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LAMPIRAN

1. Perhitungan Jumlah Enzim Yang Digunakan

   a. Selulase (*aqueous solution*) : ≥700 U/g
   Dikarenakan tidak adanya perbedaan perlakuan pada konsentrasi enzim, maka aktivitas spesifik enzim terhadap bahan yang digunakan, sama dengan aktivitas spesifik yang digunakan pada alfa amilase (4000 U/200 gram bahan)

   $\frac{4000 \text{ U per } 200 \text{ gram}}{700 \text{ U/gram}}$ = 5,714 gram/ 200 gram jahe merah

   Massa jenis selulase cair : 1,1-1,3 g/mL

   Jumlah selulase yang di pipet : $\frac{5{,}714\ g}{1{,}1\ g/mL}$ = 5,18 mL / 200 gram bahan

   Sehingga digunakan enzim selulase sebanyak 5,18 mL untuk setiap 200 gram jahe merah yang digunakan.

   b. Alfa Amilase (*lyophilized powder*) : 500-1500 U/mg
   Berdasarkan hasil penelitian pendahuluan, digunakan enzim alfa amilase dengan aktivitas enzim 4000 U/200 gram bahan

   $\frac{4000 \text{ U per } 200 \text{ gram}}{500 \text{ U/mg}}$ = 8 mg/ 200 gram bahan= 0,008 gram enzim/200 gram jahe merah

   Sehingga digunakan enzim alfa amilase bubuk sebanyak 0,008 gram untuk setiap 200 gram jahe merah yang digunakan.

2. Hasil Perhitungan Jumlah Rendemen

Yield (%) = (Bobot ekstrak yang dihasilkan/bobot bahan baku)x100

Perlakuan		Bobot Ekstrak yg dihasilkan (gram)	Bobot bahan baku (gram)	% Yield	Rata-rata
Selulase	K1U1	5.36	200	2.68	3.66
	K1U2	8.53	200	4.27	
	K1U3	8.05	200	4.03	
Alfa Amilase	K2U1	0.12	200	0.06	0.20
	K2U2	0.66	200	0.33	
	K2U3	0.43	200	0.22	
Ganda	K3U1	2.22	200	1.11	1.29
	K3U2	2.71	200	1.36	
	K3U3	2.82	200	1.41	

3. Hasil Uji Statistik Jumlah Rendemen

Descriptives

Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
		Lower Bound	Upper Bound		
.85715	.49487	1.5307	5.7893	2.68	4.27
.13577	.07839	-.1339	.5406	.06	.33
.16073	.09280	.8941	1.6926	1.11	1.41
1.59278	.53093	.4946	2.9432	.06	4.27

ANOVA

Rendemen

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.738	2	9.369	36.082	.000
Within Groups	1.558	6	.260		
Total	20.296	8			

Rendemen

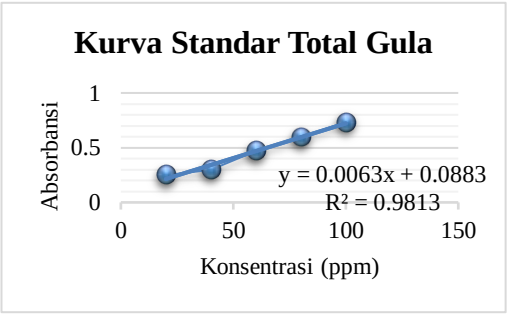
Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
K2	3	.2033		
K3	3		1.2933	
K1	3			3.6600
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

4. Hasil Perhitungan Analisis Kandungan Total Gula

Konsentrasi Larutan Standar (ppm)	Absorbansi
20	0.248
40	0.299
60	0.467
80	0.594
100	0.734



CARA 1

Total gula tiap gram sampel = (C.V.FP)/m dengan C: Total gula larutan (x), V: Volume ekstrak yang digunakan (mL), FP: Faktor pengenceran, m: Berat sampel yang digunakan (gram)

