014.

Kubo, T., Doi, K., Hayashi, K., Morita, K., Matsuura, A., Teixeira, E.R., Akagawa, Y., 2011. Comparative evaluation of bone regeneration using spherical and irregularly shaped granules of interconnected porous hydroxylapatite. A beagle dog study. *J. Prosthodont. Res*.55, 104–109.

Lan, S. K., Levengood, Polak, S. J., Wheeler, M. B., Maki, A. J., Clark, S. G., Jamison, R. D., Wagoner, A. J., Johnson, A. J., 2010. Multiscale osteointegration as a new paradigm forthe design of calcium phosphate scaffolds for bone regeneration, *Biomaterials31* (13); 3552–3563.

Lane, N. E., Yao, W., Balooch, M., Nalla, R.K., Balooch, G., Habelitz ,S., Kinney, J. H., Bonewald LF., 2006. Glucocorticoid-treated mice have localized changes in trabecular bone material properties and osteocyte lacunar size

UNIVERSITAS GADJAH MADA
Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur Femur pada Kelinci Lokal
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

that are not observed in placebo-treated or estrogendeficient mice. *J Bone Miner Res* 21(3):466–76.

Lanyon, L. E., Baggott, D. G., 1976. Mechanical function as an influence on the structure and form of bone. J Bone Joint Surg;58-B(4):436–43.

LaStayo, P. C., Winters, K. M., Hardy, M., 2003. Fracture healing: bone healing, fracture management, and current concepts related to the hand. *Journal of Hand Therapy*; 16, 81-93.

Lawrence, W. T., 1998. Physiology of the acute wound. *Clin Plast Surg* ;25(3):321-40.

Lazić, S. Z., Miljević, S., N., Slobodan, M., 2001. The effect of temperature on the properties of hydroxyapatite precipitated from calcium hydroxide and phosphoric acid. *Thermochimica Acta*. 374. 13-22. 10.1016/S0040-6031(01)00453-1.

Lee, J. Y., Kim, Y. K., 2012. Retrospective cohort study of autogenous tooth bone graft. Oral Biol Res;36:39–43.

LeGeros, R.Z., Lin, S., Rohanizadeh, R. *et al.*, 2003. Biphasic calcium phosphate bioceramics: preparation, properties and applications. *Journal of Materials Science: Materials in Medicine* 14, 201–209. https://doi.org/10.1023/A:1022872421333.Leighton, L.R., 1993. *Small Animal Orthopedics*. Mosby-year Book Europe LTD. London. pp. 3.16-3.39.

Li, L., Yang, G., 2009. Synthesis and properties of hydroxyapatite nanorod-reinforced polyamide 6 nanocomposites. *Polym. Int*. 58, 380–387.

Li, Y., Li, Q., Zhu, S., Luo, E., Li, J., Feng, G., Liao, Y., and Hu, J., 2010. The effect of strontium-substituted hydroxyapatite coating on implant fixation in ovariectomized rats. Biomaterials. 2010 Dec;31 (34):9006-14. doi: 10.1016/*j.biomaterials*.2010.07.112. Epub. PMID: 20800275.

Li-Chan, E., and Nakai, S., 1989. Biochemical basis for the properties of egg white, *Crit Rev Poult Biol*, 2, 21–57.

Lieberman, J.R. and Friedlaender, G.E., 2005. Bone regeneration and repair.

Lin, J.H., Kuo, K.H., Ding, S.J., Ju, C.P., 2001. Surface reaction of stoichiometric and calcium-deficient hydroxyapatite in simulated body fluid. *J Mater Sci Mater Med*;12:731–741.

Lin, K., Chang, J., Liu, X., et al., 2011a. Synthesis of element-subtituted hydroxyapatite with controllable morphology and chemical composition using calcium silicate as precursor. *CrystEngComn* 13 (15); 4850-4855.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Lin, K., Yuan, W., Wang, L., Lu, J., Chen, L., Wang, Z., et al., 2011e. Evaluation of host inflammatory responses of beta-tricalcium phosphate bioceramics caused by calcium pyrophosphate impurity using a subcutaneous model. J. Biomed. Mater. Res. B Appl. *Biomater*. 99, 350–358.

Lin, K., Xia, L., Gan, J., Zhang, Z., Chen, H., Jiang, X., et al., 2013c. Tailoring the nanostructured surfaces of hydroxyapatite bioceramics to promote protein adsorption, osteoblast growth, and osteogenic differentiation. ACS Appl. *Mater*. *Interfaces* 5, 8008–8017.

Lin, K., Zhou, Y., Zhou, Y., Qu, H., Chen, F., Zhu, Y., et al., 2011a. Biomimetic hydroxyapatite porous microspheres with co-substituted essential trace elements: surfactant-free hydrothermal synthesis, enhanced degradation and drug release. *J. Mater. Chem*. 21, 16558–16565.

