

8. LAMPIRAN

Lampiran 1. Sheet uji ranking hedonik

UJI RANKING HEDONIK

Kerupuk Kolang-Kaling Pewarna Alami (Labu Kuning, Daun Suji, Umbi Bit)

No. : . Tanggal uji : .
Nama : . No. WA : .
Jenis Kelamin : L/P

Intruksi

Dihadapan Anda terdapat 4 sampel kerupuk kolang-kaling dengan menggunakan pewarna alami yang telah digoreng. Cicipilah setiap sampel kerupuk secara **berurutan dari kiri ke kanan**. Berkumurlah menggunakan air mineral terlebih dahulu sebelum Anda menguji tiap sampel. Anda diminta untuk mengamati dan memberi nilai sesuai dengan tingkat kesukaan Anda terhadap parameter **warna, aroma, tekstur, rasa, dan overall (keseluruhan)**.

Nilai yang digunakan yaitu

- 1 = paling tidak disukai
- 2 = tidak suka
- 3 = agak suka
- 4 = suka
- 5 = paling disukai

NILAI ANTARA SATU SAMPEL DENGAN SAMPEL LAIN TIDAK BOLEH SAMA.

Atribut	Kode Sampel			
Warna				
Aroma				
Tekstur				
Rasa				
<i>Overall</i>				

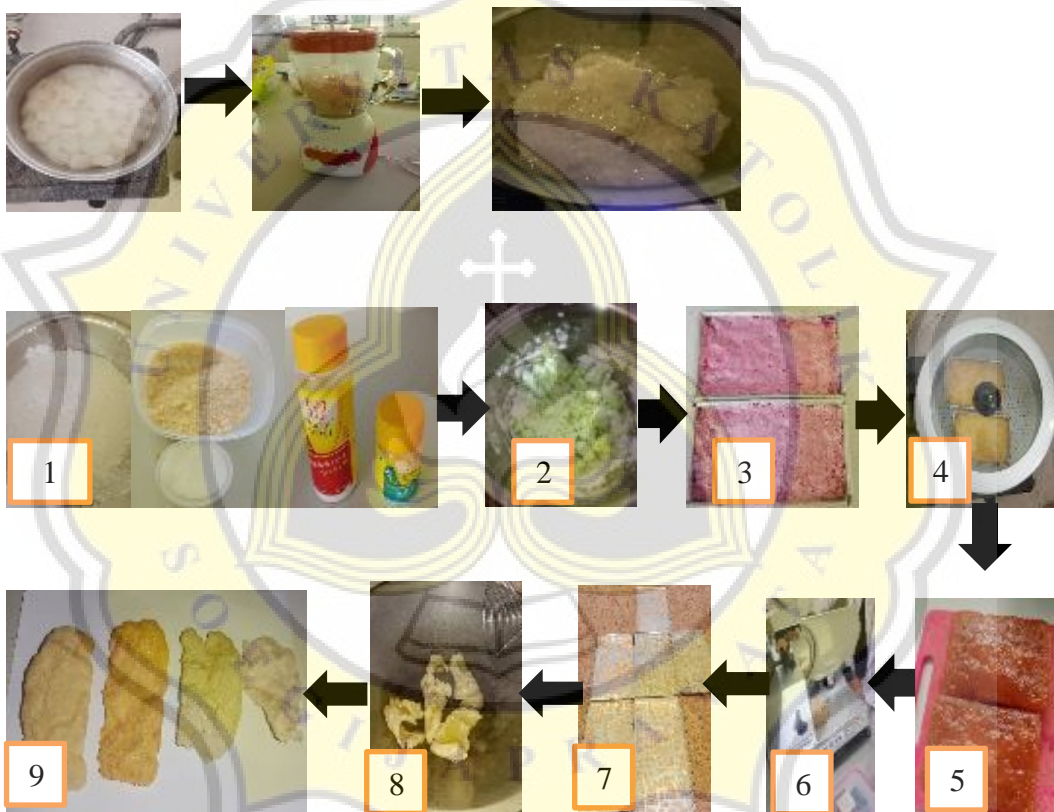
Terimakasih 😊

Lampiran 2. Proses Pembuatan Kerupuk

Pembuatan Pewarna Alami



Pembuatan Kerupuk Kolang-Kaling



Keterangan :

