

REFERENCES

1. Mawadara PA, Mozarta M, Trisnawati K. Effect of Addition of Hydroxyapatite from Chicken Egg Shells on GIC Surface Hardness. *J Dental Materials.* 2016; 2(5). P.9
2. Amalia V, Hadisantoso EP, Hidayat P, et all. Isolation and Characterization of Hydroxyapatite from Animal Bone Waste. *Alchemy: Journal of Chemistry.* 2018; 5(4). P.115
3. Wardani S. Synthesis of Hydroxyapatite from Cow Bones by Wet-Deposition Method. *Chemistry Student Journal.* 2015; 1(1). P.93
4. Firdiyani F, Agustini TW, Ma'ruf WF. Extraction of Bioactive Compounds as Natural Antioxidants Fresh Spirulina Platensis with Different Solvents. *JPHPI.* 2015; 18(1). P.29
5. Yuniati H, Sahara M. Bioactive Components of Protein and Fat in Wild Horse Milk. *Health Research Bull.* 2012; 40(2). P.672
6. Anggresani L, Nurse S, Rahayu IJ. Mackerel Fish Bone Waste As A Source Of Calcium In The Making Of Hydroxyapatite. *Catalyst Journal.* 2019 ; 4(2). P. 134
7. Afrial, Gunawarman. Micro-Structure Analysis of Hydroxyapatite Substitution Materials Blood Shells and Acrylic Resin Dental Materials for Denture Applications. *Surya Teknika Journal.* 2016; 1(4). P. 2

8. Rahmawati D, Sunarso, Irwan B. Application of Hydroxyapatite as Bone Filler After Tooth Extraction. *JKMG*. 2020; 9(2). P. 4
9. Vidyahayati IL. Dewi AH, Ana ID. Effect of Bone Substitution with Hydroxyapatite on Bone Remodeling Process. *Medical Faculty of Diponogoro University*. 2016 ; 1(3). P. 158
10. Hamza, et al. Extraction of Hydroxyapatite from Fish Scales and its Integration with Rice Husk for Ammonia Removal in Aquaculture Wastewater. *Indonesia. J. Chem* . 2019; 19(4). P.1020
11. Dorozhkin SV. Calcium Orthophosphates. *Journal of Materials Science*. 2007; 42(4). P.1064
12. Hengu KU. Ibrahim B, Subtijah P. Hydroxyapatite from Cuttlefish Shells as a Bone Scaffolding Biomaterial. *JPHPI*. 2019; 22(1). P.7
13. Mozartha M. Hydroxyapatite and Its Applications in Dentistry. *Chakradonya Dent J*. 2015; 7 (2). P. 836
14. Purnama EF, Enjoyment S, Langenati R. Effect of Reaction Temperature on Degree of Crystallinity and Hydroxyapatite Composition of Water and Synthetic Body Fluids. *Indonesian Journal of Material Science*. 2006. P.155
15. Mondal S, Mondal B, Dey A, Mukhopadhyay SS. Studies on Processing and Characterization of Hydroxyapatite Biomaterials from Different Bio Wastes. *Journal of Minerals & Materials Characterization & Engineering*. 2012; 11(1). P. 60

16. Trisnawati M, Izak D, Siswanto. Synthesis and Characterization of Hydroxyapatite-Alginate Bone Graft with Ex-Situ Method. *Journal of Unair*. 2016. P. 3-4
17. Sulistioso GS, Deswita, Wulanawati A, Romawat A. Synthesis of Hydroxyapatite Porous with Chitosan Porogen and Its Characterization. *Journal of Packaging Chemistry* . 2012; 34(1). P. 219-224
18. Poinerm GE, Brundavanam RK, Jiang Z. Synthesis and Characterization of nanohydroxyapatite using an ultrasound-assisted method. *Ultrasonic Sonochemistry*. 2011. P. 469-474
19. Kurniawan AM, Hartini S, Cahyanti MN. The effect of Phosphate Concentration on Ca/P Ratio of Hydroxyapatite from Ceramic Industrial Gypsum Waste. *EXACTLY* . 2019 ; 19(1). P.47-48
20. Purwasasmita BS, Gultom RS. Synthesis and Characterization of Sub-Micron Scale Hydroxyapatite Powder via Precipitation. *Bionatura Journal* . 2010 ; 10(2). P.159
21. Akram, et al. Extracting Hydroxyapatite and Its Precursors from Natural Resources. *Journal of Materials Science*. 2013.
22. Noviyanti AR, Haryono, Pandu R, Eddy DR. Chicken Egg Shell as a Source of Calcium in Making Hydroxyapatite for Bone Graft. *Chimica et Natura Acta* . 2017 ; 5(3). P.108