Lin, P., Liu, L., Wei, Z., Zou, W., Zhang, Y., Qian., *et al., 2013.* Strontium substituted hydroxyapatite porous microspheres: surfactant-free hydrothermal synthesis, enhanced biological response and sustained drug release. *Chem. Eng*. J., 222, pp. 49-59.

Lindhe, J., Lang, N.P., and Karring, T., 2008. Clinical periodontology and implant densitry, 5th ed. Blackwell Munksgaard. Hongkong. 554-562, 542.

Liu, M., Zhou, G., Song, W., Li, P., Liu, H., Niu, X., et al., 2012a. Effect of nano-hydroxyapatite on the axonal guidance growth of rat cortical neurons. *Nanoscale* 4, 3201–3207.

Loh, Q.L., and Choong, C., 2013. Three-dimensional scaffolds for tissue engineering applications: Role of porosity andpore size.*Tissue Eng*. *Part B Rev*,19, 485–502.

Loia, F., Cordoca, L. A., Pajarinena, J., Lina. T. H., Yaoa, Z., and Goodman, S. B., 2016. Inflammation, fracture and bone repair. *Bone*, 86: 119-130.

Luttikhuizen, D. T., Harmsen, M. C., VanLuyn, M. J., 2006. Cellular and molecular dynamics in the foreign body reaction. *Tissue Eng*; 12(7):1955-70.

Maes, C., Kobayashi, T., Selig, M. K., et al., 2010b. Osteoblast precursors, but notmature osteoblasts, move into develop-ingand fracturedbones alongwith invad-ing blood vessels. *Dev Cel*l 19:329–344.

Mahreni., Sulistyowati, E., Sampe, S., Chdanra, W., 2012. Pembuatan Hidroksi Apatit dari Kulit Telur. *In: Prosiding Seminar Nasional Teknik Kimia "Kejuangan" 2012*. C07-1-C07-5.

Mahyudin, F., Utomo, D. N., Suroto, H., Martanto, T. W., Edward, M., Gaol, I. L., 2017. Comparative effectiveness of bone grafting using xenograft freezedried cortical bovine, allograft freezedried cortical new zealand

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

white rabbit, xenograft hydroxyapatite bovine, and xenograft demineralized bone matrix bovine in bone defect of femoral diaphysis of white rabbit: Experimental study in vivo. *Int. J. Biomater*: 7571523.

Malizos, K. N., and Papatheodorou, L. K., 2005. The healing potential of the periosteum molecular aspects. *Injury*36: Suppl 3:S13-9. doi: 10.1016/j.injury.2005.07.030. PMID: 16188544.

Manfro, R., Fonseca, F. S., Bortoluzzi, M. C., Sendyk, W. R., 2014. Comparative, histological and histomorphometric analysis of three anorganic bovine xenogenous bone substitutes: Bio-oss, bone-fill and gen-ox anorganic. *J Maxillofac Oral Surg*. Dec;13(4):464-70. https://doi.org/10.1007/s12663-013-0554-z.

Mao, T., and Kamakshi, V., 2014. Bone grafts and bone substitutes. *International Journal of Pharmacy and Pharmaceutical Sciences.* 6. 88-91.

Marsell, R., and Einhorn, T. A., 2011. The biology of fracture healing. *Injury* 42, 551–555.

Mastrogiacomo, M., Scaglione, S., Martinetti, R., Dolcini, L., Beltrame, F., ancedda, R., Quarto, R., 2006. Role of scaffold internal structure onin vivobone formation in macroporous calcium phosphate bioceramics. *Biomaterials*, 27, 3230–3237. Material in human periodontal osseous defects. *J. Periodontol*, 65, 177–185.

Mathew R. S., Marc, McCord., Zain, Q., Franklin, D. S., 2016. Basic Science. In: Mark, D. M., Stephen, R. T, editors. *Miller's review of orthopaedics Philadelphia*: Elsevier. P. 149-82.

Mavropoulos, E. R., Alexandre, R., N. S., Glória, M., Josino, M, G., 2003. Dissolution of calcium-deficient hydroxyapatite synthesized at different conditions. *Materials Characterization*. 50. 203-207. 10.1016/S1044-5803(03)00093-7.

Mayer, I., Cohen, S., Gdalya, S., Burghaus, O., Reinen, D., 2008. Crystal structure and EPR study of Mn-doped β-tricalcium phosphate. *Mater. Res. Bull*., 43: 447.

McKibbin, B., 1978. The biology of fracture healing in long bones. *J. Bone Joint Surg*. Br. 60‑B, 150–162.

Millis, D. L., Martinez, S. A., 2003. Bone Grafts. In: Slatter D, editor. Textbook of Small Animal Surgery. 3rd ed.. Philadelphia: WB Saunders Company: 1875–1891.