1. Persiapan bahan kerupuk
2. Pencampuran dan pengulenan
3. Pencetakan adonan dalam loyang
4. Pengukusan adonan
5. Pendinginan adonan
6. Pemotongan adonan
7. Penjemuran dengan sinar matahari
8. Pengorengan kerupuk
9. Kerupuk kolang-kaling matang

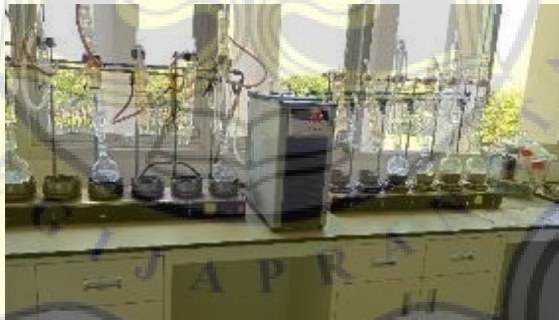
Lampiran 3. Dokumentasi



Gambar 8. Hasil Analisis Kadar Air



Gambar 9 . Hasil Analisis Lemak



Gambar 10. Soxhlet Analisis Lemak



Gambar 11. Tanur dalam Analisis Abu



Gambar 12. Tanur dalam Analisis Abu



Gambar 13. Alat Destruksi Protein



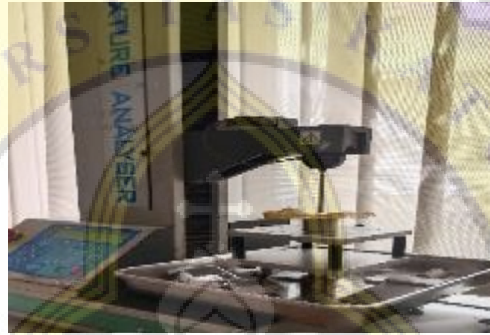
Gambar 14 . Hasil Analisis Protein



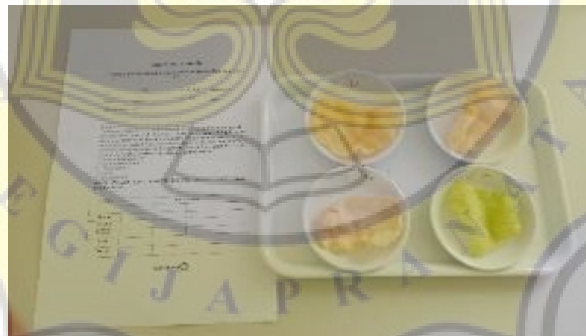
Gambar 15. Spektrofotometer untuk analisis antioksidan



Gambar 16 . Analisis Warna



Gambar 17. Analisis Tesktur dengan Texture Analyzer



Gambar 18 . Penyajian Sampel Analisis Sensori



Gambar 19. Panelis Analisis Sensori

Lampiran 4 . Analisis statistik

1. Uji Anova

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
L_mentah	Between Groups	890.019	3	296.673	440.028	.000
	Within Groups	10.454	20	.523		
	Total	700.473	23			
a_mentah	Between Groups	828.100	3	276.033	472.989	.000
	Within Groups	8.825	20	.441		
	Total	634.925	23			
b_mentah	Between Groups	890.019	3	296.673	440.028	.000
	Within Groups	10.454	20	.523		
	Total	700.473	23			
L_matang	Between Groups	585.434	3	195.145	436.739	.000
	Within Groups	8.936	20	.447		
	Total	594.370	23			
a_matang	Between Groups	247.295	3	82.432	357.296	.000
	Within Groups	4.614	20	.231		
	Total	251.909	23			
b_matang	Between Groups	694.888	3	231.629	799.774	.000
	Within Groups	6.792	20	.340		
	Total	700.680	23			
Tekstur	Between Groups	84113.261	3	28037.754	8.384	.001
	Within Groups	66880.619	20	3344.031		
	Total	150993.880	23			
Daya_kembang	Between Groups	937.264	3	312.421	10.598	.000
	Within Groups	589.569	20	29.478		
	Total	1526.833	23			

