7. LAMPIRAN

Lampiran 1. Uji Normalitas Total Fenolik, Antioksidan, Lightness, a dan b

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
polifenol	.049	243	.200*	.982	243	.003
antioksidan	.054	243	.085	.982	243	.004
warna L	.051	243	.200*	.993	243	.276
warna a	.052	243	.200*	.980	243	.002
warna b	.041	243	.200*	.986	243	.016

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

a. Lilliefors Significance Correction

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	suhu pengeringan	Statistic	df	Sig.	Statistic	df	Sig.
polifenol	45	.098	81	.053	.949	81	.003
	50	.091	81	.096	.961	81	.015
	55	.094	81	.076	.958	81	.009
antioksidan	45	.097	81	.056	.953	81	.005
	50	.083	81	.200*	.957	81	.009
	55	.097	81	.055	.944	81	.001
warna L	45	.097	81	.056	.969	81	.048
	50	.078	81	.200*	.972	81	.072
	55	.074	81	.200*	.976	81	.127
warna a	45	.085	81	.200*	.965	81	.026
	50	.096	81	.062	.946	81	.002
	55	.097	81	.058	.957	81	.009
warna b	45	.096	81	.063	.927	81	.000
	50	.086	81	.200*	.956	81	.007
	55	.089	81	.172	.955	81	.007

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

a. Lilliefors Significance Correction

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	waktu penyeduhan	Statistic	df	Sig.	Statistic	df	Sig.
polifenol	0,5 menit	.114	27	.200*	.961	27	.382
	3 menit	.116	27	.200*	.951	27	.224
	6 menit	.152	27	.112	.957	27	.310
	9 menit	.149	27	.130	.933	27	.081
	12 menit	.137	27	.200*	.936	27	.095
	15 menit	.165	27	.056	.919	27	.037
	18 menit	.158	27	.083	.937	27	.104
	21 menit	.151	27	.114	.965	27	.474
	24 menit	.156	27	.089	.919	27	.037
antioksidan	0,5 menit	.124	27	.200*	.946	27	.167
	3 menit	.166	27	.053	.941	27	.129
	6 menit	.153	27	.107	.943	27	.143
	9 menit	.192	27	.012	.909	27	.022
	12 menit	.158	27	.081	.945	27	.163
	15 menit	.150	27	.124	.922	27	.044
	18 menit	.132	27	.200*	.967	27	.526
	21 menit	.155	27	.095	.963	27	.425
	24 menit	.164	27	.061	.948	27	.191
warna L	0,5 menit	.150	27	.122	.969	27	.571
	3 menit	.103	27	.200*	.970	27	.610
	6 menit	.099	27	.200*	.973	27	.671
	9 menit	.164	27	.061	.909	27	.022
	12 menit	.098	27	.200*	.979	27	.846
	15 menit	.124	27	.200*	.946	27	.175
	18 menit	.122	27	.200*	.922	27	.044
	21 menit	.153	27	.102	.946	27	.168
	24 menit	.166	27	.054	.923	27	.046
warna a	0,5 menit	.113	27	.200*	.948	27	.187
	3 menit	.160	27	.074	.942	27	.139
	6 menit	.162	27	.065	.915	27	.030
	9 menit	.093	27	.200*	.982	27	.908
	12 menit	.161	27	.071	.930	27	.068
	15 menit	.155	27	.096	.944	27	.152
	18 menit	.125	27	.200*	.961	27	.387
	21 menit	.138	27	.200*	.934	27	.089
	24 menit	.158	27	.082	.943	27	.145
warna b	0,5 menit	.157	27	.085	.883	27	.006
	3 menit	.141	27	.177	.891	27	.008
	6 menit	.154	27	.097	.949	27	.199
	9 menit	.130	27	.200*	.947	27	.182
	12 menit	.128	27	.200*	.947	27	.179
	15 menit	.161	27	.069	.926	27	.055
	18 menit	.155	27	.096	.928	27	.062
	21 menit	.114	27	.200*	.946	27	.171
	24 menit	.137	27	.200*	.950	27	.214

