

### Daftar Pustaka

1. Miranda CB, Pagani C, Benetti AR, Matuda FD. Evaluation of the bleached human enamel by scanning electron microscopy. *Journal of Applied Oral Science*. 2005 Jun;13(2):204-11.
2. Budirahardjo R. Pemutihan kembali gigi yang berubah warna pada anak. *Journal of Dentomaxillofacial Science*. 2011:105-10.
3. Ariana TR, Wibisono G, Praptiningsih RS. Pengaruh perasan buah lemon terhadap peningkatan warna gigi. *Jurnal Medali*. 2015. 16;2(1):74-8.
4. Rochmah N, Lestari S. Potensi Jeruk Nipis (*Citrus aurantifolia*) dalam Memutihkan Email Gigi yang Mengalami Diskolorasi Lime (*Citrus aurantifolia*) Potential to The Whiten Discoloration Tooth Enamel. *Insisiva Dental Journal*. 2014 Jan 7;3(1):78-83.
5. Baker RC. *Pediatric Primary Care III-Child Care*. Philadelphia: Lippincott Williams & Wilkins; 2001. Hal 60-1.
6. Torabinejad M, Walton RE. *Endodontics Principles and Practice*. China: Elsevier; 2009. Hal 391-3.
7. Riani MD, Oenzil F, Kasuma N. Pengaruh Aplikasi Bahan Pemutih Gigi Karbamid Peroksida 10% dan Hidrogen Peroksida 6% secara Home Bleaching terhadap Kekerasan Permukaan Email Gigi. *Jurnal Kesehatan Andalas*. 2015 May 1;4(2).
8. American Dental Association (ADA). 2009. *Tooth Whitening /Bleaching : Treatment Considerations For Dentists And Their Patients*. *Ada Council On Scientific Affairs*.
9. Dahl JE, Pallesen U. Tooth bleaching —a critical review of the biological aspects. *Critical Reviews in Oral Biology & Medicine*. 2003 Jul 1;14(4):292-304.
10. Fauziah C, Fitriyani S, Diansari V. Colour change of enamel after application of Averrhoa bilimbi. *Journal of Dentistry Indonesia*. 2013 Aug 29;19(3):53-6.
11. Vasconcelos AAM dkk. Enamel properties after tooth bleaching with hydrogen/ carbamide peroxides in association with a CPP-ACP paste. *Acta Odontologica Scandinavica* 2012; 70: 337-43.
12. Tredwin Cj, Et. Al. 2006. Hydrogen Peroxide Tooth-Whitening (Bleaching ) Products: Review Of Adverse Effects And Safety Issues. *British Dental Journal*. 200: 371-376.
13. Joiner A. 2006. The Bleaching Of Teeth: A Review Of The Literature. *Journal Of Dentistry*. 34: 412-419.
14. Mulky IH, Rania N, Nila K. The influence of tomato juice to whiten the teeth. *Indonesian Scholars Jurnal*; 2014; 1(45): 1-2.
15. Matos LF, Hernandez LM, Abreu N. Dental bleaching techniques; hydrogen-carbamide peroxides and light sources for activation, an update. mini review article. *Open Dent J* 2014; 8: 265.
16. Rini A, Rianti D. Bahan pemutih gigi dengan sertifikat ADA/ISO. *Majalah Gigi (Dent J)* 2005; 38(2): 73-4.
17. Torabinejad M, Walton RE. Bleaching discolored teeth: internal and external. In: Torabinejad M, Walton RE eds. *Endodontics principles and practice*. 4th ed. Philadelphia: Elsevier, 2009: 391-8.