Perlakuan		Absorbansi (y)	Nilai X	FP	Berat sampel yang digunakan (g)	Volume yang digunakan (mL)	Total Gula (µg/mL)	Total Gula (µg/g sampel)	Total Gula (%)	Rata-rata (µg/g sampel)	Rata-rata (%)
Selulase	K1U1	0.296	32.968	200	0.01	1	6593.65	659365.08	65.94	86.47	86.47
	K1U2	0.386	47.254	200	0.01	1	9450.79	945079.37	94.51		
	K1U3	0.4	49.476	200	0.01	1	9895.24	989523.81	98.95		
Alfa Amilase	K2U1	0.355	42.333	200	0.01	1	8466.67	846666.67	84.67	67.52	67.52
	K2U2	0.249	25.508	200	0.01	1	5101.59	510158.73	51.02		
			33.444	200	0.01	1	6688.89	668888.89	66.89		
			46.460	160	0.01	1	7433.65	743365.08	74.34	55.37	55.37
			26.937	160	0.01	1	4309.84	430984.13	43.10		
			30.429	160	0.01	1	4868.57	486857.14	48.69		

CARA 2

Total gula tiap gram sampel = (Total gula larutan/konsentrasi larutan)*100

Perlakuan		Absorbansi (y)	Total Gula larutan (Nilai X (µg/mL)	Berat sampel yang dipakai (µg)	Volume pelarut (mL)	Konsentrasi larutan awal (µg/mL)	Konsentrasi akhir larutan (µg/mL)	Total Gula (%)	Rata-Rata (%)
Selulase	K1U1	0.296	32.968	10000	20	500	50	65.94	86.47
	K1U2	0.386	47.254	10000	20	500	50	94.51	
	K1U3	0.4	49.476	10000	20	500	50	98.95	
Alfa Amilase	K2U1	0.355	42.333	10000	20	500	50	84.67	67.52
	K2U2	0.249	25.508	10000	20	500	50	51.02	
	K2U3	0.299	33.444	10000	20	500	50	66.89	
Ganda	K3U1	0.381	46.460	10000	20	500	62.5	74.34	55.37
	K3U2	0.258	26.937	10000	20	500	62.5	43.10	
	K3U3	0.28	30.429	10000	20	500	62.5	48.69	

5. Hasil Uji Statistik Total Gula

Descriptives

Total Gula

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
K1	3	86.4667	17.91470	10.34306	41.9641	130.9692	65.94	98.95
K2	3	67.5267	16.83403	9.71913	25.7086	109.3447	51.02	84.67
K3	3	55.3767	16.65887	9.61800	13.9937	96.7596	43.10	74.34
Total	9	69.7900	20.11409	6.70470	54.3289	85.2511	43.10	98.95

ANOVA

Total Gula

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1472.934	2	736.467	2.505	.162
Within Groups	1763.678	6	293.946		
Total	3236.612	8			

Total Gula

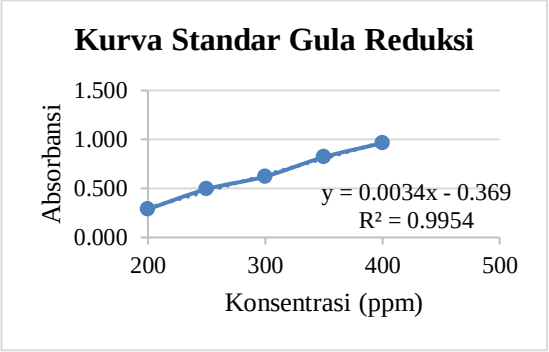
Duncan

Perlakuan	N	Subset for alpha = 0.05
		1
K3	3	55.3767
K2	3	67.5267
K1	3	86.4667
Sig.		.076

Means for groups in homogeneous subsets are displayed.

6. Hasil Perhitungan Analisis Kandungan Gula Reduksi

Konsentrasi Larutan Standar (ppm)	Absorbansi
200	0.288
250	0.493
300	0.622
350	0.820
400	0.963



CARA 1

Gula reduksi tiap gram sampel = (Gula reduksi larutan dari kurva standar)/konsentrasi larutan)*100 x=(y+0.369)/0.0034