Mills, S.E., 2007. Histology for Pathology. 3rd Eds. Philadelphia: Lippincott Williams & Wilkins. pp.81-88.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Mills, L., Tsang, J., Hopper, G., Keenan, G and Simpson, H., 2016. 'The multifactorial aetiology of fracturenonunion and the importance of searching for latent infection', *Bone & Joint Research*, vol. 5, no. 10, pp.512-519. https://doi.org/10.1302/2046-3758.510.BJR-2016-0138.

Mobasherpour, I., Soulati, H. M., Kazemzadeh, A., and Zakeri, M., 2006. Synthesis of nanocrystalline hydroxyapatite by using precipitation method. *J Alloy Compd*;430:330–333. doi: 10.1016/j.jallcom.2006.05.018.

Morisue, H., Matsumoto, M., Chiba, K., Matsumoto, H., Toyama, Y., Aizawa, M., et al., 2009. Novel apatite fiber scaffolds can promote three-dimensional proliferation of osteoblasts in rodent bone regeneration models. *J. Biomed. Mater. Res*. A 90, 811–818.

Morris, S.A., Jackson, I.T., 1991. The uses and complications of porous hydroxyapatite and proplast hydroxyapatite. *Eur J Plast Surg* 14, 85–88. https://doi.org/10.1007/BF00209810.

Mountziaris, P. M., Mikos, A. G., 2008. Modulation of the inflammatory response for enhanced bone tissue regeneration. Tissue Engineering Part B: Reviews; 14, 179-86.

Muthukumar, T., Aravinthan, A., Sharmila, J., et al., 2016. Collagen/chitosan porous bone tissue engineering composite scaffold incorporated with ginseng compound K. *Carbohydr Poly*; 152: 566–574.

Nashar, A.I., Ahmad and Daoud, A., 2019, Evaluation of the activity of hen eggshell graft in experimentally induced mandibular defects in rabbits: pilot study. *International Journal of Research in Medical Sciences*. 7. 1133. 10.18203/2320-6012.ijrms20191312.

Neagoe, P. E., Brkovid, A., Hajjar, F., Sirois, M. G., 2009. Expression and release of angiopoietin-1 from human neutrophils: intracellular mechanisms. *Growth Factors* 27, 335-344.

Newton, C.D., 1985. *Etiology, Classification, and Diagnosis of Fractures*. www.ivir.org.

Nirmala, R., Sheikh, F. A., Kanjwal, M. A., Lee, J. H., Park, S. J., Navamathavan, R., and Kim, H. Y., 2011. Synthesis and characterization of bovine femur bone hydroxyapatite containing silver nanoparticles for the biomedical applications. Journal of Nanoparticle Research, 13(5), 1917–1927.

Noviyanti, A.R., Haryono,H., Pandu, R., Eddy, D. R., 2017. Cangkang telur ayam sebagai sumber kalsium dalam pembuatan hidroksiapatit untuk aplikasi graft tulang. *Chimica et Natura Acta.* Volume 5(3). pp:107-111.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Ogura, H., Tanaka, H., Koh, T., Hashiguchi, M., Kuwagata, Y., Hosotsubo, H., Shimazu, T., Sugimoto, H., 1999. Priming, second-hit priming, and apoptosis in leukocytes from trauma patients. *J. Trauma* 46, 227-781.

Ohgushi, H., Goldberg, V. M., Caplan, A., 1989. Repair ofbone defects with marrow cells and porous ceramic: Experiments in rats, *Acta Orthopaedica Scandinavica*, 60:3, 334-339, DOI: 10.3109/17453678909149289.

Ohgushi, H., Victor, M., Goldberg and Arnold, Caplan.I., 1989. Repair ofbone defects with marrow cells and porous ceramic: Experiments in rats, *Acta OrthopaedicaScandinavica*, 60:3, 334-339.

Okabayashi, R., Nakamura, M., Okabayashi, T., Tanaka, Y., Nagai, A., Yamashita, K., 2009. Efficacy of polarized hydroxyapatite and silk fibroin composite dressing gel on epidermal recovery from full-thickness skin wounds. *J. Biomed. Mater. Res*. B Appl. Biomater. 90, 641–646.

Ooi, Y., Abd-Shukor., Ramesh. M. S., 2007. Properties of hydroxyapatite produced by annealing of bovine bone. *Ceramics International*. 33. 1171-1177. 10.1016/j.ceramint.2006.04.001.

Orenstein, S. B., Saberski, E. R., Klueh, U., Kreutzer, D. L., Novitsky, Y. W., 2010. Effects of mast cell modulation on early host response to implanted syntheticmeshes. *Hernia*; 14(5):511-6. http://dx.doi.org/10.1007/s10029-010-0680-1.

Oryan, A., Alidadi, S., Moshiri, A., 2013. Review: Current concerns regarding healing of bone defects. *Hard Tissue.* 2(2): 13.