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

a. Lilliefors Significance Correction

Lampiran 2. Uji Homogenitas

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
polifenol	Based on Mean	.011	2	240	.989
	Based on Median	.003	2	240	.997
	Based on Median and with adjusted df	.003	2	226.205	.997
	Based on trimmed mean	.011	2	240	.989
antioksidan	Based on Mean	2.561	2	240	.079
	Based on Median	2.575	2	240	.078
	Based on Median and with adjusted df	2.575	2	238.133	.078
	Based on trimmed mean	2.598	2	240	.077
warna L	Based on Mean	.995	2	240	.371
	Based on Median	.875	2	240	.418
	Based on Median and with adjusted df	.875	2	229.716	.418
	Based on trimmed mean	.970	2	240	.380
warna a	Based on Mean	5.140	2	240	.007
	Based on Median	4.930	2	240	.008
	Based on Median and with adjusted df	4.930	2	218.265	.008
	Based on trimmed mean	5.125	2	240	.007
warna b	Based on Mean	.047	2	240	.954
	Based on Median	.067	2	240	.936
	Based on Median and with adjusted df	.067	2	236.209	.936
	Based on trimmed mean	.064	2	240	.938

Lampiran 3. Uji Two Way Anova

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	polifenol	1076.606[a]	26	41.408	201.787	.000
	antioksidan	23719.898[b]	26	912.304	68.329	.000
	warna L	430.009[c]	26	16.539	66.870	.000
	warna a	156.540[d]	26	6.021	71.669	.000
	warna b	766.454[e]	26	29.479	97.394	.000
Intercept	polifenol	20707.598	1	20707.598	100911.284	.000
	antioksidan	1113390.165	1	1113390.165	83389.796	.000
	warna L	46845.282	1	46845.282	189405.745	.000
	warna a	747.271	1	747.271	8895.186	.000
	warna b	6758.726	1	6758.726	22329.803	.000
X1	polifenol	69.098	2	34.549	168.362	.000
	antioksidan	1025.097	2	512.548	38.388	.000
	warna L	73.268	2	36.634	148.120	.000
	warna a	5.089	2	2.544	30.288	.000
	warna b	17.060	2	8.530	28.182	.000
X2	polifenol	978.740	8	122.342	596.194	.000
	antioksidan	21901.627	8	2737.703	205.046	.000
	warna L	352.250	8	44.031	178.028	.000
	warna a	146.784	8	18.348	218.407	.000
	warna b	728.994	8	91.124	301.061	.000
X1 * X2	polifenol	28.768	16	1.798	8.762	.000
	antioksidan	793.174	16	49.573	3.713	.000
	warna L	4.490	16	.281	1.135	.324
	warna a	4.667	16	.292	3.472	.000
	warna b	20.399	16	1.275	4.212	.000
Error	polifenol	44.324	216	.205		
	antioksidan	2883.953	216	13.352		
	warna L	53.423	216	.247		
	warna a	18.146	216	.084		
	warna b	65.378	216	.303		
Total	polifenol	21828.528	243			
	antioksidan	1139994.017	243			
	warna L	47328.714	243			
	warna a	921.957	243			
	warna b	7590.558	243			
Corrected Total	polifenol	1120.931	242			
	antioksidan	26603.851	242			
	warna L	483.432	242			
	warna a	174.686	242			
	warna b	831.832	242			

a. R Squared = .960 (Adjusted R Squared = .956)

b. R Squared = .892 (Adjusted R Squared = .879)

c. R Squared = .889 (Adjusted R Squared = .876)

d. R Squared = .896 (Adjusted R Squared = .884)

e. R Squared = .921 (Adjusted R Squared = .912)