Perlakuan		Absorbansi (y)	Nilai X (gula reduksi larutan µg/mL)	Berat sampel (mg)	Berat sampel (µg)	Volume pelarut (mL)	konsentrasi larutan (µg/mL)	Volume yang dipakai (mL)	gula reduksi (%)	Rata-Rata (%)
Selulase	K1U1	0.462	244.412	100	100000	5	20000	0.75	1.22	1.24
	K1U2	0.471	247.059	100	100000	5	20000	0.75	1.24	
	K1U3	0.487	251.765	100	100000	5	20000	0.75	1.26	
Alfa Amilase	K2U1	0.500	255.588	100	100000	30	3333	0.75	7.67	7.81
	K2U2	0.519	261.176	100	100000	30	3333	0.75	7.84	
	K2U3	0.531	264.706	100	100000	30	3333	0.75	7.94	
Ganda	K3U1	0.344	209.706	100	100000	30	3333	0.75	6.29	6.16
	K3U2	0.336	207.353	100	100000	30	3333	0.75	6.22	
	K3U3	0.308	199.118	100	100000	30	3333	0.75	5.97	

CARA 2

Gula reduksi tiap gram sampel = (C.V.FP)/g dengan C: konsentrasi gula reduksi larutan (x), V: Volume ekstrak yang digunakan (mL), FP: Faktor pengenceran, g: Berat sampel yang digunakan (gram)

Perlakuan		Absorbansi (y)	Nilai X (Konsentrasi gula reduksi µg/mL)	FP	Berat sampel (mg)	Berat sampel (g)	Volume pelarut (mL)	Volume yang dipakai (mL)	Gula pereduksi (µg/g sampel)	Gula Pereduksi (%)	Rata-Rata
Selulase	K1U1	0.462	244.412	6.66	100	0.10	5	0.75	12208.37	1.22	1.24
	K1U2	0.471	247.059	6.66	100	0.10	5	0.75	12340.59	1.23	
	K1U3	0.487	251.765	6.66	100	0.10	5	0.75	12575.65	1.26	
Alfa Amilase	K2U1	0.500	255.588	40.00	100	0.10	30	0.75	76676.47	7.67	7.81
	K2U2	0.519	261.176	40.00	100	0.10	30	0.75	78352.94	7.84	
	K2U3	0.531	264.706	40.00	100	0.10	30	0.75	79411.76	7.94	
Ganda	K3U1	0.344	209.706	40.00	100	0.10	30	0.75	62911.76	6.29	6.16
	K3U2	0.336	207.353	40.00	100	0.10	30	0.75	62205.88	6.22	
	K3U3	0.308	199.118	40.00	100	0.10	30	0.75	59735.29	5.97	

7. Hasil Uji Statistik Gula Reduksi

Descriptives

Gula Reduksi

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
			.02082	.01202	1.1850	1.2884	1.22	1.26
			.13650	.07881	7.4776	8.1558	7.67	7.94
			.16823	.09713	5.7421	6.5779	5.97	6.29
			2.96595	.98865	2.7913	7.3509	1.22	7.94

ANOVA

Gula Reduksi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	70.280	2	35.140	2.226E3	.000
Within Groups	.095	6	.016		
Total	70.375	8			

Gula Reduksi

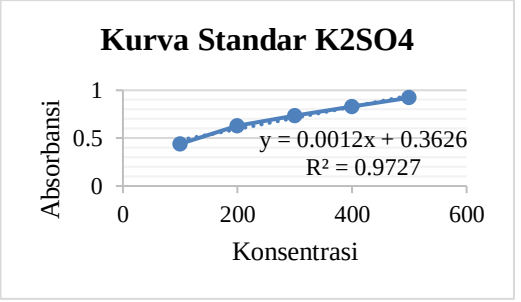
Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
K1	3	1.2367		
K3	3		6.1600	
K2	3			7.8167
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

8. Hasil Perhitungan Analisis Kandungan Sufat

Konsentrasi Larutan Standar (µg/mL)	Absorbansi
100	0.44
200	0.631
300	0.734
400	0.829
500	0.922



Kandungan sulfat tiap gram sampel = (Kandungan sulfat larutan uji/Konsentrasi larutan uji)x100

Perlakuan		Absorbansi (y)	Kadar total sulfat Larutan (nilai x) (µg/mL)	Berat sampel yg dipakai (mg)	Volume pelarut (L)	Konsentrasi larutan (ppm)	Total Sulfat (%)	Rata-rata
Selulase	K1U1	0.524	134.500	20	0.02	1000	13.45	10.2
	K1U2	0.436	61.167	20	0.02	1000	6.12	
	K1U3	0.495	110.333	20	0.02	1000	11.03	
Alfa Amilase	K2U1	0.529	138.667	20	0.02	1000	13.87	18.0
	K2U2	0.526	136.167	20	0.02	1000	13.62	
	K2U3	0.679	263.667	20	0.02	1000	26.37	
Ganda	K3U1	0.778	346.167	20	0.05	400	86.54	102.7
	K3U2	0.885	435.333	20	0.05	400	108.83	
	K3U3	0.903	450.333	20	0.05	400	112.58	