23. Rivera EM. Hydroxyapatite Based Materials: Synthesis and Characterization. Biomedical Engineering-frontiers and Challenges. *Intech Open*. 2011. P. 75-88
24. Von ES, et al. Bone Mineral: New Insights Into Its Chemical Composition. *Scientific Reports*. 2019.
25. Sudip M, Biswanath M, Dey A, Mukhopadhyay SS. Studies on Processing and Characterization of Hydroxyapatite Biomaterials from Different Bio Wastes. *Journal of Minerals & Materials Characterization & Engineering*. 2012 ; 11(1) : P. 55-67
26. Bin MI, Dara A, Sontang M, Zuha R, Marlini AN. Fish Bone Waste Utilization Program for Hydroxyapatite Product. *Journal of Environmental Research and Development*. 2013: 7(3): P. 1274-1281
27. Muhara I, Fadli A, Akbar F. Synthesis of Hydroxyapatite from Blood Shells by Low-Temperature Hydrothermal Method. *Let's FTEKNIK*. 2015 ; 2(1). P.2
28. Murniyati D, Warinangin R. Calcium Flour Processing Techniques from Tilapia Fish Bones. *Jakarta Self-Help Spreader*. 2014.
29. Zulia H, Karlina E, Primasari VS. Analysis of Diametral Tensile Strength of Self-Prepared Composite Resin with Hydroxyapatite Filler from Freshwater Fish Bone. *JMKG*. 2015 ; 4(1). P. 16
30. Siswoyo, Kurmalasari, Wulan S, Afriani F. Fabrication of Hydroxyapatite Porous Scaffold from Mackerel Fish Bone with Alginate as Natural Binder. *Journal of Physics and Science Education*. 2020 ; 3(2). P.36

31. Andika R, Fadli A, Irdoni H. Effect of Aging Time and Stirring Speed on Hydroxyapatite Synthesis from Egg Shells with Precipitation Method. *Let's FTEKNIK*. 2015 ; 2(1). P. 5 16
32. Anggresani L, Diana F, Sutrisno D. Effect of Variation in Ca/P Mole Comparison on Porous Hydroxyapatite of Mackerel Bones. *Hidea Formation Journal*. 2019; 12(1). P. 62
33. Wahdah I, Wardhani S, Darjito. Synthesis of Hydroxyapatite from Cattle Bone by Wet-Deposition Method. *Chemistry Student Journal*. 2014; 1(1). P. 92-97
34. Yuliana R, Rahim EB, Hardi J. Synthesis of Hydroxyapatite from Cattle Bone by Wet Method at Various Stirring Times and Sintering Temperatures. *Covalent Chemical Research Journal* . 2017 ; 3(3). P. 202
35. Wathi AFD, Sri W, Mohammad MK. Comparison of Ca:P Mass Against Beef Bone Hydroxyapatite Synthesis by Dry Method. *Chemistry Student Journal*. 2014; 1(2). P. 199
36. Afifah F, Cahyaningrum SE. Synthesis and Characterization of Hydroxyapatite from Beef Bone Using Calcination Technique. *UNESA Journal of Chemistry*. 2020; 9(3). P. 90
37. Johansson, et al. Nanosized Hydroxyapatite Coating on PEEK Implants Enhances Early Bone Formation: A Histological and Three-Dimensional Investigation in Rabbit Bone. *MDPI Materials*. 2015; 8(7). P. 3815-3830.