Oryan, A., Monazzah, S., Bigham-Sadegh, A., 2015. Bone Injury and Fracture Healing Biology, Biomedical and Environmental Sciences,Volume 28, Issue 1, 2015, p57-71, ISSN 0895-3988, https://doi.org/10.3967/bes2015.006.

Ozawa, S., and Kasugai, S., 1996. Evaluation of implant materials (hydroxyapatite, glass-ceramics, titanium) in rat bone marrow stromal cell culture. *Biomaterials*; 17: 23–29.

Pape, H. C., Evans, A., Kobbe, P., 2010. Autologous bone graft: properties and techniques. *J Orthop Trauma*; 24 Suppl 1: S36-40.

Paramitha, D., Noviana, D., Estuningsih, S., Ulum, M. F., Hermawan, H., 2015. Radiography Study of Iron-based Foreign Body Material Degradation at Different Implantation Site in Mice. *Advanced Materials Research* 1112: 466-469.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Parfitt, A.M., 1977. The cellular basis of bone turnover and bone loss: a rebuttal of the osteocytic resorption-bone flow theory. *Clin Orthop Relat Res*; 127:236–47.

Park, J.W., Bae, S.R., Suh, J.Y., Lee, D. H., Kim, S.H., Kim, H., Lee, C. S., 2008. Evaluation of bone healing with eggshell-derived bone graft substitutes in rat calvaria: A pilot study. J. Biomed. Mater. Res. Part A, 87A, 203–214.

Parvizi., 2010. Osteoblasts. Book: Chapter 160, pp. 331.

Pasuri, J., Holopainen ,J,. Kokkonen, H., et al., 2015. Osteoclasts in the interface with electrospun hydroxyapatite. Colloids and surfaces. B, B*iointerfaces*. Nov;135:774-783. DOI: 10.1016/j.colsurfb.2015.08.045.

Paul, W., Sharma, C.P., 2012. Bioceramic scaffold—Bone tissue engineering. In Handbook of Intelligent Scaffold for Tissue Engineering Regenerative Medicine; Pan Stanford Publishing: Danvers, MA, USA.

Perren, S. M., 2002. Evolution of the internal fixation of long bone fractures. The scientific basis of biological internal fixation: choosing a new balance between stability and biology. *J Bone Joint Surg*. Br. 84‑B, 1093–1110.

Perwitasari, D. S., 2008. Hidrolisis Tulang Sapi Menggunakan HCL Untuk Pembuatan Gelatin. Dalam: *Makalah Seminar Nasional Soebardjo Brotohardjono*. Surabaya. 427.

Peter, B., Manoj, R., 2007. Bone injury, healing and grafting. In: Ramachandran, M., editor. Basic Orthopedic Sciences, The Stanmore Guide. London: Hodder Arnold: P. 123-34.

Phillips, A. M., 2005. Overview of the fracture healing cascade. Injury 36(Suppl. 3), S5–S7.

Pilitsis, J. G., Lucas, D.R., Rengachary, S.R., 2002. Bone healing and spinal fusion.Neurosurg Focus 6(1): 1-6. Jahagirdar, R., Scammell, B.E., 2009, Principles of fracture healing and disorders of bone union. Surgery27(2): 63-69.

Pillay, J., Ramakers, B. P., Kamp, V. M., Loi, A. L., Lam, S. W., Hietbrink, F., Leenen, L.P., Tool. A. T., Pickkers, P., Koenderman, L., 2010. Functional heterogeneity and differential primiting of circulating neutrophils in human experimental endotoxemia. J. *Leukoc. Biol*. 88, 211-220.

Pool, K. E., Bezooijen, V. R. L., Loveridge, N., 2005. Sclerostin is a delayed secreted product of osteocytes that inhibits bone formation. *Faseb J*;19(13):1842–4.

UNIVERSITAS GADJAH MADA
Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur Femur pada Kelinci Lokal
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Rajesh, R., Hariharasubramanian, A., and Ravichandran, D., 2012. Chicken Bone as a Bioresource for the Bioceramic (Hydroxyapatite). *Phosphorus, Sulfur, and Silicon*, 187:914–925. DOI: 10.1080/10426507.2011.650806.

Rajesh, R., and Ravichandran, D. Y., 2015. Development of a new carbon nanotube alginate hydroxyapatite tricomponent composite scaffold for application in bone tissue engineering. *International Journal of Nanomedicine*, 10:7-15.

Rifas, L., 2006. T-cell cytokine induction of BMP-2 regulates human mesenchymal stomal cell differentiation and mineralization. *J. Cell. Biochem.* 98, 706-714.

Rivera, E. M., Araiza, M., Brostow, W., Castano, V.M., Hernandez, R., Rodrıguez, J. R., 1999. Synthesis of hydroxyapatite from eggshells. *Materials Letters*. 41: 128–134.