9. Hasil Uji Statistik Kandungan Sulfat

Descriptives

Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
		Lower Bound	Upper Bound		
3.73482	2.15630	.9222	19.4778	6.12	13.45
7.29012	4.20895	-.1563	36.0630	13.62	26.37
14.07710	8.12742	67.6805	137.6195	86.54	112.58
45.15413	15.05138	8.8926	78.3096	6.12	112.58

ANOVA

Sulfat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15780.642	2	7890.321	89.237	.000
Within Groups	530.519	6	88.420		
Total	16311.161	8			

Sulfat

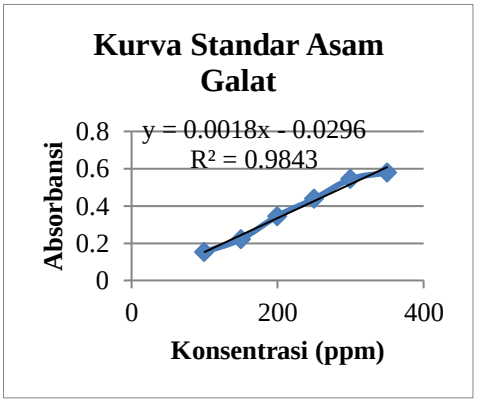
Duncan

Perlakuan	N	Subset for alpha = 0.05	
		1	2
K1	3	10.2000	
K2	3	17.9533	
K3	3		102.6500
Sig.		.352	1.000

Means for groups in homogeneous subsets are displayed.

10. Hasil Perhitungan Analisis Kandungan Total Fenolik

Pelarut Etanol 70%		
Panjang gelombang	Konsentrasi (µg/mL)	Absorbansi
782	100	0.153
	150	0.222
	200	0.346
	250	0.438
	300	0.544
	350	0.579



Rumus Total Fenolik = (C.V.FP)/m ; dengan C: Kadar fenolik larutan (x), V: Volume ekstrak yang digunakan (mL), FP: Faktor pengenceran, m: Berat sampel yang digunakan (gram)

Perlakuan		Absorbansi (y)	Kadar Fenolik Larutan (nilai x) (µg/mL)	Volume ekstrak yang digunakan (mL)	FP	Berat sampel yang digunakan (g)	Total Fenolik (µg GAE/g sampel)	Rata-rata	Total Fenol (%GAE)	Rata-rata (%GAE)	Total Fenol (mg GAE/g sampel)	Rata Rata Total Fenol (mg GAE/g sampel)
Selulase	K1U1	0.328	198.667	0.02	100	0.1	3973.333	4295.56	0.397	0.430	3.973	4.30
	K1U2	0.342	206.444	0.02	100	0.1	4128.889		0.413		4.129	
	K1U3	0.401	239.222	0.02	100	0.1	4784.444		0.478		4.784	
Alfa Amilase	K2U1	0.326	197.556	0.02	100	0.1	3951.111	3943.70	0.395	0.394	3.951	3.94
	K2U2	0.329	199.222	0.02	100	0.1	3984.444		0.398		3.984	
	K2U3	0.321	194.778	0.02	100	0.1	3895.556		0.390		3.896	
Ganda	K3U1	0.468	276.444	0.02	250	0.1	13822.222	11081.48	1.382	1.108	13.822	11.08
	K3U2	0.326	197.556	0.02	250	0.1	9877.778		0.988		9.878	
	K3U3	0.314	190.889	0.02	250	0.1	9544.444		0.954		9.544	

11. Hasil Uji Statistik Kandungan Total Fenolik

Descriptives

Total Fenolik

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
K1	3	.4300	.04359	.02517	.3217	.5383	.40	.48
K2	3	.3967	.00577	.00333	.3823	.4110	.39	.40
K3	3	1.1067	.23756	.13715	.5165	1.6968	.95	1.38
Total	9	.6444	.36739	.12246	.3620	.9268	.39	1.38

ANOVA

Total Fenolik

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.963	2	.482	24.751	.001
Within Groups	.117	6	.019		
Total	1.080	8			

Total Fenolik

Duncan

Perlakuan	N	Subset for alpha = 0.05	
		1	2
K2	3	.3967	
K1	3	.4300	
K3	3		1.1067
Sig.		.780	1.000

Means for groups in homogeneous subsets are displayed.