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Air_mentah	Between Groups	7.801	3	2.600	9.154	.001
	Within Groups	5.681	20	.284		
	Total	13.482	23			
Air_matang	Between Groups	12.180	3	4.060	5.379	.007
	Within Groups	15.096	20	.755		
	Total	27.276	23			
Abu	Between Groups	1.813	3	.604	19.020	.000
	Within Groups	.636	20	.032		
	Total	2.449	23			
Lemak	Between Groups	25.668	3	8.556	11.058	.000
	Within Groups	15.474	20	.774		
	Total	41.141	23			
Protein	Between Groups	4.591	3	1.530	52.321	.000
	Within Groups	.585	20	.029		
	Total	5.175	23			
Karbohidrat	Between Groups	132.775	3	44.258	29.310	.000
	Within Groups	30.200	20	1.510		
	Total	162.974	23			
Antioksidan_sblm_dikukus	Between Groups	8382.498	3	2794.166	1184.234	.000
	Within Groups	47.189	20	2.359		
	Total	8429.687	23			
Antioksidan_ssdh_dikukus	Between Groups	4875.432	3	1625.144	530.818	.000
	Within Groups	61.232	20	3.062		
	Total	4936.664	23			
Antioksidan_sblm_digoreng	Between Groups	2312.933	3	770.978	1132.972	.000
	Within Groups	13.610	20	.680		
	Total	2326.542	23			
Antioksidan_ssdh_digoreng	Between Groups	317.546	3	105.849	98.904	.000
	Within Groups	21.404	20	1.070		
	Total	338.951	23			

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
air_suhu30	Between Groups	152.593	4	38.148	81.735	.000
	Within Groups	11.668	25	.467		
	Total	164.261	29			
air_suhu40	Between Groups	178.103	4	44.776	116.668	.000
	Within Groups	9.595	25	.384		
	Total	187.697	29			
air_suhu50	Between Groups	174.114	4	43.529	111.431	.000
	Within Groups	8.766	25	.351		
	Total	182.880	29			
lemak_suhu30	Between Groups	1.704	4	.446	.066	.981
	Within Groups	163.671	25	6.547		
	Total	165.375	29			
lemak_suhu40	Between Groups	4.316	4	1.079	.191	.941
	Within Groups	141.037	25	5.641		
	Total	145.353	29			
lemak_suhu50	Between Groups	5.307	4	1.347	.240	.913
	Within Groups	140.145	25	5.606		
	Total	145.532	29			
tekstur_suhu30	Between Groups	38139.793	4	9534.948	4.128	.011
	Within Groups	57746.835	25	2309.657		
	Total	95886.228	29			
tekstur_suhu40	Between Groups	59009.056	4	13252.264	5.435	.003
	Within Groups	60958.897	25	2438.306		
	Total	119967.953	29			
tekstur_suhu50	Between Groups	56742.174	4	14185.543	5.468	.003
	Within Groups	64050.200	25	2594.326		
	Total	120792.374	29			

2. Uji Duncan

L_mentah					a_mentah					
Duncan ^a					Duncan ^a					
Jenis Kerupuk	N	Subset for alpha = 0.05				Jenis Kerupuk	N	Subset for alpha = 0.05		
		1	2	3	4			1	2	3
kerupuk pewarna daun suji	6	41.3400				kerupuk pewarna daun suji	6	-1.8850		
kerupuk pewarna labu kuning	6		44.3300			kerupuk kontrol	6		7.5133	
kerupuk pewarna umbi bit	6			47.3100		kerupuk pewarna labu kuning	6			10.5283
kerupuk kontrol	6				49.8200	kerupuk pewarna umbi bit	6			10.5933
Sig.		1.000	1.000	1.000	1.000	Sig.		1.000	1.000	.987

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

L_matang					b_mentah						
Duncan ^a					Duncan ^a						
Jenis Kerupuk	N	Subset for alpha = 0.05				Jenis Kerupuk	N	Subset for alpha = 0.05			
		1	2	3	4			1	2	3	4
kerupuk pewarna labu kuning	6	33.2250				kerupuk pewarna umbi bit	3	0.3100			
kerupuk pewarna daun suji	6		36.5400			kerupuk kontrol	3		13.5167		
kerupuk kontrol	6			42.7800		kerupuk pewarna daun suji	3			21.0937	
kerupuk pewarna umbi bit	6				45.9063	kerupuk pewarna labu kuning	3				22.2617
Sig.		1.000	1.000	1.000	1.000	Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

a_matang

Duncan^a

Jenis Kerupuk	N	Subset for alpha = 0.05			
		1	2	3	4
kerupuk pewarna daun suji	6	-0.0257			
kerupuk pewarna labu kuning	6		2.5067		
kerupuk kontrol	6			6.2200	
kerupuk pewarna umbi bit	6				7.3333
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.000.

b_matang

Duncan^a

Jenis Kerupuk	N	Subset for alpha = 0.05			
		1	2	3	4
kerupuk pewarna umbi bit	6	10.2850			
kerupuk kontrol	6		20.0050		
kerupuk pewarna daun suji	6			22.9067	
kerupuk pewarna labu kuning	6				23.5067
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.000.