18. Watts A, Addy M. Tooth discolouration and staining: a review of the literature. *Bri Dent J.* 2001; 190: 309-16.
19. Roberson TM, Heymann HO, Swift EJ. *Sturdevant's art and science of operative dentistry.* 5th ed. St. Louis: Elsevier, 2006: 637-40.
20. Manuel ST, Abhishek P, Kundabala M. Etiology of tooth discoloration-a review. *Nig Dent J* 2010; 18(2): 56
21. Tarigan R, Tarigan G. *Perawatan pulpa gigi (endodonti).* Ed 3. Jakarta: EGC, 2015: 202-4.
22. Liwang budianto, Irmawati, Budi pramana els. Kekerasan mikro enamel gigi permanen setelah aplikasi bahan pemutih dan pasta remineralisasi. *Dental journal.* 2014. Vol 47 (4). H. 206-10
23. Hendari R. Pemutihan gigi (Tooth-Whitening) pada gigi yang mengalami pewarnaan. *Majalah Ilmiah Sultan Agung.* 2009;44(118):65-78.
24. Dahl JE, Pallesen U. Tooth bleaching —a critical review of the biological aspects. *Critical Reviews in Oral Biology & Medicine.* 2003 Jul 1;14(4):292-304.
25. Garg N, Garg A. *Textbook of endodontics.* 2nd ed. New Delhi: Jaypee Brothers, 2010: 443-50.
26. Istanti SF, Arbianti K. Pengaruh konsentrasi madu terhadap perubahan warna gigi pada proses pemutihan gigi secara in vitro. *Odonto Dental Journal.* 2015 Dec 1;1(2):25-8.
27. Margaretha J, Rianti D, Meizarini A. Perubahan warna email gigi setelah aplikasi pasta buah stroberi dan gel karbamid peroksida 10%. *Material Dent.* 2009;1:16-20.
28. Meizarini Asti, Rinati Devi. Bahan pemutih gigi dengan sertifikat ADA/ISO. *Maj. Ked. Gigi. (Dent. J.).* 2005; 38(2):73–76.
29. Suprastiwi E. Penggunaan Karbamid Peroksida Sebagai Bahan Pemutih Gigi. *Indonesian Journal Of Dentistry.* 2005. 12(3):141-2.
30. Farah R.A.A, Suprastiwi E, Usman M. Pemutihan gigi teknik home bleaching dengan menggunakan karbamid peroksida. *Dep Ilmu Konservasi gigi : Fakultas Kedokteran Gigi Universitas Indonesia*
31. Wasonowati C. Peningkatan Produksi dan Kualitas Tomat (*Lycopersicon esculentum*) dengan Sistem Budi daya Hidroponik. *Rekayasa.*2010;3(2): 83-9.
32. Lukistasari E, Subroto G. Respon Pertumbuhan dan Hasil Dua Varietas Tomat (*Lycopersico Esculentum Mill.*). *Berkala Ilmiah Pertanian.*2015;10(10): 1-4.
33. Darwin SC, Knapp S, Peralta IE. Taxonomy of tomatoes in the Galápagos Islands: native and introduced species of *Solanum* section *Lycopersicon* (*Solanaceae*). *Systematics and Biodiversity.* 2003 May 1;1(1):29-53.
34. Naika S, de Jeude J, de Goffau M, Hilmi M, Van Dam B. *Cultivation of tomato: Production, processing and marketing.* Agromisa Foundation and CTA, Wageningen, Netherlands. 2005.
35. Purnadinus T, Wiryanta W. *Bertanam tomat.* Jakarta: Agromedia Pustaka; hal. 4-10.
36. Prana HR. *Seri budidaya tomat dan cherry.* Yogyakarta: Kanisius. 2002, 17-22.



37. Sumardiono S, Basri M, Pasonang Sihombing R. Analisis sifat-sifat psikokimia buah tomat (*lycopersicon esculentum*) jenis tomat apel, guna peningkatan nilai fungsi buah tomat sebagai komoditi pangan lokal.
38. Gharechahi M, Moosavi H, Forghani M. Effect of surface roughness and materials composition on biofilm formation. *Journal of Biomaterials and Nanobiotechnology*. 2012 Oct 1;3(4A):541.
39. Agustina A, Sutaryono, Nisa AK. Formulasi gel ekstrak buah strawberry (*Fragaria Sp.*) dengan gelling agent karbomer. *Motorik* 2013 Agt; 8(17): 14-22.
40. Ansel CH, Allen LV. *Ansel's pharmaceutical dosage forms and drug delivery systems*. 10th ed. Philadelphia: Wolters kluwer; 2014. p323-4.
41. Gad SC, Mahalingam R, Li X, Jasti BR. *Pharmaceutical manufacturing handbook: production and processes*. Canada: John Wiley & Sons; 2008. P. 288- 302.
42. Sikri VK. Color: implication in dentistry. *J Conserv Dent* 2010 Oc-Dec; 13(4): 249-55.
43. Anusavice KJ, Shen C, Rawls HR. *Phillips' science of dental materials*. 12nded. New York: Elsevier; 2012. p35-38.
44. Joiner A. The bleaching of teeth: a review of the literature. *Journal of Dentistry* 2006; 34: 412-9.
45. Mariska J, Rovani CA, Matullada IK, Tanumihardja M. Potential of 10% strawberry gel (*fragaria x annanasea*) as an alternative bleaching agent for extrinsic discoloration of composite resin: an in vitro study. *Journal of Dentomaxillofacial Science (J Dentomaxillofac Sci)* 2019; 4(1): 22-27.
46. Pruthi G, Jain V, Kandpal HC, Mathur VP, Shah N. Effect of bleaching on color change and surface topography of composite restorations. *International Journal of Dentistry*; 2010: p1-7.
47. Firsty KN, Larasati DM, Yogiartono M. Effectiveness of ellagic acid that contains in strawberry for acrylic discoloration. *J Asia Pac Dent Stud*. 2012; 3(2): 3-9.
48. Bamisea CT, Kolawolb KA, Oloyedec EO. The determinants and control of soft drinks-incited dental erosion. *Rev Clin Pesq Odontol*. 2009; 5: 141-154.
49. Juanita M, Rovani CA, Mattulada IK, Tanumihardja M. Potential of 10% strawberry gel (*fragaria x annanasea*) as an alternative bleaching agent for extrinsic discoloration of composite resin: an in vitro study. *J Dentomaxillofac Sci*. 2019; 4(1): 22-27.
50. Freire A, Archegas LRA. Evelise MDS, Vieira SR. Effect of storage temperature on pH of in-office and ar home dental bleaching agents. *Acta Odontol Latinoam*. 2009; 22(1): 27-33.
51. Bayu Teguh. Pengaruh Konsentrasi Jus Buah Tomat (*Lycopersicon esculentum* Mill) terhadap Perubahan Warna Gigi dalam Proses Pemutihan Gigi secara In-vitro. Skripsi. Semarang: Universitas Dipenogoro; 2009.
52. Scientific Committee on Consumer Product. Tooth whiteners & oral hygiene product containing hydrogen peroxide. *Greenfact*. 2007:1-17.
53. Berg M, Grootveld M, Lynch E. Undesirable and adverse effects of whitening products: a review. *J Clin Oral Invest*. 2010;14:1-10.