12. Hasil Perhitungan Aktivitas Antioksidan

Perlakuan Enzim Tunggal Selulase (K1) Ulangan 1

K1U1				
Konsentrasi (ppm)	**Absorbansi kontrol (A0)**	**Absorbansi sampel (A1)**	**A2**	**DRSA (%)**
100	0.170	0.164	0.006	7.06
200	0.170	0.173	0.013	5.88
300	0.170	0.164	0.015	12.35
400	0.170	0.168	0.021	13.53
500	0.170	0.141	0.024	31.18

Perlakuan Enzim Tunggal Selulase (K1) Ulangan 2

K1U2				
Konsentrasi (ppm)	**Absorbansi kontrol (A0)**	**Absorbansi sampel (A1)**	**A2**	**DRSA (%)**
100	0.170	0.164	0.005	6.47
200	0.170	0.180	0.024	8.24
300	0.170	0.171	0.019	10.59
400	0.170	0.164	0.021	15.88
500	0.170	0.155	0.023	22.35

Perlakuan Enzim Tunggal Selulase (K1) Ulangan 3

K1U3				
Konsentrasi (ppm)	**Absorbansi kontrol (A0)**	**Absorbansi sampel (A1)**	**A2**	**DRSA (%)**
100	0.170	0.177	0.007	0.00
200	0.170	0.181	0.027	9.41
300	0.170	0.167	0.016	11.18
400	0.170	0.164	0.024	17.65
500	0.170	0.150	0.028	28.24

Perlakuan Enzim Tunggal Alfa Amilase (K1) Ulangan 1

K2U1				
Konsentrasi (ppm)	**Absorbansi kontrol (A0)**	**Absorbansi sampel (A1)**	**A2**	**DRSA (%)**
100	0.170	0.175	0.010	2.94
200	0.170	0.174	0.013	5.29
300	0.170	0.168	0.027	17.06
400	0.170	0.147	0.024	27.65
500	0.170	0.148	0.031	31.18

Perlakuan Enzim Tunggal Alfa Amilase (K2) Ulangan 2

K2U2				
Konsentrasi (ppm)	**Absorbansi kontrol (A0)**	**Absorbansi sampel (A1)**	**A2**	**DRSA (%)**
100	0.170	0.178	0.008	0.00
200	0.170	0.169	0.010	6.47
300	0.170	0.142	0.020	28.24
400	0.170	0.138	0.021	31.18
500	0.170	0.132	0.030	40.00

Perlakuan Enzim Tunggal Alfa Amilase (K2) Ulangan 3

K2U3				
Konsentrasi (ppm)	**Absorbansi kontrol (A0)**	**Absorbansi sampel (A1)**	**A2**	**DRSA (%)**
100	0.170	0.175	0.010	2.94
200	0.170	0.169	0.013	8.24
300	0.170	0.155	0.017	18.82
400	0.170	0.145	0.017	24.71
500	0.170	0.138	0.029	35.88

Perlakuan Ganda (Kombinasi Selulase - Alfa Amilase) (K3) Ulangan 1

K3U1				
Konsentrasi (ppm)	**Absorbansi kontrol (A0)**	**Absorbansi sampel (A1)**	**A2**	**DRSA (%)**
100	0.170	0.153	0.012	17.06
200	0.170	0.143	0.015	24.71
300	0.170	0.149	0.038	34.71
400	0.170	0.140	0.051	47.65
500	0.170	0.127	0.061	61.18

Perlakuan Ganda (Kombinasi Selulase - Alfa Amilase) (K3) Ulangan 2

K3U2				
Konsentrasi (ppm)	**Absorbansi kontrol (A0)**	**Absorbansi sampel (A1)**	**A2**	**DRSA (%)**
100	0.111	0.072	0.009	43.24
200	0.111	0.076	0.013	43.24
300	0.111	0.070	0.023	57.66
400	0.111	0.060	0.031	73.87
500	0.111	0.065	0.040	77.48