38. Nayak AK, Laha B, Sen K. Development of Hydroxyapatite Ciprofloxacin Bone Implants. *Acta Pharmaceutica*. 2011. P. 34
39. Riyanto B, Maddu A, Nurrahman. Tuna Fish Bone Hydroxyapatite Based Bioceramic Material. *JPHPI*. 2013; 16(2). P. 120
40. Firdaus, Pascawinata A, Anissa R. Effect of Nanocrystal Hydroxyapatite Implantation on The Number of osteoblasts in Bone Healing Post Teeth Extraction. *Makassar Dental Journal* . 2021 ; 10(1). P. 62
41. Manafi AM, Joughehdoust S. Synthesis of Hydroxyapatite Nanostructure by Hydrothermal Condition for Biomedical Application. *Iranian J Pharmaceutical Science*. 2019; 5(2). P. 89-94
42. Gunawarman, et al. Hydroxyapatite Coating on Titanium Alloys with Electrophoretic Deposition (EPD) for Orthopedic Implants. *BKSTM-Indonesia*. 2019. P. 1
43. Hapsari, et al. The Effect of Addiction of Hydroxyapatite from Skipjack Tuna (*Katsuwonus pelamis*) Fish Bone Flour to The Transverse, Impact, and Tensile Strength of Heat-Cured Acrylic Resin. *Journal of Dentomaxillofacial Science*. 2020; 5(2). P. 95
44. Zulkarnain, Gunawarman, Affi J. Treatment and characterization of hydroxyapatite powder from cow bone waste for dental replacement. *TOWER of Science*. 2016; 10(72). P. 153-4

45. Saeed AM, Hassan RA, Tahjeel KM. Synthesis of Calcium Hydroxyapatite Powder from Hen's Eggshell. *Iraqi Journal of Physics*. 2011 ; 9(16). P. 24-8
46. Sitohang F, Yelmida A, Zultiniar. Synthesis of Hydroxyapatite from Precipitated Calcium Carbonate (PCC) Chicken Eggshell Through Hydrothermal Method. *Online Journal of Engineering Faculty Students*. 2016 ; 3. P. 1-7
47. Anggresani L, Rahayu I. Bone Waste of Mackerel (*Scomberomorus guttatus*) as a Source of Hydroxyapatite. *Catalyst Journal* . 2019 ; 4(2). P. 133-140.
48. Ranamanggala JA, Laily DI, Annisa YN, Cahyaningrum SE. Potential of Hydroxyapatite from Chicken Bone as a Coating for Dental Implants. *Research Chemistry Journal*. 2020 ; 5(2). P. 142-8
49. Shi, et al. Hydroxyapatite Based Materials for Bone Tissue Engineering: A Brief and Comprehensive Introduction. *MDPI*. 2021. P. 3-13
50. Rahmawati, Sunarso, Irawan B. Hydroxyapatite Application as Bone Filler Post Tooth Extraction. *Journal of Dental Materials*. 2020 ; 9(2). P.40-6
51. Ardhiyanto. The Role of Hydroxyapatite as a Bone Graft Material in Stimulating the Density of L-type Collagen in the Bone Healing Process. *JKG Unej*. 2012 ; 9(1). P.16-18.
52. Firdaus, Pascawinata A, Annisa R. Effect of Nanocrystalline Hydroxyapatite Implantation on the Number of Osteoblasts in Bone Healing Post Teeth Extraction. *Makassar Dental Journal*. 2021 ; 10(1). P.61-65.