54. Arruda AM, Santos PHD, Sundfeld RH, Berger SB, Briso ALF. Effect hydrogen peroxide at 35% on the morphology of enamel and interefrence in the de-remineralization process: an in situ study. Operat Dentistry in-press. 2011:1–6.
55. Pinto FC, Oliveira RD, Cavalli V, Giannini M. Peroxide bleaching agent effect on enamel surface microhardness, roughness, and morphology. Braz Oral Res. 2004;18(4):306–11.
56. Ferreira IA, Lopes GC, Vieira LCC, Araujo E. Effect of hydrogen peroxide based home bleaching agents on enamel hardness. Brazil J Oral Sci. 2006;5(18):1090–2.
57. Higgins J, Lotha G, Pallardy L. Encyclopedia brittanica online tooth. 2008:2–5.
58. Bistey T, Hegedus C, Jenei A. Examination of the effect of peroxides on human enamel structure (doctoral dissertation). Debrecen: University of Debrecen, Medical and Health Science Faculty of Dentistry Department of Prosthetic Dentistry; 2008.
59. Tezel H, Ertas SO, Ozata F, Dalgat H, Korkut Z. Effect of bleaching agent on calcium loss from the enamel surface. Quintessence Int. 2007;38(4):339–47
60. Mala HF , Dwi WKA, Zita A. Efektivitas Asam Askorbat Dalam Ekstrak Buah Tomat (*Lycopersicon Esculentum* Mill.) Terhadap Pemutihan Gigi Dengan Konsentrasi 30%, 70%, DAN 100%. 2017. Pp. 172-5.
61. Kailaku S I, Kun Tanti Dewandari, Sunarmani. Potensi Likopen Dalam Tomat Untuk Kesehatan. Buletin Teknologi Pascapanen Pertanian 2007:3 H. 52.



# LAMPIRAN





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No : 2109/UN4.13.1/TP.02.02/2020  
Perihal : Permohonan Rekomendasi Etik

24 Agustus 2020

Kepada Yth.  
Ketua Komite Etik Penelitian Kesehatan  
Fakultas Kedokteran Gigi Universitas Hasanuddin  
Makassar

Dengan hormat kami sampaikan bahwa mahasiswa Program Studi Sarjana Kedokteran Gigi, Fakultas Kedokteran Gigi Universitas Hasanuddin di bawah ini:

Nama : **Arwindah Arifin (J111 16 701)**

Judul Penelitian : "Perbedaan Tingkat Kecerahan Permukaan Email Gigi Setelah Pengaplikasian Gel Buah Tomat (*Lycopersicon Esculentum* Mill) 16% dan Karbamid Peroksida 16%".

bermaksud melakukan penelitian di Laboratorium Fitofarmako dan Laboratorium Farmasetika Sekolah Tinggi Ilmu Farmasi Makassar pada bulan Februari – Maret 2020.

Untuk maksud tersebut di atas, kami mohon kiranya yang bersangkutan dapat diberikan surat Rekomendasi Etik dalam rangka penyelesaian studinya.

Demikian permohonan kami atas perhatian dan kerjasamanya diucapkan terima kasih.

a.n. Dekan  
Wakil Dekan Bidang Akademik, Riset dan Inovasi,

**Prof. Dr. drg. Edy Machmud, Sp. Pros(K)**  
NIP. 19631104 199401 1 001

Tembusan Yth:  
1. Dekan FKG Unhas;  
2. Kepala Bagian Tata Usaha FKG Unhas.





### REKOMENDASI PERSETUJUAN ETIK

Nomor: 0078/PL.09/KEPK FKG-RSGM UNHAS/2020

Tanggal: 19 Agustus 2020

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

No. Protokol	UH 17120359	No Protokol Sponsor	
Peneliti Utama	Arwinda Arifin	Sponsor	Pribadi
Judul Peneliti	Perbedaan Tingkat Kecerahan Permukaan Email Gigi Pengaplikasian Gel Buah Tomat ( <i>Lycopersicon Esculentum</i> Mill) 16% dan Karbamid Peroksida 16%		
No. Versi Protokol	1	Tanggal Versi	19 Agustus 2020
No. Versi Protokol		Tanggal Versi	
Tempat Penelitian	di Laboratorium Fitofarmako dan Laboratorium Farmasetika STIFA		
Dokumen Lain			
Jenis Review	<input checked="" type="checkbox"/> Exempted <input type="checkbox"/> Expedited <input type="checkbox"/> Fullboard	Masa Berlaku 19 Agustus 2020-19 Agustus 2021	Frekuensi Review Lanjutan
Ketua Komisi Etik Penelitian	Nama: Dr. drg. Marhamah, M.Kes	Tanda Tangan 	Tanggal
Sekretaris Komisi Etik Penelitian	Nama: drg. Muhammad Ikbal, Sp.Prog	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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### Tanda Terima Proposal Penelitian Skripsi