Perlakuan Ganda (Kombinasi Selulase - Alfa Amilase) (K3) Ulangan 3

K3U3				
Konsentrasi (ppm)	**Absorbansi kontrol (A0)**	**Absorbansi sampel (A1)**	**A2**	**DRSA (%)**
100	0.111	0.081	0.008	34.23
200	0.111	0.077	0.016	45.05
300	0.111	0.070	0.024	58.56
400	0.111	0.060	0.030	72.97
500	0.111	0.067	0.038	73.87

Rata-rata %DRSA Perlakuan Enzim Tunggal Selulase

DRSA (%) Perlakuan Kombinasi Enzim (PJMSA)					
Konsentrasi (ppm)	**K3U1**	**K3U2**	**K3U3**	**Rata-rata**	**St. deviasi**
100	17.06	43.24	34.23423	31.51	13.303
200	24.71	43.24	45.04505	37.66	11.259
300	34.71	57.66	58.55856	50.31	13.519
400	47.65	73.87	72.973	64.83	14.889
500	61.18	77.48	73.87387	70.84	8.563

Rata-rata %DRSA Perlakuan Enzim Tunggal Alfa Amilase

DRSA (%) Perlakuan Enzim Alfa Amilase (PJMA)					
	K2U1	**K2U2**	**K2U3**	**Rata-rata**	**st. deviasi**
	2.94	0.00	2.94	1.96	1.698
	5.29	6.47	8.24	6.67	1.480
	17.06	28.24	18.82	21.37	6.008
	27.65	31.18	24.71	27.84	3.240
	31.18	40.00	35.88	35.69	4.415

Rata-rata %DRSA Perlakuan Ganda (Kombinasi Enzim Selulase – Alfa Amilase)

DRSA (%) Perlakuan Kombinasi Enzim (PJMSA)					
Konsentrasi (ppm)	**K3U1**	**K3U2**	**K3U3**	**Rata-rata**	**St. deviasi**
100	17.06	43.24	34.23	31.51	13.303
200	24.71	43.24	45.04	37.66	11.259
300	34.71	57.66	58.55	50.31	13.519
400	47.65	73.87	72.97	64.83	14.889
500	61.18	77.48	73.87	70.84	8.563

13. Hasil Uji Statistik Aktivitas Antioksidan

Descriptives

%DRSA

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
K1	15	13.3340	8.54160	2.20543	8.6038	18.0642	.00	31.18
K2	15	18.7067	13.51068	3.48844	11.2247	26.1886	.00	40.00
K3	15	51.0323	18.88314	4.87561	40.5752	61.4894	17.06	77.48
Total	45	27.6910	21.86938	3.26009	21.1207	34.2613	.00	77.48

ANOVA

%DRSA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12474.880	2	6237.440	30.572	.000
Within Groups	8568.983	42	204.023		
Total	21043.863	44			

%DRSA

Duncan

Perlakuan	N	Subset for alpha = 0.05	
		1	2
K1	15	13.3340	
K2	15	18.7067	
K3	15		51.0323
Sig.		.309	1.000

Means for groups in homogeneous subsets are displayed.

14. Data Hasil Penelitian Aktivitas Antibakteri

Sampel/ Konsentrasi (ppm)		Diameter Zona Hambat (mm)			
		***Escherichia coli* ATCC**	***Staphylococcus aureus* ATCC**	***Salmonella typhi* ATCC**	***Bacillus* sp.**
PJMS	K1 50	8.90	7.70	7.10	8.30
	K1 100	10.00	7.65	7.15	8.35
	K1 150	12.55	7.20	8.30	11.25
PJMA	K2 50	9.05	9.30	6.45	8.25
	K2 100	9.90	7.35	7.70	8.10
	K2 150	13.30	8.80	7.90	10.80
PJMSA	K3 50	8.20	8.10	7.05	7.60
	K3 100	10.40	7.15	7.50	8.05
	K3 150	10.45	8.45	8.80	11.00
Kontrol Positif (Ciprofloxacin)		25.10	31.40	37.35	28.55