Lampiran 4. Uji Duncan Total Fenolik, Antioksidan, Lightness, a* dan b* Antar Suhu Pengeringan

polifenol

Duncan[a,b]

suhu pengeringan	N	Subset 1	2	3
45	81	8.5668		
50	81		9.2547	
55	81			9.8723
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = .205.

a. Uses Harmonic Mean Sample Size = 81.000.

b. Alpha = .05.

antioksidan

Duncan[a,b]

suhu pengeringan	N	Subset 1	2	3
45	81	65.3641		
50	81		67.3446	
55	81			70.3595
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = 13.352.

a. Uses Harmonic Mean Sample Size = 81.000.

b. Alpha = .05.

warna L

Duncan[a,b]

suhu pengeringan	N	Subset 1	2	3
45	81	13.1962		
50	81		13.9173	
55	81			14.5400
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = .247.

a. Uses Harmonic Mean Sample Size = 81.000.

b. Alpha = .05.

warna a

Duncan[a,b]

suhu pengeringan	N	Subset 1	2	3
45	81	1.6021		
50	81		1.7102	
55	81			1.9485
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = .084.

a. Uses Harmonic Mean Sample Size = 81.000.

b. Alpha = .05.

warna b

Duncan[a,b]

suhu pengeringan	N	Subset 1	2	3
45	81	4.9548		
50	81		5.2632	
55	81			5.6036
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = .303.

a. Uses Harmonic Mean Sample Size = 81.000.

b. Alpha = .05.

Lampiran 5. Uji Duncan Total Fenolik, Antioksidan, Lightness, a* dan b* Antar Waktu Penyeduhan

polifenol

Duncan[a,b]

waktu penyeduhan	N	Subset 1	2	3	4	5	6	7	8
0,5 menit	27	5.7537							
3 menit	27		7.1681						
24 menit	27			8.2022					
6 menit	27			8.3374					
21 menit	27				9.1730				
18 menit	27					9.8285			
9 menit	27						10.5004		
12 menit	27							11.8615	
15 menit	27								12.2567
Sig.		1.000	1.000	.274	1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = .205.

a. Uses Harmonic Mean Sample Size = 27.000.

b. Alpha = .05.

antioksidan

Duncan[a,b]

waktu penyeduhan	N	Subset 1	2	3	4	5	6	7
0,5 menit	27	49.2719						
3 menit	27		57.8263					
6 menit	27			64.0574				
24 menit	27			65.1700				
21 menit	27				68.5189			
18 menit	27					71.4144		
9 menit	27					72.4237		
12 menit	27						79.2407	
15 menit	27							81.2811
Sig.		1.000	1.000	.264	1.000	.311	1.000	1.000

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = 13.352.

a. Uses Harmonic Mean Sample Size = 27.000.

b. Alpha = .05.

warna L

Duncan[a,b]

waktu penyeduhan	N	Subset 1	2	3	4	5	6	7
24 menit	27	11.6563						
21 menit	27		12.3433					
18 menit	27			13.5674				
15 menit	27			13.7659	13.7659			
12 menit	27				13.9515			
9 menit	27					14.2930		
6 menit	27					14.5456		
3 menit	27						15.0474	
0,5 menit	27							15.7900
Sig.		1.000	1.000	.144	.172	.063	1.000	1.000

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = .247.

a. Uses Harmonic Mean Sample Size = 27.000.

b. Alpha = .05.

warna a

Duncan[a,b]

waktu penyeduhan	N	Subset 1	2	3	4	5	6	7
0,5 menit	27	.5089						
3 menit	27		.7467					
6 menit	27			1.5326				
24 menit	27			1.5741				
21 menit	27				1.7485			
9 menit	27				1.8059			
18 menit	27					2.0485		
12 menit	27						2.7785	
15 menit	27							3.0389
Sig.		1.000	1.000	.600	.468	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = .084.

a. Uses Harmonic Mean Sample Size = 27.000.

b. Alpha = .05.