Nama : **ARWINDAH ARIFIN**  
NIM : J111 16 701  
Judul : Perbandingan Tingkat Kecerahan Permukaan Gigi Setelah Pengaplikasian Gel Tomat 16% Dan Karbamid Peroksida 16%  
Hari / Tanggal : Selasa , 25 Februari 2020  
Waktu : 09.00 – Selesai  
Tempat : RSGM Kandeana

No.	Nama	N I P	Tanda Tangan
1.	Dr. Med. Dent. Rehatta Yongki	19560319 198303 1 001	1.....
2.	Dr. drg. Andi Sumidarti, M.Kes	19571126 198603 2 001	2.....
3.	Dr. drg. Maria Tanumihardja, MDS	19610216 198702 2 001	3.....
4.	drg. Nurhayaty Natsir, Ph.D, Sp.KG(K)	19640518 199103 2 001	4.....
5.	Prof. Dr. drg. Ardo Sabir, M.Kes	19700712 199802 1 002	5.....
6.	Dr. drg. Hafisah Katu, M.Kes	19601212 199412 2 001	6.....
7.	Dr. drg. Aries Chandra Trilaksana, Sp.KG(K)	19760327 200212 1 001	7.....
8.	Dr. drg. Juni Jekti Nugroho, Sp.KG(K)	19710625 200501 2 001	8.....
9.	drg. Christine A.Rovani, Sp.KG (K)	19800901 200812 2 002	9.....

Makassar, 17 Februari 2020  
Ketua Departemen Konservasi,

  
**Dr. drg. Juni Jekti Nugroho, Sp.KG (K)**  
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**Daftar Hadir Dosen Konservasi yang menghadiri Seminar Proposal Skripsi**

Nama : ARWINDAH ARIFIN  
NIM : JIII 16 701  
Judul : Perbandingan Tingkat Kecerahan Permukaan Gigi Setelah Pengaplikasian Gel Tomat 16% Dan Karbamid Peroksida 16%  
Hari / Tanggal : Selasa, 25 Februari 2020  
Waktu : 09.00 – Selesai  
Tempat : RSGM Kande'a

No.	Nama	N I P	Tanda Tangan
1.	Dr. Med. Dent. Rehatta Yongki	19560319 198303 1 001	1.....
2.	Dr. drg. Andi Sumidarti, M.Kes	19571126 198603 2 001	2.....
3.	Dr. drg. Maria Tanumihardja, MDSc	19610216 198702 2 001	3.....
4.	drg. Nurhayaty Natsir, Ph.D, Sp.KG(K)	19640518 199103 2 001	4.....
5.	Prof. Dr. drg. Ardo Sabir, M.Kes	19700712 199802 1 002	5.....
6.	Dr. drg. Hafsah Katu, M.Kes	19601212 199412 2 001	6.....
7.	Dr. drg. Aries Chandra Trilaksana, Sp.KG(K)	19760327 200212 1 001	7.....
8.	Dr. drg. Juni Jekti Nugroho, Sp.KG(K)	19710625 200501 2 001	8.....
9.	drg. Christine A.Rovani, Sp.KG(K)	19800901 200812 2 002	9.....
10.	drg. Noor Hikmah, Sp.KG(K)		10.....

Makassar, 25 Februari 2020

Pembimbing Skripsi,

**Dr. drg. Andi Sumidarti, M.Kes.**  
NIP. 19571126 198603 2 001







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**KARTU KONTROL SKRIPSI**

Nama : Arwindah Arifin  
 Nim : J111 16 701  
 Pembimbing I : Dr. drg. Andi Sumidarti A. M.S  
 Pembimbing II : drg. Christine A. Rovani, Sp. KG  
 Judul : Perbandingan Tingkat Kecerahan permukaan Email Gigi setelah pengaplikasian Gel Buah Tomat 16% dan karbamid peroksida 16%

NO.	HARI/TANGGAL	MATERI KONSULTASI	PARAF		
			PEMBIMBING I	PEMBIMBING II	MAHASISWA
1.	Rabu, 4 Des. 19	Buat. Latar Belakang & Metode Peneliti diari dulu.			
2.	Kamis, 19 Des 19	Latar Belakang Masalah & Metode			
3.	Senin, 6 Jan 20	Revisi latar Belakang dan metode penelitian			
4.	Selasa 14 Jan 2020	Buat Proposal lengkap dgn lbrp. Masukan			
5.	Juma 21 Jan. 2020	acc. Proposal			
6.	Rabu, 22 Jan 2020	Revisi Proposal			
7.	Rabu 5 Feb 2020	Konultasi: Pohon 16.%. Carbamide Perox.			