15. Hasil Uji Statistik Aktivitas Antibakteri

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Diameter Zona Hambat (mm) Terhadap E.Coli	PJMS	3	10.4833	1.87239	1.08102	5.8321	15.1346	8.90	12.55
	PJMA	3	10.7500	2.24889	1.29840	5.1635	16.3365	9.05	13.30
	PJMSA	3	9.6833	1.28485	.74181	6.4916	12.8751	8.20	10.45
	Total	9	10.3056	1.66873	.55624	9.0229	11.5883	8.20	13.30
Diameter Zona Hambat (mm) Terhadap Salmonella	PJMS	3	7.5167	.67885	.39193	5.8303	9.2030	7.10	8.30
	PJMA	3	7.3500	.78581	.45369	5.3979	9.3021	6.45	7.90
	PJMSA	3	7.7833	.90875	.52467	5.5259	10.0408	7.05	8.80
	Total	9	7.5500	.71545	.23848	7.0001	8.0999	6.45	8.80
Diameter Zona Hambat (mm) Terhadap S Aureus	PJMS	3	7.5167	.27538	.15899	6.8326	8.2007	7.20	7.70
	PJMA	3	8.4833	1.01283	.58476	5.9673	10.9994	7.35	9.30
	PJMSA	3	7.9000	.67268	.38837	6.2290	9.5710	7.15	8.45
	Total	9	7.9667	.75250	.25083	7.3882	8.5451	7.15	9.30
Diameter Zona Hambat (mm) Terhadap Bacillus sp	PJMS	3	9.3000	1.68893	.97511	5.1045	13.4955	8.30	11.25
	PJMA	3	9.0500	1.51740	.87607	5.2806	12.8194	8.10	10.80
	PJMSA	3	8.8833	1.84684	1.06628	4.2955	13.4711	7.60	11.00
	Total	9	9.0778	1.47460	.49153	7.9443	10.2113	7.60	11.25

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Diameter Zona Hambat (mm) Terhadap E.Coli	Between Groups	1.849	2	.924	.272	.771
	Within Groups	20.428	6	3.405		
	Total	22.277	8			
Diameter Zona Hambat	Between Groups	.287	2	.143	.226	.804
	Within Groups	3.808	6	.635		
	Total	4.095	8			
	Between Groups	1.422	2	.711	1.372	.323
	Within Groups	3.108	6	.518		
	Total	4.530	8			
	Between Groups	.264	2	.132	.046	.955
	Within Groups	17.132	6	2.855		
	Total	17.396	8			

16. Lembar Spesifikasi Enzim Selulase

SIGMA-ALDRICH®

sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Product Specification

Product Name:
Cellulase from Trichoderma reesei – aqueous solution, ≥700 units/g

Product Number:	**C2730**
CAS Number:	9012-54-8
MDL:	MFCD00081510

Storage Temperature: 2 - 8 °C

TEST	Specification
Density	1.10 - 1.30 g/ml
Note	----------
Celluclast is a registered trademark of Novozymes Corp.	
Enzymatic Activity	≥ 700
EGU/G	
Beta-Glucanase units	

Specification: PRD.0.ZQ5.10000079948

- 6.0, and the optimal temperature range is 50 - 60°C.

ty of Product C2730, Cellulase?

e to a Novozyme cellulase standard. The assay utilizes carboxymethyl cellulose (CMC) as the
pH 6.0.

17. Lembar Spesifikasi Enzim Alfa Amilase

SIGMA-ALDRICH®

sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Product Specification

Product Name:
α-Amylase from Bacillus licheniformis – lyophilized powder, 500–1,500 units/mg protein, 93–100% (SDS-PAGE)

Product Number: **A4551**

MDL: MFCD00081319

Storage Temperature: 2 - 8 °C

TEST	Specification
% Protein (BCA)	60 - 80
units/mg protein	500 - 1500
One unit will liberate 1.0 mg of Maltose from starch in 3 min at pH 6.9 at 20 deg C.	
SDS-PAGE	93 - 100 %

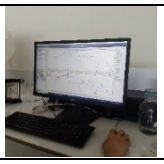
Specification: PRD.1.ZQ5.10000040083

18. Dokumentasi Penelitian

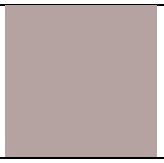
Ekstraksi Polisakarida Jahe Merah Metode Enzimatis