warna b

Duncan[a,b]

waktu penyeduhan	N	Subset 1	2	3	4	5	6	7
0,5 menit	27	2.0519						
3 menit	27		3.6107					
24 menit	27			4.4681				
6 menit	27			4.7259				
21 menit	27				5.2141			
9 menit	27					5.8767		
18 menit	27					6.1626		
12 menit	27						7.3674	
15 menit	27							7.9874
Sig.		1.000	1.000	.087	1.000	.058	1.000	1.000

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = .303.

a. Uses Harmonic Mean Sample Size = 27.000.

b. Alpha = .05.

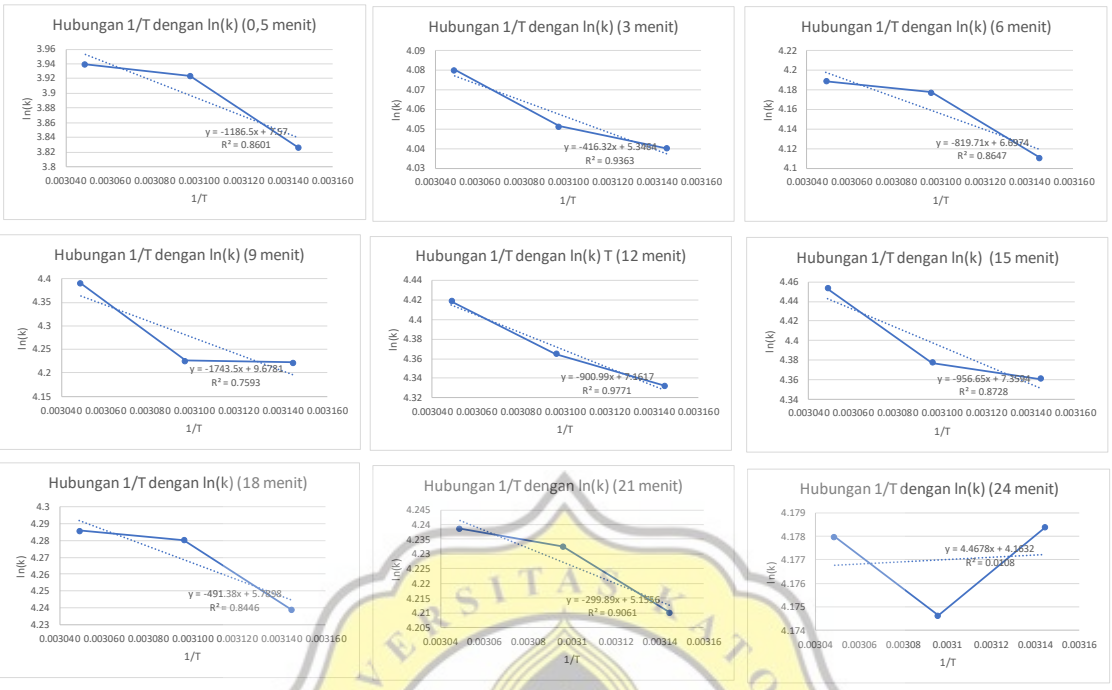
Lampiran 6. Uji Korelasi Antara Antioksidan, Polifenol, Lightness, a* dan b*