Makassar,.....2019

Pembimbing Skripsi,

Pembimbing I

Pembimbing II

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**Nilai Pengukuran Warna**  
***ΔE<sub>shadeguide</sub>***

**GEL TOMAT 16%**

sampel	baseline	diskolorisasi	hari pertama	hari ke tujuh
1	16,28854622	17,50461939	18,2627848	23,51509449
2	18,68266041	20,85873678	21,85890917	23,28827756
3	17,42750126	19,50284851	22,02183235	30,27325665
4	15,32720456	17,7129049	20,13889186	21,99534431
5	18,40866644	19,00584268	21,5429727	22,04589404
6	19,73426715	20,24009096	22,31106676	24,93111224
7	13,72532331	15,99417379	17,65830683	21,15539373
8	17,68909551	19,88728737	21,20499329	22,14863697
9	14,25217176	16,06301849	17,04824139	19,07975063
10	16,28835795	18,89887046	20,101312	23,05074725
11	15,29920913	17,81014598	19,07973375	21,48480674
12	19,80428741	21,54045961	23,31926457	24,08949437
13	12,23848438	15,96105886	17,84702216	19,32755159
14	15,20515044	17,57715847	22,71769575	24,50627498
15	10,20871686	14,29733192	20,41859202	23,0672579
16	15,4348958	15,87460804	16,80805678	18,2453608
17	16,35085821	16,83427787	17,74426768	18,66140661
18	16,48347658	18,60473327	20,94131432	21,69957603



## Nilai Pengukuran Warna $\Delta E$ program

GEL TOMAT 16%

sampel	baseline	diskolorisasi	hari pertama	hari ke tujuh
1	4,545338271	6,740096438	7,590577306	8,670576373
2	9,736416178	11,68254345	13,88265297	14,24677432
3	8,180733821	9,089643946	9,701206111	11,12265256
4	2,690315967	2,998899798	3,032858547	4,293669759
5	3,430583041	4,735915962	6,38452185	7,071067812
6	4,06995086	5,904049458	6,418404697	6,748340537
7	6,914398022	7,472322263	8,45939293	10,87586778
8	4,882730998	5,196152423	7,589385759	8,449591706
9	4,109594521	5,172507418	6,320340181	6,762152024
10	2,158726476	5,83810408	7,77950834	10,86685056
11	4,534809809	5,395887323	7,80567332	8,02268807
12	4,48523247	5,055091558	7,17631978	9,088332884
13	6,971692764	7,78238091	11,69758095	10,06575151
14	6,363273728	8,403793819	10,76602858	11,8137869
15	4,645188029	5,217068142	6,350251493	9,20401929
16	7,57071899	8,505752106	8,903726969	9,834185274
17	5,819842929	6,04593292	7,12956121	9,91481732
18	5,899906779	8,09064787	8,752315225	10,2526226



## Nilai Pengukuran Warna

### $\Delta E_{\text{shadeguide}}$

#### GEL KARBAMID PEROKSIDA 16%

sampel	baseline	diskolorisasi	hari pertama	hari ke tujuh
1	15,03342009	16,74495148	18,13791308	21,01038882
2	16,20659434	17,85873678	19,88015594	20,30952433
3	14,30130966	16,88415738	17,34315661	22,2852353
4	17,30953783	18,49360589	19,94036359	23,68716654
5	14,25165955	17,59475206	20,50911784	23,80649387
6	17,35106337	21,00306342	24,1091532	28,11068491
7	15,99993125	18,99417379	22,3337883	25,8308752
8	15,84652347	17,07250714	21,29853751	25,83479108
9	9,745178295	10,7279588	14,08340123	17,94738063
10	12,73833192	14,67998127	17,38156735	28,72155799
11	16,76886706	18,56177254	19,53548219	22,31636846
12	16,23159265	19,32785613	21,23776589	22,90169395
13	10,78223539	18,35961329	19,70852835	21,38833499
14	12,75008235	14,29733192	17,06376812	20,21243408
15	15,93653036	16,84609377	19,30043264	21,22347952
16	15,44906793	17,34973033	18,74426768	19,41913285
17	9,80693096	11,10010498	15,99604008	17,54609255
18	5,811333754	7,17418428	9,93759342	12,02468556



**Nilai Pengukuran Warna**  
 **$\Delta E$ program**  
**GEL KARBAMID PEROKSIDA 16%**

sampel	baseline	diskolorisasi	hari pertama	hari ke tujuh
1	7,155263797	7,756004126	10,46507525	11,76859251
2	5,268444783	6,682543445	7,749829627	8,714990796
3	6,580652379	8,180733821	10,58299129	12,145044741
4	3,31044723	5,690315967	6,991221147	9,67810203
5	9,925729192	10,7911781	12,98538024	15,96041359
6	9,939597577	10,22486144	13,52155639	14,8106306
7	5,279318138	7,472322263	9,920892755	10,1990857
8	4,474013217	5,109594521	6,512648006	8,40405331
9	3,70239395	5,158726476	7,530397334	11,62517597
10	8,39769139	9,642499676	10,03218324	13,32528325
11	9,31723583	10,39588732	12,24109881	13,24193697
12	5,67496411	7,805132926	11,5899396	12,6049877
13	11,40175864	12,48523247	13,51354099	15,5786268
14	7,80625825	8,645188029	10,80164189	13,74641302
15	9,00152389	10,57071899	12,48824536	15,50688421
16	7,81760259	8,819842929	10,95137951	12,66338525
17	5,34457669	7,499633324	8,37757007	10,44025341
18	5,80864953	6,307844323	8,81908688	9,32229759





Output Created		04-JUN-2020 22:06:07
Comments		
Input	Data	D:\Be the best Statistician\2016 apridey\spss revisi.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Missing Value Handling	Definition of Missing
	Cases Used	Statistics are based on cases with no missing values for any dependent variable or factor used.