Roberts, T. T., and Rosenbaum, A. J., 2012. Bone grafts, bone substitutes and orthobiologics: *the bridge between basic science and clinical advancements in fracture healing. Organogenesis*; 8(4):114-24. doi: 10.4161/org.23306. Epub 2012 Oct 1. PMID: 23247591; PMCID: PMC3562252.

Robson, L., Syndercombe-Court, D., 2018. Bone, muscle, skin and connective tissue. In: Naish J, Syndercombe Court D (eds) *Medical Sciences*. London: Elsevier.

Rodan, G. A., 1992. Introduction to bone biology. *Bone*;13:3-6.

Rodriguez-Ruiz, I., Delgado-Lopez, J. M., Duran-Olivencia, M. A., Iafisco, M., Tampieri, A., Colangelo, D., et al., 2013. pH-Responsive delivery of doxorubicin from citrate-apatite nanocrystals with tailored carbonate content. *Langmuir*, 29 (2013), pp. 8213-8221.

Rohrich, R. J., Minoli, J. J., Adams, W. P., Hollier, L. H., 1997. The lateral nasal osteotomy in rhinoplasty: an anatomic endoscopic comparison of the external versus the internal approach. *Plast Reconstr Surg*;99:1309-12.

Rouahi, M., Gallet, O., Champion, E., Dentzer, J., Hardouin, P., Anselme, K., 2006. Influence of hydroxyapatite microstructure on human bone cell response. *J Biomed Mater Res A*:78; 222–235.

Saad, K. A., Abu-Shahba, A. G., El-Drieny. E. A., Khedr, M. S., 2015. Evaluation of the role of autogenous bone-marrow–derived mesenchymal stem cell transplantation for the repair of mandibular bone defects in rabbits. *J Cranio-Maxillofac Surg*:43:1151-1160.

Sadat, M. S., Khorasani, M.T., Dinpanah, E. K., Jamshidi,A., 2013. Synthesis methods for nanosized hydroxyapatite with diverse structures, *Acta Biomater*. 9:7591–7621.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Samuelson, D.A., 2007. *Text Book of Veterinary Histology*. China: *Elsevier*. Page 109-126.

Sandberg, O. H., and Aspenberg, P., 2015b. Glucocorticoids inhibit shaft fracture healing but not metaphyseal bone regeneration under stable mechanical conditions. *Bone Joint Res*; 4 (10): 170-5.

Schindeler, A., McDonald, M. M., Bokko, P., et al. 2008. Bone remodeling during fracture repair: the cellular picture. *Semin Cell Dev Biol*; 19, 459-66.

Schindeler, M., McDonald, M., P. Bokko, D., Little, G., 2008. Bone remodeling during fracture repair: the cellular picture, Semin. *Cell Dev. Biol*. 19. 459-466.

Seeman, E., 2008. Modeling and remodeling: the cellular machinery responsible for the gain and loss of Bone's material and structural strength. In: Bilezikian JP, Raisz LA, Martin TJ, editors. *Principles of bone biology*, vol. 1. 3rd ed. San Diego: Academic. p. 3–28.

Sfeir, C., Ho, L., Doll, B. A., Azari, K., Hollinger, J. O., 2005. Fracture Repair. In: Lieberman, J. R., Friedlaender, G. E., editos. Bone Regeration and Repair Biology and Clinical Applications. New Jersey: *Humana Press Inc*: p. 21-44.

Shapiro, F., 2008. Cartilago bone repair. The relationship of lacunar-canalicular system and interceluller gap junction to the repair process. *J. Bone Joint Surg*., 70 (7): 1067-1081.

Shih, Y.R.V., Hwang, Y., Phadke. A., et al., 2014. Calcium phosphatebearing matrices induce osteogenic differentiation of stem cells through adenosine signaling. *Proc Natl Acad Sci USA*; 111: 990–995.

Shin, Y., Aoki, H., Yoshiyama, N., Akao, M., Higashikata, M., 1992. Surface properties of hydroxyapatite ceramic as new percutaneous material in skin tissue. J. *Mater. Sci. Mater. Med*. 3, 219–221.

Sitoresmi, I.P., 2013. Sintesis Hidroksiapatit Berpori Dari Cangkang Telur Ayam Dan Porogen Dari Kitosan, Skripsi: Institut Pertanian Bogor.

Sivaraj, K. K., and Adams, R. H, 2016. Blood vessel formation and function in bone. The Company of Biologists. 143, 2706-2715. Doi: 10.1242/dev.136861.

Smith, R., and Goodship, A., 2004. Skeletal physiology: Responses to exercise and training. 10.1016/B978-070202857-1.50006-8.