Correlations

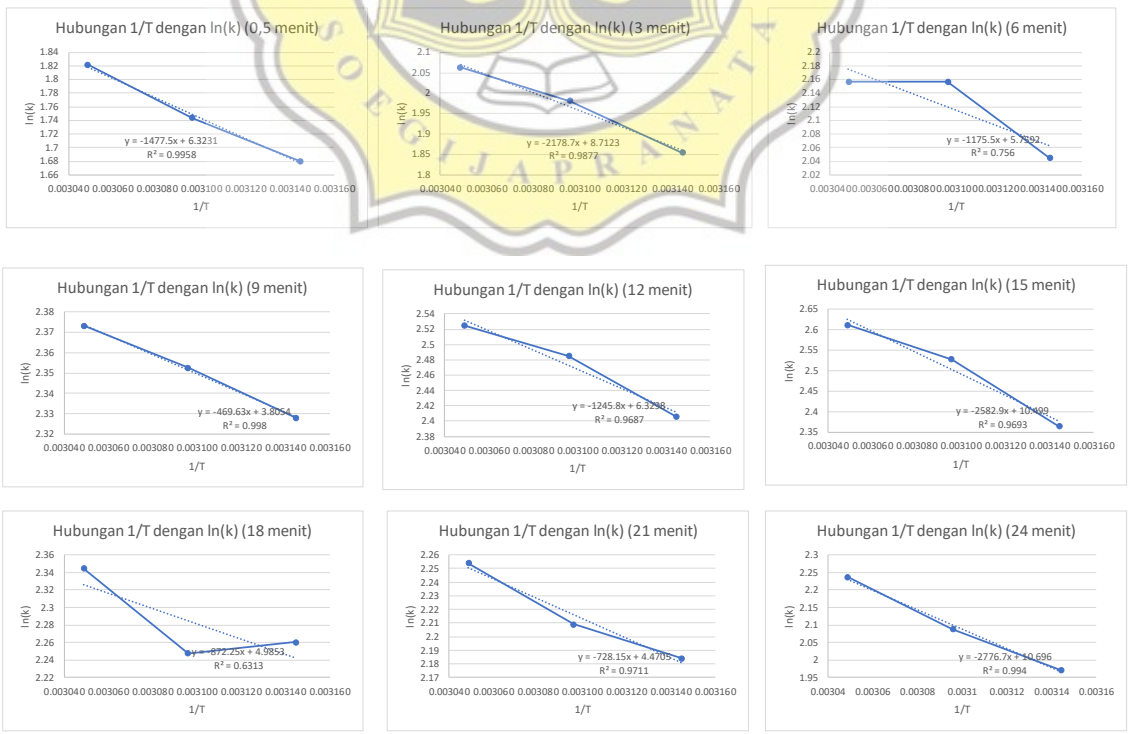
		polifenol	antioksidan	warna L	warna a	warna b
polifenol	Pearson Correlation	1	.890**	-.174**	.893**	.910**
	Sig. (2-tailed)		.000	.007	.000	.000
	N	243	243	243	243	243
antioksidan	Pearson Correlation	.890**	1	-.255**	.869**	.909**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	243	243	243	243	243
warna L	Pearson Correlation	-.174**	-.255**	1	-.242**	-.227**
	Sig. (2-tailed)	.007	.000		.000	.000
	N	243	243	243	243	243
warna a	Pearson Correlation	.893**	.869**	-.242**	1	.875**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	243	243	243	243	243
warna b	Pearson Correlation	.910**	.909**	-.227**	.875**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	243	243	243	243	243

**. Correlation is significant at the 0.01 level (2-tailed).

Lampiran 7. Grafik Hubungan Ln dan 1/T Kandungan Polifenol



Lampiran 8. Grafik Hubungan Ln dan 1/T Aktivitas Antioksidan



Lampiran 9. Data Total Fenolik, 1/T dan ln(k)

suhu (Celcius)	waktu (menit)	1/T (K)	k	ln(k)
45	0,5	0.003145	5.36	1.679586
	3	0.003145	6.39	1.8544
	6	0.003145	7.73	2.044534
	9	0.003145	10.26	2.328036
	12	0.003145	11.09	2.405944
	15	0.003145	10.63	2.363889
	18	0.003145	9.59	2.260489
	21	0.003145	8.88	2.184177
	24	0.003145	7.17	1.970525
50	0,5	0.003096	5.72	1.74358
	3	0.003096	7.25	1.980542
	6	0.003096	8.64	2.156917
	9	0.003096	10.51	2.352644
	12	0.003096	12.00	2.485092
	15	0.003096	12.52	2.527594
	18	0.003096	9.47	2.247894
	21	0.003096	9.11	2.209251
	24	0.003096	8.07	2.087878
55	0,5	0.003049	6.18	1.821318
	3	0.003049	7.87	2.063058
	6	0.003049	8.64	2.15666
	9	0.003049	10.73	2.373044
	12	0.003049	12.49	2.525195
	15	0.003049	13.61	2.611131
	18	0.003049	10.43	2.344686
	21	0.003049	9.53	2.254095
	24	0.003049	9.36	2.23692