Tekstur

Duncan^a

Jenis Kerupuk	N	Subset for alpha = 0.05	
		1	2
kerupuk kontrol	6	335.9750	
kerupuk pewarna daun suji	6	342.6367	
kerupuk pewarna labu kuning	6		428.5667
kerupuk pewarna umbi bit	6		476.6700
Sig.		.844	.165

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.000.

Daya_kembang

Duncan^a

Jenis Kerupuk	N	Subset for alpha = 0.05		
		1	2	3
kerupuk pewarna umbi bit	6	27.7778		
kerupuk pewarna labu kuning	6		35.7143	
kerupuk pewarna daun suji	6		42.0835	42.0835
kerupuk kontrol	6			43.6508
Sig.		1.000	.056	.618

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.000.

Air_mentah

Duncan^a

Jenis kerupuk	N	Subset for alpha = 0.05	
		1	2
kerupuk kontrol	6	6.9036	
kerupuk pewarna daun suji	6		8.0132
kerupuk pewarna labu kuning	6		8.1837
kerupuk pewarna umbi bit	6		8.3671
Sig.		1.000	.270

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.000.

Air_matang

Duncan^a

Jenis kerupuk	N	Subset for alpha = 0.05	
		1	2
kerupuk kontrol	6	1.7500	
kerupuk pewarna daun suji	6	2.0117	
kerupuk pewarna labu kuning	6		3.1350
kerupuk pewarna umbi bit	6		3.4233
Sig.		.608	.572

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.000.

Abu

Duncan^a

sampil	N	Subset for alpha = 0.05	
		1	2
kerupuk kontrol	6	.5933	
Kerupuk kolang-kaling pewarna alami umbi bit	6		1.1500
Kerupuk kolang-kaling pewarna daun suji	6		1.2250
Kerupuk kolang-kaling pewarna labu kuning	6		1.2817
Sig.		1.000	.240

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.000.

Lemak

Duncan^a

Jenis kerupuk	N	Subset for alpha = 0.05	
		1	2
kerupuk kontrol	6	25.0933	
kerupuk pewarna daun suji	6	25.2633	
kerupuk pewarna umbi bit	6		27.1717
kerupuk pewarna labu kuning	6		27.3100
Sig.		.741	.788

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.000.

Karbohidrat

Protein

Duncan^a

Jenis kerupuk	N	Subset for alpha = 0.05			
		1	2	3	4
kerupuk kontrol	6	.2770			
kerupuk pewarna daun suji	6		.0218		
kerupuk pewarna abu kuning	6			1.1278	
kerupuk pewarna umbi bit	6				1.3553
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

Duncan^a

Jenis kerupuk	N	Subset for alpha = 0.05	
		1	2
kerupuk pewarna umbi bit	6	66.8967	
kerupuk pewarna labu kuning	6	67.1510	
kerupuk pewarna daun suji	6		70.9757
kerupuk kontrol	6		72.2083
Sig.		.724	.079

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

antibiotik_sblm_pengukuran

Duncan^a

sampel	N	Subset for alpha = 0.05			
		1	2	3	4
kerupuk kontrol	6	21.9327			
kerupuk kolang-kaling pewarna alami umbi bit	6		52.0453		
kerupuk kolang-kaling pewarna daun suji	6			54.5690	
kerupuk kolang-kaling pewarna labu kuning	6				68.5300
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

antibiotik_sblm_pengukuran

Duncan^a

sampel	N	Subset for alpha = 0.05			
		1	2	3	4
kerupuk kontrol	6	15.2303			
kerupuk kolang-kaling pewarna alami umbi bit	6		40.1000		
kerupuk kolang-kaling pewarna daun suji	6			49.7627	
kerupuk kolang-kaling pewarna labu kuning	6				52.3625
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