Song, K., Rao, N. J., Chen, M. L., Huang, Z. J. and Cao, Y. G., 2011. Enhanced bone regeneration with sequential delivery of basic fibroblast growth factor and sonic hedgehog. *Injury* 42, 796–802.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Sophie, C. W., Richard, M. K., 2001. Comparison of techniques for the synthesis of hydroxyapatite. *Bioinspired, Biomimetic and Nanobiomaterials*. 4. 37-47. 10.1680/bbn.14.00010.

Street, J., Bao, M., deGuzman, L., Bunting, S., Peale Jr., F. V., Ferrara, N., Steinmetz, H., Hoeffel, J., Cleland, J. L., Cleland, J. L., Daugherthy, A., van Bruggen, N., Redmond, H.P., Carano, R. A., Filvaroff, E. H., 2002. Vascular endothelial growth factor stimulates bone repair by promoting angiogenesis and bone turnover. *Proc. Natl. Acad. Sci. USA* 99, 9656-9661

Sugawara, Y., Suzuki, K., Koshikawa, M., Ando, M., and Lida, J. 2002. Nessesity of enzymatic activity of alkaline phosphatase for mineralization of osteoblastic cells. Jpn. *J. Pharmacol.* 88:262-269.

Sun, W., Chu, C., Wang, J., Zhao, H., 2007. Comparison of periodontal ligament cells responses to dense and nanophase hydroxyapatite. *J. Mater. Sci. Mater. Med*. 18, 677–683.

Sun, R. X., Niu, Y. Lv, Y.R., Zhao, X.H., Cao, D.S., Tang, J., Sun, X.C., Chen, K.Z., 2017. Physicochemical and biological properties of bovine-derived porous hydroxyapatite/collagen composite and its hydroxyapatite powders, Ceram. Int. 43; 16792–16798.

Supova, M., Martynkova, G. S., Sucharda, Z., 2011. Bioapatite Made From Chicken Femur Bone. *Ceramics – Silikáty* 55 (3) 256-260.

Suzuki, O., Nakamura, M., Miyasaka, Y., Kagayama, M., and Sakurai, M., 1991. *Bone Formation on Synthetic Precursors of Hydroxyapatite. The Tohoku Journal of Experimental Medicine, 164(1), 37–50.* doi:10.1620/tjem.164.37.

Szycher, M., Lee, S. J., 1992. Modern wound dressings: A systematic approach to wound healing. *J Biomater Appl*; 7(2):142-213.

Tadic, D. P., Fabian, E. M., 2002. Continuous Synthesis of Amorphous Carbonated Apatite. *Biomaterials*. 23. 2553-9. 10.1016/S0142-9612(01)00390-8.

Takahashi, N., Udagawa, N., Takami, M., Suda, T., 2002. Cells of Bone, Osteoclast Generation. In: J. P. Bilezikian, L. G. Raisz, G. A. Rodan, Eds. Principles of Bone Biology 2nd ed:109-26.

Tardito, E., Biondo, B., Caputo, V., Freddi, G., Grosso, E., Mantero, S., et al., 1993. Biodegradation of dacron vascular prostheses. Physicochemical, histological, morphometric and ultrastructural study. *Minerva Cardioangiol*; 41(3):59-80.

Tebyanian, H., Norahan, M. H., Eyni, H., Movahedin, M., Mortazavi, S. M. J., Karami, A., Nourani, M. R., and Baheiraei, N, 2019. Effects of collagen/β-

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

tricalcium phosphate bone graft to regenerate bone in critically sized rabbit calvarial defects*: Journal of Applied Biomaterials & Functional Materials* 00(0).

Thompson, D. D., 2003. Introduction Mechanisms of fracture healing and pharmacologic control. *J Musculoskel Neuron Interact*; 3, 295-6.

Tortora, G., Derrickson, B, H., 2016. Principles of Anatomy and Physiology, 15th Edition. *Wiley*. ISBN: 978-1-119-32064-7.

Tripathi, G., and Bikramjit, B., 2012. A porous hydroxyapatite scaffold for bone tissue engineering: Physico-mechanical and biological evaluations. Ceramics internationals; 38: 341-9.

Tsiridis, E., Upadhyay, N., Giannoudis, P., 2007. Molecular aspects of fracture healing: which are the important molecules? *Injury* 38: S11–25.

Turner, C. H., 2006. Bone strength: current concepts. Ann N Y Acad Sci;1068:429–46.

Udapa, P., 1993. Chemical and histochemical studies in organic constituens in fracture repair rats. *J. Bone Joint Surg.* Br. 45:770-779.

Ulstrup, A.K., 2008. Biomechanical concepts of fracture healing in weight-bearing long bones. *Acta Orthopaedica Belgica*; 74, 291.

Uraz, A., Gultekin, S. E., Senguven, B., Karaduman, B., Sofuoglu, I. P., Pehlivan, S., Capan, Y., Eren, K., 2013. Histologic and Histomorphometric Assessment of Eggshell-Derived Bone Graft Substitutes on Bone Healing in Rats. *J Clin Exp Dent*; 5(1):e23-9.