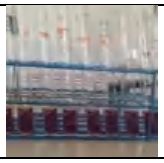
Sampel Polisakarida dari Jahe Merah

Penentuan Gugus Fungsi dengan FT-IR

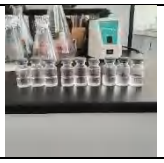



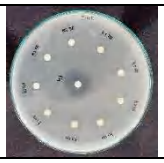
Uji Aktivitas Antioksidan

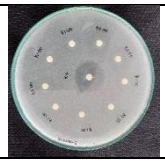




Uji Aktivitas Antibakteri



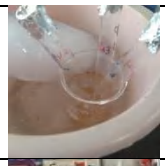


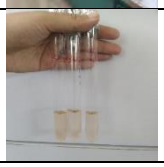
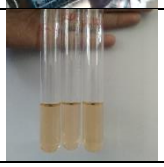


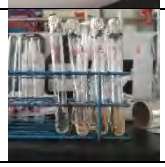
Analisis Kandungan Total Gula







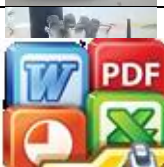





Analisis Kandungan Gula Pereduksi Metode DNS





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		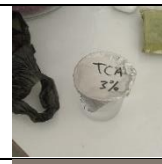		
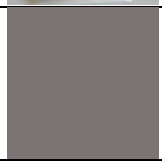	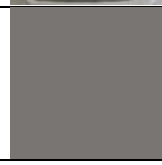	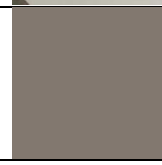		
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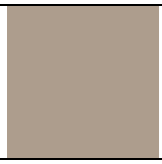				

RIWAYAT HIDUP PENULIS

Elok Fai Qatul Faniyah lahir di Makassar, 24 Juli 2001 merupakan anak pertama dari dua bersaudara dari pasangan bapak Basuki Rachmat dan ibu Ma'rifatul Hikmah. Jenjang yang telah ditempuh oleh penulis, yaitu:

1. TK Idhata II Ela-Ela Bulukumba (2006-2007)
2. SDN 7 Matajang (2007-2008)
3. SDN 184 Palambarae (2008-2013)
4. SMPN 9 Bulukumba (2013-2016)
5. SMAN 1 Bulukumba (2016-2019)

Tahun 2019, penulis diterima di Perguruan Tinggi Negeri Universitas Hasanuddin melalui jalur penerimaan mahasiswa baru SBMPTN (Seleksi Bersama Masuk Perguruan Tinggi Negeri) Program Strata Satu (S1) dan tercatat sebagai Mahasiswa Program Studi Ilmu dan Teknologi Pangan, Departeman Teknologi Pertanian, Fakultas Pertanian, Universitas Hasanuddin, Makassar.

Selama menempuh pendidikan di jenjang S1, penulis pernah menjadi asisten Laboratorium Aplikasi Bioteknologi Pangan pada tahun 2022. Penulis juga telah menempuh program magang di UPTD Balai Pengujian dan Sertifikasi Mutu Barang (BPSMB) Disperindag Provinsi Sulawesi Selatan pada tahun 2022. Pada tahun 2020, penulis pernah menjadi finalis kegiatan National Business Plan Competition Gebyar Mahasiswa Wirausaha Nasional 3 di Universitas Negeri Padang. Selain itu, penulis aktif mengikuti kegiatan upload proposal Program Kreativitas Mahasiswa (PKM) pada tahun 2019-2022 dan penulis merupakan salah satu peserta peraih pendanaan PKM 2021 dalam bidang PKM Kewirausahaan (PKM-K) dengan judul "I-WAKE DRINK : Inovasi Minuman Sinbiotik Pure Pisang Ambon Diperkaya Antioksidan dari Jambu Biji Berbasis Water Kefir sebagai *Immunity Booster*", kemudian penulis juga merupakan salah satu peserta peraih pendanaan PKM 2022 dalam bidang PKM Riset Eksakta (PKM-RE) dengan judul "*Smart-active Packaging* Berbasis Bioindikator Kulit Buah Naga dan Bunga Telang serta Ekstrak Minyak Atsiri Lempuyang dalam Memonitor dan Mempertahankan Kualitas Daging".