antibiotik_sblm_dipanggang

Duncan^a

sampel	N	Subset for alpha = 0.05			
		1	2	3	4
kerupuk kontrol	6	13.4725			
kerupuk kolang-kaling pewarna alami umbi bit	6		22.7023		
kerupuk kolang-kaling pewarna daun suji	6			35.4105	
kerupuk kolang-kaling pewarna labu kuning	6				37.5680
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

antibiotik_sblm_dipanggang

Duncan^a

sampel	N	Subset for alpha = 0.05			
		1	2	3	4
kerupuk kontrol	6	2.4597			
kerupuk kolang-kaling pewarna alami umbi bit	6		6.1068		
kerupuk kolang-kaling pewarna daun suji	6			10.1128	
kerupuk kolang-kaling pewarna labu kuning	6				11.5730
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

air_suhu30

Duncan^a

Hari	N	Subset for alpha = 0.05			
		1	2	3	4
0	6	3.1330			
7	6		5.3517		
14	6			6.9950	
21	6				8.6400
28	6				9.3533
Sig.		1.000	1.000	1.000	.083

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

air_suhu40

Duncan^a

Hari	N	Subset for alpha = 0.05				
		1	2	3	4	5
0	6	3.1350				
7	6		5.0017			
14	6			7.0017		
21	6				8.7817	
28	6					9.7617
Sig.		1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

air_suhu50

Duncan^a

Hari	N	Subset for alpha = 0.05				
		1	2	3	4	5
0	6	3.1350				
7	6		5.5450			
14	6			7.7800		
21	6				8.7250	
28	6					9.8950
Sig.		1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

tekstur_suhu30

Duncan^a

Hari	N	Subset for alpha = 0.05	
		1	2
7	6	425.4187	
14	6	426.5733	
0	6	428.5667	
21	6	479.9167	479.9167
28	6		512.9167
Sig.		.083	.246

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

tekstur_suhu40

Duncan^a

Hari	N	Subset for alpha = 0.05	
		1	2
7	6	419.5350	
14	6	421.4417	
0	6	428.5667	
21	6		494.7350
28	6		519.7267
Sig.		.788	.389

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

tekstur_suhu50

Duncan^a

Hari	N	Subset for alpha = 0.05	
		1	2
7	6	477.0650	
0	6	428.5667	
14	6	433.6550	
21	6		511.3183
28	6		524.6003
Sig.		.035	.653

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.000.

3. Uji Kruskal wallis

Test Statistics^{a,b}

	warna	aroma	tekstur	rasa	overall
Chi-Square	9.088	15.242	22.743	25.729	25.828
df	3	3	3	3	3
Asymp. Sig.	.028	.002	.000	.000	.000

a. Kruskal Wallis Test
b. Grouping Variable: sampel

4. Uji Mann Whitney K0 dan K1

Test Statistics^a

	warna	aroma	tekstur	rasa	overall
Mann-Whitney U	1422.500	1339.500	1234.500	1223.000	1131.500
Wilcoxon W	3252.500	3169.500	3064.500	3053.000	2961.500
Z	-2.044	-2.488	-3.064	-3.150	-3.640
Asymp. Sig. (2-tailed)	.041	.013	.002	.002	.000

a. Grouping Variable: sampel

K0 dan K2

Test Statistics^a

	warna	aroma	tekstur	rasa	overall
Mann-Whitney U	1769.000	1691.000	1551.500	1382.000	1526.500
Wilcoxon W	3599.000	3521.000	3381.500	3212.000	3356.500
Z	-.167	-.585	-1.335	-2.251	-1.482
Asymp. Sig. (2-tailed)	.867	.558	.182	.024	.138

a. Grouping Variable: sampel

K0 dan K3

Test Statistics^a

	warna	aroma	tekstur	rasa	overall
Mann-Whitney U	1543.000	1302.000	1614.500	1577.000	1555.500
Wilcoxon W	3373.000	3132.000	3444.500	3407.000	3385.500
Z	-1.390	-2.677	-.995	-1.203	-1.323
Asymp. Sig. (2-tailed)	.165	.007	.320	.229	.186

a. Grouping Variable: sampel

K1 dan K2

Test Statistics^a

	warna	aroma	tekstur	rasa	overall
Mann-Whitney U	1511.000	1480.000	999.000	942.500	1004.500
Wilcoxon W	3341.000	3310.000	2829.000	2772.500	2834.500
Z	-1.563	-1.735	-4.316	-4.627	-4.316
Asymp. Sig. (2-tailed)	.118	.083	.000	.000	.000