Uskoković, V and Uskoković, D. P., 2011. Nanosized hydroxyapatite and other calcium phosphates: chemistry of formation and application as drug and gene delivery agents. *J Biomed Mater Res B Appl Biomater* ;96(1):152-91. doi: 10.1002/jbm.b.31746. PMID: 21061364.

Utama. I. H., Kendra, A. A. S., Widyastuti, S. K., Virginia, P., Sene, S. M., Kusuma, W. D., Arisdani, B. Y., 2013. Hitungan differensial dan kelainan sel darah sapi bali. *J Vet* 14 (4); 462-466.

Utami, T., 2015. Efektivitas Penggunaan *Demineralized Equine Cortical Bone Xenograft* (DECBX) untuk Penanganan Fraktur Tulang Femur pada Anjing. Tesis: Universitas Gadja Mada.

Valletregi, M., 2004. "Calcium phosphates as substitution of bone tissues," *Prog. Solid State Chem.*, vol. 32, no. 1–2, pp. 1–31.

UNIVERSITAS GADJAH MADA
Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur Femur pada Kelinci Lokal
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Venkatesan, J., Quian, Z.J., Ryu, B., Thomas, N..V, Kim, S.K., 2011. A comparative study of thermal calcination and an alkaline hydrolysis method in the isolation of hydroxyapatite from *Thunnus obesus* bone. *Biomed Mater* 6(3):035003. https://doi.org/10.1088/1748 6041/6/3/035003.

Venkatesan, J., and Kim, S., 2012. Nanostructured Hydroxyapatite-Chitosan Composite Biomaterial for Bone Tissue Engineering. *Advanced Materials Research*. 584. 212-216. 10.4028/www.scientific.net/AMR.584.212.

Venkatesan, J., and Kim, S. K., 2013. Hydroxyapatite from marine fish bone: Isolation and characterization techniques. *Marine Biomaterials*: Characterization, Isolation and Applications, 17–27. https://doi.org/10.1201/b14723.

Waher, A., Salmond, S., and Pellino, T., 2002. *Orthopaedic Nursing*, Third Edition, Philadelphia, PA. WB *Saunders Co*.

Wang, C., Duan, Y., Markovic, B., Barbara, J., Howlett, C. R., Zhang, X,, and Zreiqat, H., 2004. Proliferation and bone-related gene expression of osteoblasts grown on hydroxyapatite ceramics sintered at different temperature. *Biomaterials*;25:2949–2956.

Wang, D., He, Y., Bi, L., Qu, Z., Zou, J., et al., 2013. Enhancing the bioactivity of Poly(lactic-co-glycolic acid) scaffold with a nano-hydroxyapatite coating for the treatment of segmental bone defect in a rabbit model. *Int J Nano-medicine* 8: 1855-1865.

Wardani, S. N., Fadli. A., and Irdoni., 2015. "Sintesis Hidroksiapatit dari Cangkang Telur dengan Metode Presipitasi." *Jurnal Online Mahasiswa Fakultas Teknik Universitas Riau*, vol. 2, no. 1, Feb, pp. 1-6.

Watanabe, M., Osada, J., Aratani, Y., Kluckman, K., Reddick, R., Malinow, M.R., and Maeda, N., 1995. Mice deficient in cystathionine beta-synthase:animal models for mild and severe homocyst(e)inemia. *Proc. Natl. Acad. Sci.*USA92, 1585–1589.

Waugh, A., and Grant, A., 2018. The musculoskeletal system. In: *Ross & Wilson Anatomy and Physiology in Health and Illness*. London: Elsevier.

Webb, J., and Tricker, J., 2000. Bone biology—A review of fracture healing. Current Orthopaedics - *Curr Orthopaed*. 14. 457-463. 10.1054/cuor.2000.0145.

Webster, T. J., Ergun, C., Doremus, R. H., Siegel, R. W., and Bizios, R., 2000. Enhanced functions of osteoblasts on nanophase ceramics.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Biomaterials.Sep;21(17):1803-10. doi: 10.1016/s0142-9612(00)00075-2. PMID: 10905463.

Webster, T. J., Ergun, C., Doremus, R. H., Siegel, R. W., Bizios, R., 2000a. Enhanced functions of osteoblasts on nanophase ceramics. *Biomaterials* 21:1803–1810.

Webster, T. J., Ergun, C., Doremus, R. H., Siegel, R. W., Bizios, R., 2000b. Specific proteins mediate enhanced osteoblast adhesion on nanophase ceramics. J Biomed Mater Res 51:475–483.

Webster, D., Wasserman, E., Ehrbar, M. *et al.* 2010. Mechanical loading of mouse caudal vertebrae increases trabecular and cortical bone mass-dependence on dose and genotype. *Biomech Model Mechanobiol* 9, 737–747.