Syntax	<pre> EXAMINE VARIABLES=delta1_gel _p delta2_gel_p delta3_gel_p delta4_gel_p delta1_h202_p delta2_h202_p delta3_h202_p delta4_h202_p delta1_gel_shadeguide delta2_gel_shadeguide delta3_gel_shadeguide  delta4_gel_shadeguide delta1_h202_shadeguid e delta2_h202_shadeguid e delta3_h202_shadeguid e  delta4_h202_shadeguid e /PLOT BOXPLOT NPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL. </pre>				
Resources	<table border="1"> <tr> <td style="background-color: #d3d3d3;">Processor Time</td> <td>00:00:23.08</td> </tr> <tr> <td style="background-color: #d3d3d3;">Elapsed Time</td> <td>00:00:24.75</td> </tr> </table>	Processor Time	00:00:23.08	Elapsed Time	00:00:24.75
Processor Time	00:00:23.08				
Elapsed Time	00:00:24.75				

### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
_p	.190	18	.085	.879	18	.025
_p	.183	18	.116	.933	18	.216



delta3_gel_p	.142	18	.200*	.943	18	.322
delta4_gel_p	.214	18	.028	.861	18	.013
delta1_h202_p	.133	18	.200*	.950	18	.424
delta2_h202_p	.119	18	.200*	.975	18	.892
delta3_h202_p	.113	18	.200*	.964	18	.676
delta4_h202_p	.142	18	.200*	.960	18	.600
delta1_gel_shadeguide	.156	18	.200*	.918	18	.117
delta2_gel_shadeguide	.255	18	.003	.758	18	.000
delta3_gel_shadeguide	.206	18	.042	.781	18	.001
delta4_gel_shadeguide	.187	18	.098	.892	18	.041
delta1_h202_shadeguide	.248	18	.005	.729	18	.000
delta2_h202_shadeguide	.131	18	.200*	.970	18	.800
delta3_h202_shadeguide	.206	18	.042	.774	18	.001
delta4_h202_shadeguide	.126	18	.200*	.919	18	.124

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

## Explore

Output Created	04-JUN-2020 22:08:25	
Comments		
Input	Data	D:\Be the best Statistician\2016 arwindah\spss revisi.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
Value Handling	Definition of Missing	User-defined missing values for dependent variables are treated as missing.



Cases Used		Statistics are based on cases with no missing values for any dependent variable or factor used.
Syntax		<pre> EXAMINE VARIABLES=Gel_p Gel_shadeguide hidrogen_p hidrogen_shadeguide BY waktu /PLOT BOXPLOT NPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL. </pre>
Resources	Processor Time	00:00:07.03
	Elapsed Time	00:00:05.96

### Tests of Normality

	waktu	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Gel_p	delta1	.190	18	.085	.879	18	.025
	delta2	.183	18	.116	.933	18	.216
	delta3	.142	18	.200*	.943	18	.322
	delta4	.214	18	.028	.861	18	.013
Gel_shadeguide	delta1	.156	18	.200*	.918	18	.117
	delta2	.255	18	.003	.758	18	.000
	delta3	.206	18	.042	.781	18	.001
	delta4	.187	18	.098	.892	18	.041
hidrogen_p	delta1	.133	18	.200*	.950	18	.424
	delta2	.119	18	.200*	.975	18	.892
	delta3	.113	18	.200*	.964	18	.676
	delta4	.142	18	.200*	.960	18	.600
shadeguide	delta1	.248	18	.005	.729	18	.000
	delta2	.131	18	.200*	.970	18	.800
	delta3	.206	18	.042	.774	18	.001
	delta4	.126	18	.200*	.919	18	.124



## NPar Tests

Notes		
Output Created		04-JUN-2020 22:10:34
Comments		
Input	Data	D:\Be the best Statistician\2016 arwindah\spss revisi.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Missing Value Handling	Definition of Missing
Cases Used		Statistics for all tests are based on cases with no missing data for any variables used.
Syntax		NPAR TESTS /FRIEDMAN=delta1_gel_p delta2_gel_p delta3_gel_p delta4_gel_p /MISSING LISTWISE.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.05
	Number of Cases Allowed <sup>a</sup>	174762

a. Based on availability of workspace memory.



an Test

### Ranks

	Mean Rank
delta1_gel_p	2.00
delta2_gel_p	2.17
delta3_gel_p	1.89
delta4_gel_p	3.94

### Test Statistics<sup>a</sup>

N	18
Chi-Square	30.467
df	3
Asymp. Sig.	.000

a. Friedman Test

### NPAR TESTS

/FRIEDMAN=delta1\_h202\_p delta2\_h202\_p delta3\_h202\_p delta4\_h202\_p  
/MISSING LISTWISE.