a. Grouping Variable: sampel

K1 dan K3

Test Statistics^a

	warna	aroma	tekstur	rasa	overall
Mann-Whitney U	1272.500	951.000	1102.500	1091.500	1047.500
Wilcoxon W	3102.500	2781.000	2932.500	2921.500	2877.500
Z	-2.848	-4.569	-3.774	-3.845	-4.092
Asymp. Sig. (2-tailed)	.004	.000	.000	.000	.000

a. Grouping Variable: sampel

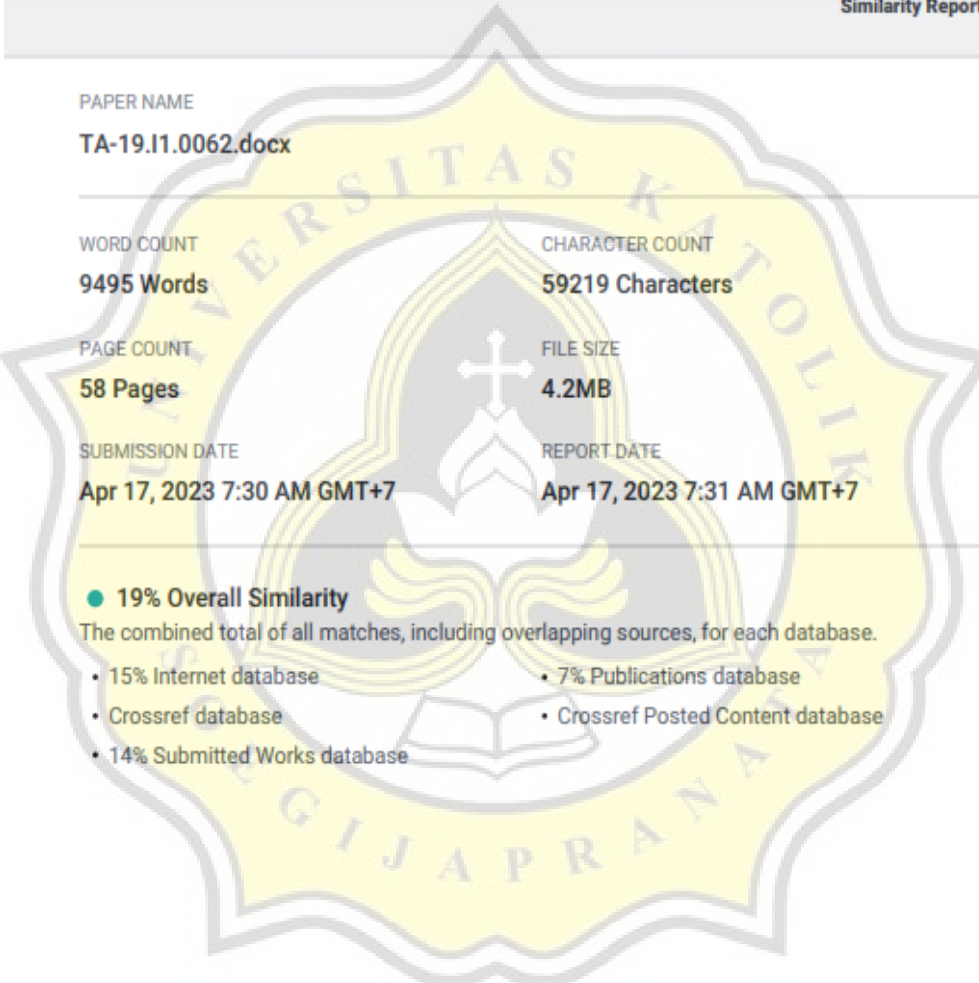
K2 dan K3

Test Statistics^a

	warna	aroma	tekstur	rasa	overall
Mann-Whitney U	1603.500	1258.000	1760.500	1674.500	1777.000
Wilcoxon W	3433.500	3088.000	3590.500	3504.500	3607.000
Z	-1.058	-2.925	-.212	-.674	-.124
Asymp. Sig. (2-tailed)	.290	.003	.832	.500	.901

a. Grouping Variable: sampel

Lampiran 4. Hasil Plagscan



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