Wehner, T., Penzkofer, R., Augat, P., Claes, L. and Simon, U., 2011. Improvement of the shear fixation stability of intramedullary nailing. Clin. Biomech. (Bristol, Avon) 26, 147–151.

Wu, S. C., Hsu, H. C., Hsu, S. K., Chang, Y. C., and Ho, W. F., 2016. Synthesis of hydroxyapatite from eggshell powders through ball milling and heat treatment. *Journal of Asian Ceramic Societies*, 4(1), 85–90.

Xia, Y., Zhou, P. Y., Cheng, X. S., et al., 2013. Selective laser sintering fabrication of nano-hydroxyapatite/poly-ε-caprolactone scaffolds for bone tissue engineering applications. *International Journal of Nanomedicine*; 8:4197–4213. doi: 10.2147/ijn.s50685.

Yadegari, M., Karimi, M., Sheishi, P. G., Derakhshan, S., 2015. A radiographic survey of eggshell powder effect on tibial bone defect repair tested in dog. *HVM Bioflux*;7(4):392-396.

Yang, X., Ricciardi, B.F., Hernandez-Soria, A., et al., 2007, Callus mineralization and maturation are delayed during fracture healing in interleukin-6 knockout mice. Bone. 2007; 41(6):928–36. [PubMed: 17921078].

Yang, C., Yang, P. P., Wang, W. X., Wang, J., Zhang, M. L., and Lin, J., 2008. Solvothermal synthesis and characterization of Ln (Eu3+, Tb3+) doped hydroxyapatite. *Journal of Colloid and Interface Science*;328, 203–210.

Yuan, H., Zou, P., Yang, A., Zhang, X., de-Bruijn, J. D., and de-Groot, K., 1998. Bone morphogenetic protein and ceramic-induced osteogenesis. *J Mater Sci Mater Med*;9:717–721.

Yuasa, T., Miyamoto, Y., Ishikawa, K., Takechi, M., Nagayama, M., and Suzuki, K., 2001. “In vitro resorption of three apatite cements with osteoclasts,” *Journal of Biomedical Materials Research*, vol. 54, no. 3, pp. 344–350.

UNIVERSITAS
GADJAH MADA
**Efektifitas Chicken Eggshell Powder (CESP) dan Chicken Bone Xenograft (CBX) Untuk Penanganan Fraktur
Femur pada Kelinci Lokal**
SARRAH ALVANIA J, Dr. drh. Dhirgo Adji, M.P.;Dr. drh. Hartiningsih, M.P.
Universitas Gadjah Mada, 2021 | Diunduh dari http://etd.repository.ugm.ac.id/

Yukna, R. A., 1994. Clinical evaluation of coralline calcium carbonate as a bone replacement graft.

Yuse, I. S., 2012. Evaluasi Radiologis dan Histopatolgis Penggunaan *Bovine Bone Graft* pada Fraktur Femur Tikus *Sprague Dawley*. Tesis: Universitas Gadja Mada.

Zhang, N., Zhai, D., Chen, L., Zou, Z., Lin, K., Chang, J., 2014. Hydrothermal synthesis and characterization of Si and Sr co-substituted hydroxyapatite nanowires using strontium containing calcium silicate as precursors. Mater. Sci. Eng. C: *Mater. Biol*. Appl. 37, 286–291.

Zhao, Y., Zhang, Y., Ning, F., Guo, D., and Xu, Z., 2007. Synthesis and cellular biocompatibility of two kinds of HAP with different nanocrystal morphology. *Journal of Biomedical Materials Research Part B: Applied Biomaterials*, 83, 121–126.

Zhou, H., Lee, J., 2011. Nanoscale hydroxyapatite particles for bone tissue engineering. *Acta Biomater.* 7, 2769–2781.

Zhu, S.H., Huang, B.Y., Zhou, K.C., Huang, S.P., Liu, F., Li, Y.M., Xue, Z.G., and Long, Z.G., 2004. Hydroxyapatite nanoparticles as a novel gene carrier. *Journal of Nanoparticle Research*. 6. 307-311.

Zhu, W., Wang, D., Xiong, J., Liu, J., You, W., Huang, J., Duan, L., Chen, J., and Zeng, Y., 2015. Study on clinical application of nano-hydroxyapatite bone in bone defect repair, Artificial Cells, *Nanomedicine, and Biotechnology,* 43:6, 361-365, DOI: 10.3109/21691401.2014.893521.

Zimmerman, K. L., Moore, D.M., Smith, S.T., 2010. Hematology of laboratoey rabbit. In: Wess DJ, Wardrop KJ, editors. Schalm's, Veterinary Hematology. Philadelphia:Lippincott Williams and Wilkins.p. 862.