### NPar Tests

### Notes

Output Created	04-JUN-2020 22:10:54	
Comments		
Input	Data	D:\Be the best Statistician\2016 arwindah\spss revisi.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>



	N of Rows in Working Data File	72
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for all tests are based on cases with no missing data for any variables used.
Syntax		<pre> NPAR TESTS   /FRIEDMAN=delta1_h202_p delta2_h202_p delta3_h202_p delta4_h202_p /MISSING LISTWISE. </pre>
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.04
	Number of Cases Allowed <sup>a</sup>	174762

a. Based on availability of workspace memory.

## Friedman Test

### Ranks

	Mean Rank
delta1_h202_p	1.64
delta2_h202_p	2.22
delta3_h202_p	2.14
delta4_h202_p	4.00



Statistics <sup>a</sup>	
	18
e	34.743
	3

Asymp. Sig. .000

a. Friedman Test

#### NPART TESTS

/FRIEDMAN=delta1\_gel\_shadeguide delta2\_gel\_shadeguide  
delta3\_gel\_shadeguide delta4\_gel\_shadeguide  
/MISSING LISTWISE.

### NPar Tests

Notes		
Output Created		04-JUN-2020 22:11:07
Comments		
Input	Data	D:\Be the best Statistician\2016 arwindah\spss revisi.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Missing Value Handling	Definition of Missing
Cases Used		Statistics for all tests are based on cases with no missing data for any variables used.





Syntax	NPAR TESTS	
	/FRIEDMAN=delta1_gel_sha deguide delta2_gel_shadeguide delta3_gel_shadeguide delta4_gel_shadeguide /MISSING LISTWISE.	
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.08
	Number of Cases Allowed <sup>a</sup>	174762

a. Based on availability of workspace memory.

## Friedman Test

### Ranks

	Mean Rank
delta1_gel_shadeguide	2.00
delta2_gel_shadeguide	2.00
delta3_gel_shadeguide	2.00
delta4_gel_shadeguide	4.00

### Test Statistics<sup>a</sup>

N	18
Chi-Square	32.400
df	3
Asymp. Sig.	.000



in Test

ESTS

```

/FRIEDMAN=delta1_h202_shadeguide delta2_h202_shadeguide
delta3_h202_shadeguide
  delta4_h202_shadeguide
/MISSING LISTWISE.

```

## NPar Tests

Notes		
Output Created		04-JUN-2020 22:11:21
Comments		
Input	Data	D:\Be the best Statistician\2016 arwindah\spss revisi.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for all tests are based on cases with no missing data for any variables used.
Syntax		NPAR TESTS  /FRIEDMAN=delta1_h202_shadeguide delta2_h202_shadeguide delta3_h202_shadeguide delta4_h202_shadeguide /MISSING LISTWISE.
	Processor Time	00:00:00.00



Elapsed Time	00:00:00.05
Number of Cases Allowed <sup>a</sup>	174762

a. Based on availability of workspace memory.

## Friedman Test

### Ranks

	Mean Rank
delta1_h202_shadeguide	1.72
delta2_h202_shadeguide	1.89
delta3_h202_shadeguide	2.39
delta4_h202_shadeguide	4.00

### Test Statistics<sup>a</sup>

N	18
Chi-Square	35.000
df	3
Asymp. Sig.	.000

a. Friedman Test

### NPART TESTS

```

/M-W= delta1_gel_p delta2_gel_p delta3_gel_p delta4_gel_p
delta1_gel_shadeguide
delta2_gel_shadeguide delta3_gel_shadeguide delta4_gel_shadeguide BY klp(1
2)
/MISSING ANALYSIS.

```



## NPar Tests

### Notes

Output Created		04-JUN-2020 22:14:12
Comments		
Input	Data	D:\Be the best Statistician\2016 arwindah\spss revisi.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	72
	Missing Value Handling	Definition of Missing
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax		<pre> NPAR TESTS   /M-W= delta1_gel_p delta2_gel_p delta3_gel_p delta4_gel_p delta1_gel_shadeguide       delta2_gel_shadeguide delta3_gel_shadeguide delta4_gel_shadeguide BY klp(1 2) /MISSING ANALYSIS. </pre>
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.03
	Number of Cases Allowed <sup>a</sup>	112347

on availability of workspace memory.



## Mann-Whitney Test

		Ranks		
	klp	N	Mean Rank	Sum of Ranks
delta1_gel_p	Gel	18	17.22	310.00
	karbamid peroksida	18	19.78	356.00
	Total	36		
delta2_gel_p	Gel	18	15.39	277.00
	karbamid peroksida	18	21.61	389.00
	Total	36		
delta3_gel_p	Gel	18	15.17	273.00
	karbamid peroksida	18	21.83	393.00
	Total	36		
delta4_gel_p	Gel	18	13.17	237.00
	karbamid peroksida	18	23.83	429.00
	Total	36		
delta1_gel_shadeguide	Gel	18	18.67	336.00
	karbamid peroksida	18	18.33	330.00
	Total	36		
delta2_gel_shadeguide	Gel	18	15.56	280.00
	karbamid peroksida	18	21.44	386.00
	Total	36		
delta3_gel_shadeguide	Gel	18	15.42	277.50
	karbamid peroksida	18	21.58	388.50
	Total	36		
delta4_gel_shadeguide	Gel	18	15.19	273.50
	karbamid peroksida	18	21.81	392.50
	Total	36		