LAMPIRAN



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN

UNIVERSITAS HASANUDDIN

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Dosen Pembimbing : Dr. drg. Lenny Indriani Hatta, M.Kes

Judul : *Literatur Review: The Role of Hydroxyapatite Extract as a Bioactive Ingredients in Dentistry*

No.	Hari/Tanggal	Materi Konsultasi	Paraf		Hasil Konsultasi
			Pembimbing	Mahasiswa	
1	Rabu, 15 Juli 2021	Penyerahan Surat Penugasan			Perkenalan diri ke dosen pembimbing dan arahan membuat judul
2	Senin, 20 September 2021	Pengajuan Judul			ACC judul skripsi
3	Kamis, 30 September 2021	Pengajuan BAB I			Diskusi, arahan, dan ACC BAB I
4	Senin, 11 Oktober 2021	Pengajuan BAB II			Diskusi dan ACC BAB II
5	Kamis, 4 November 2021	Pengajuan BAB III			Diskusi dan ACC BAB III
6	Rabu, 17 November 2021	Bimbingan dan Diskusi Seminar Proposal			Pengarahan untuk seminar proposal

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7	Selasa, 30 November 2021	Seminar proposal			Pemberian masukan oleh dosen penguji
8	Jumat, 24 Desember 2021	Pengajuan Revisi Proposal			Diskusi dan ACC proposal
9	Jumat, 14 Januari 2022	Diskusi Skripsi			Diskusi dan arahan oleh dosen pembimbing
10	Rabu, 2 Februari 2022	Pengajuan BAB IV dan BAB V			Diskusi dan ACC BAB IV dan BAB V
11	Selasa, 29 Maret 2022	Pengumpulan Naskah skripsi			Diskusi dan pemberian masukan oleh dosen pembimbing
12	Jumat, 1 April 2022	Diskusi Skripsi			Pemberian masukan oleh dosen pembimbing
13	Sabtu, 9 April 2022	Pengumpulan Revisi Naskah skripsi			Diskusi dan ACC naskah skripsi
14	Kamis, 14 April 2022	Diskusi seminar hasil			Diskusi, arahan serta



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		dan pengumpulan PPT Seminar Hasil			ACC PPT seminar hasil oleh dosen pembimbing
15	Jumat, 15 April 2022	Seminar Hasil			Pemberian masukan oleh dosen penguji
16	Rabu, 26 September 2022	Pengajuan revisi <i>literatur</i> <i>review</i>			Pemberian masukan oleh dosen pembimbing
17	Senin, 31 Oktober 2022	Pengesahan dan Tanda Tangan Skripsi			Arahan jilid skripsi

Makassar, 31 Oktober 2022

Pembimbing

Dr. drg. Lenny Indriani Hatta, M.Kes



KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET DAN TEKNOLOGI

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SURAT PENUGASAN

No. 2139/UN4.13/TD.06/2021

Dari : Dekan Fakultas Kedokteran Gigi Universitas Hasanuddin

Kepada : **Dr. Lenny Indriani Hatta, drg., M.Kes**

Isi : 1. Menugaskan kepada Saudara sebagai Dosen Pembimbing Skripsi mahasiswa pada Program Studi Pendidikan Kedokteran Gigi Fakultas Kedokteran Gigi Universitas Hasanuddin, yakni:

Angkatan 2019:

- A. Zhirah Sapada (J011191105)
 - Mutmainna (J011191057)
2. Bawa Saudara yang namanya tersebut pada surat penugasan ini dipandang cakap dan memenuhi syarat untuk melaksanakan tugas tersebut.
3. Agar penugasan ini dilaksanakan dengan sebaik-baiknya dengan penuh rasa tanggung jawab.
4. Surat penugasan ini berlaku sejak tanggal ditetapkan, dengan ketentuan bahwa apabila dikemudian hari terdapat kekeliruan dalam surat penugasan ini, akan diadakan perbaikan sebagaimana mestinya

Makassar, 14 Juli 2021



Muhammad Ruslin, drg., M.Kes., Ph.D., Sp.BM(K)

NIP. 19730702200112 1 001

Tembusan Yth:

1. Wakil Dekan Bidang Akademik, Riset dan Inovasi
FKG Unhas;
2. Kepala Bagian Tata Usaha FKG Unhas.



● Recording