Lampiran 10. Data Aktivitas Antikosidan , 1/T dan ln(k)

suhu (Celcius)	waktu (menit)	1/T (K)	k	ln(k)
45	0,5	0.003145	45.87	3.825908
	3	0.003145	56.84	4.040201
	6	0.003145	61.00	4.110856
	9	0.003145	68.18	4.222151
	12	0.003145	76.11	4.332194
	15	0.003145	78.33	4.360959
	18	0.003145	69.33	4.238862
	21	0.003145	67.35	4.209952
	24	0.003145	65.26	4.178379
50	0,5	0.003096	50.56	3.923183
	3	0.003096	57.48	4.051495
	6	0.003096	65.21	4.177545
	9	0.003096	68.44	4.225941
	12	0.003096	78.62	4.364669
	15	0.003096	79.63	4.377363
	18	0.003096	72.25	4.280194
	21	0.003096	68.89	4.232527
	24	0.003096	65.02	4.174627
55	0,5	0.003049	51.38	3.939249
	3	0.003049	59.16	4.080208
	6	0.003049	65.97	4.189166
	9	0.003049	80.65	4.390146
	12	0.003049	82.99	4.418693
	15	0.003049	85.88	4.45299
	18	0.003049	72.66	4.285791
	21	0.003049	69.31	4.238621
	24	0.003049	65.23	4.177988

Lampiran 11. Proses Pembuatan Minuman Herbal Daun Kelor

Daun Kelor segar

Perendaman daun kelor dengan CaCl2 0,5%

Steam blanching 90^{o}C selama 3 menit

Pengeringan daun kelor dengan oven binder

Daun kelor kering

Lampiran 12. Daun Kelor Kering

Daun kelor kering suhu 45ºC

Daun kelor kering suhu 50ºC

Daun kelor kering suhu 55ºC

Lampiran 13. Seduhan Minuman Herbal Daun Kelor

Seduhan sampel suhu 45ºC

Seduhan sampel suhu 50ºC

Seduhan sampel suhu 55ºC

Report #13216797

PENDAHULUAN Latar Belakang Penelitian Masyarakat saat ini mulai tertarik untuk mengkonsumsi pangan fungsional karena memiliki beragam manfaat khususnya akan kesehatan, sehingga menjadikan pangan fungsional sebagai kebutuhan dasar masa kini. Pangan fungsional adalah pangan yang mengandung komponen aktif dan dapat memberikan manfaat bagi kesehatan. Para ilmuwan di Jepang yang melakukan penelitian mengenai pangan fungsional menekankan bahwa terdapat tiga fungsi dasar pangan fungsional yaitu : sensori (memiliki warna, penampilan dan cita rasa menarik), nutrisi (mengandung nutrisi yang tinggi) dan fisiologis (memiliki keuntungan untuk fisiologis tubuh manusia). Fungsi fisiologis yang diharapkan contohnya adalah meningkatkan daya imunitas tubuh manusia, mencegah timbulnya penyakit dan memperlambat penuaan. Pangan fungsional tidak dapat disamakan dengan obat atau food suplement, hal ini dikarenakan pangan fungsional dapat dikonsumsi tanpa menggunakan dosis tertentu dan dinikmati selayaknya makanan umum yang bergizi dan lezat (Suter,