### Test Statistics<sup>a</sup>

	delta1_gel_p	delta2_gel_p	delta3_gel_p	delta4_gel_p
Mann-Whitney U	139.000	106.000	102.000	66.000



Wilcoxon W	310.000	277.000	273.000	237.000
Z	-.728	-1.772	-1.898	-3.037
Asymp. Sig. (2-tailed)	.467	.076	.058	.002
Exact Sig. [2*(1-tailed Sig.)]	.481 <sup>b</sup>	.079 <sup>b</sup>	.059 <sup>b</sup>	.002 <sup>b</sup>

### Test Statistics<sup>a</sup>

	delta1_gel_shadeg uide	delta2_gel_shade guide	delta3_gel_shade guide	delta4_gel_shadeg uide
Mann-Whitney U	159.000	109.000	106.500	102.500
Wilcoxon W	330.000	280.000	277.500	273.500
Z	-.095	-1.677	-1.756	-1.883
Asymp. Sig. (2-tailed)	.924	.094	.079	.060
Exact Sig. [2*(1-tailed Sig.)]	.938 <sup>b</sup>	.097 <sup>b</sup>	.079 <sup>b</sup>	.059 <sup>b</sup>

a. Grouping Variable: klp

b. Not corrected for ties.

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

### Descriptives

hidrogen\_p

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
delta1	18	1.2800	.63027	.14856	.9666	1.5934	.29	2.38
delta2	18	1.9911	.86536	.20397	1.5608	2.4214	.39	3.78
delta3	18	1.9256	1.05203	.24797	1.4024	2.4487	.28	4.09
delta4	18	5.1961	1.23177	.29033	4.5836	5.8087	3.45	7.92
Total	72	2.5982	1.80622	.21286	2.1738	3.0226	.28	7.92

### ANOVA

hidrogen\_p

	Sum of Squares	df	Mean Square	F	Sig.
Groups	167.540	3	55.847	59.252	.000
roups	64.092	68	.943		
Total	231.632	71			



### Multiple Comparisons

Dependent Variable: hidrogen\_p

Bonferroni

(I) waktu	(J) waktu	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
		(I-J)			Lower Bound	Upper Bound
delta1	delta2	-.71111	.32361	.188	-1.5906	.1683
	delta3	-.64556	.32361	.300	-1.5250	.2339
	delta4	-3.91611*	.32361	.000	-4.7956	-3.0367
delta2	delta1	.71111	.32361	.188	-.1683	1.5906
	delta3	.06556	.32361	1.000	-.8139	.9450
	delta4	-3.20500*	.32361	.000	-4.0845	-2.3255
delta3	delta1	.64556	.32361	.300	-.2339	1.5250
	delta2	-.06556	.32361	1.000	-.9450	.8139
	delta4	-3.27056*	.32361	.000	-4.1500	-2.3911
delta4	delta1	3.91611*	.32361	.000	3.0367	4.7956
	delta2	3.20500*	.32361	.000	2.3255	4.0845
	delta3	3.27056*	.32361	.000	2.3911	4.1500

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

### Report

waktu		Gel_p	Gel_shadeguide	hidrogen_p	hidrogen_shade guide
delta1	Mean	1.2400	1.9633	1.2800	2.2628
	N	18	18	18	18
	Std. Deviation	.90510	1.02973	.63027	1.56830
delta2	Mean	1.4667	2.0483	1.9911	2.4150
	N	18	18	18	18
	Std. Deviation	.97781	1.44225	.86536	1.15711
delta3	Mean	1.1983	2.3083	1.9256	3.2239
	N	18	18	18	18
	Std. Deviation	1.14922	1.88812	1.05203	2.39100
delta4	Mean	3.9044	6.3194	5.1961	7.9028
	N	18	18	18	18
	Std. Deviation	1.53554	2.95108	1.23177	2.91574
	Mean	1.9524	3.1599	2.5982	3.9511
	N	72	72	72	72



Std. Deviation	1.61386	2.66114	1.80622	3.11894
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### 1. Persiapan Gel Ekstrak Tomat 16%



### 2. Pengaplikasian Bahan Uji



Aplikasi Gel Ekstrak Tomat 16%

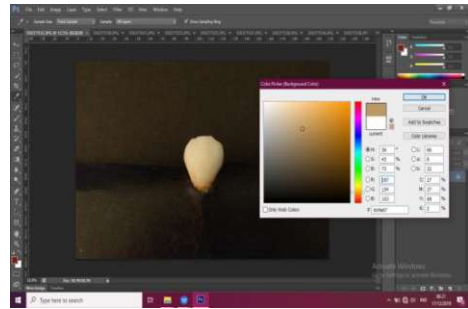


Aplikasi Karbamid Peroksida 16%





### 3. Pengukuran Warna Sampel



Pengukuran warna dengan *Shade guide*    Pengukuran warna dengan CIEL\*a\*b

### 4. Pencerahan Warna Gigi

#### I. Kelompok Gel Ekstrak Tomat 16%



Baseline



Diskolorisasi



Setelah Pengaplikasian

#### II. Kelompok Karbamid Peroksida 16%



Baseline



Diskolorisasi



Setelah Pengaplikasian

