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7. LAMPIRAN

Lampiran 1. Hasil analisa Spss

Hasil Analisa Sensori

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Warna	1.596	7	272	.137
Rasa	1.423	7	272	.196
Tekstur	1.197	7	272	.305
Overall	3.507	7	272	.001

Ranks

	Mean Rank
Spirulina_0.5	4.97
Spirulina_1	2.99
Spirulina_1.25	3.66
Spirulina_1.5	3.89
fikosianin_0.5	4.00
Fikosianin_1	5.14
Fikosianin_1.25	6.21
Fikosianin_1.5	5.14

Test Statistics[a]

N	35
Chi-Square	44.456
Df	7
Asymp. Sig.	.000

a. Friedman Test

Friedman Test

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
Spirulina_1 - Spirulina_0.5	Negative Ranks	28[a]	19.25	539.00
	Positive Ranks	7[b]	13.00	91.00
	Ties	0[c]		
	Total	35		

a. Spirulina_1 < Spirulina_0.5

b. Spirulina_1 > Spirulina_0.5

c. Spirulina_1 = Spirulina_0.5

Test Statistics[b]

	Fikosianin_1 - Spirulina_0.5
Z	-.362[a]
Asymp. Sig. (2-tailed)	.717

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	fikosianin_0.5 - Spirulina_0.5
Z	-1.779[a]
Asymp. Sig. (2-tailed)	.075

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Spirulina_1.5 - Spirulina_0.5
Z	-1.729[a]
Asymp. Sig. (2-tailed)	.084

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Spirulina_1.25 - Spirulina_0.5
Z	-2.288[a]
Asymp. Sig. (2-tailed)	.022

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Spirulina_1 - Spirulina_0.5
Z	-3.690[a]
Asymp. Sig. (2-tailed)	.000

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[a]

N	35
Chi-Square	44.456
df	7
Asymp. Sig.	.000

a. Friedman Test

Test Statistics[b]

	fikosianin_0.5 - Spirulina_1
Z	-1.781[a]
Asymp. Sig. (2-tailed)	.075

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Spirulina_1.5 - Spirulina_1
Z	-1.846[a]
Asymp. Sig. (2-tailed)	.065

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Spirulina_1.25 - Spirulina_1
Z	-1.710[a]
Asymp. Sig. (2-tailed)	.087

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.5 - Spirulina_0.5
Z	-.255[a]
Asymp. Sig. (2-tailed)	.799

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.25 - Spirulina_0.5
Z	-2.121[a]
Asymp. Sig. (2-tailed)	.034

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.25 - Spirulina_0.5
Z	-2.121[a]
Asymp. Sig. (2-tailed)	.034

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Spirulina_1.5 - Spirulina_1.25
Z	-.290[a]
Asymp. Sig. (2-tailed)	.772

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.5 - Spirulina_1
Z	-3.205[a]
Asymp. Sig. (2-tailed)	.001

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.25 - Spirulina_1
Z	-4.367[a]
Asymp. Sig. (2-tailed)	.000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1 - Spirulina_1
Z	-3.106[a]
Asymp. Sig. (2-tailed)	.002

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	fikosianin_0.5 - Spirulina_1
Z	-1.781[a]
Asymp. Sig. (2-tailed)	.075

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Spirulina_1.5 - Spirulina_1
Z	-1.846[a]
Asymp. Sig. (2-tailed)	.065

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1 - Spirulina_1.5
Z	-2.066[a]
Asymp. Sig. (2-tailed)	.039

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	fikosianin_0.5 - Spirulina_1.5
Z	-.082[a]
Asymp. Sig. (2-tailed)	.934

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.5 - Spirulina_1.25
Z	-2.491[a]
Asymp. Sig. (2-tailed)	.013

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.25 - Spirulina_1.25
Z	-3.948[a]
Asymp. Sig. (2-tailed)	.000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1 - Spirulina_1.25
Z	-2.202[a]
Asymp. Sig. (2-tailed)	.028

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	fikosianin_0.5 - Spirulina_1.25
Z	-.495[a]
Asymp. Sig. (2-tailed)	.621

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.5 - Fikosianin_1
Z	-.066[a]
Asymp. Sig. (2-tailed)	.947

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.25 - fikosianin_0.5
Z	-3.596[a]
Asymp. Sig. (2-tailed)	.000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.25 - fikosianin_0.5
Z	-3.596[a]
Asymp. Sig. (2-tailed)	.000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1 - fikosianin_0.5
Z	-2.295[a]
Asymp. Sig. (2-tailed)	.022

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.5 - Spirulina_1.5
Z	-2.483[a]
Asymp. Sig. (2-tailed)	.013

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.25 - Spirulina_1.5
Z	-3.609[a]
Asymp. Sig. (2-tailed)	.000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.5 - Fikosianin_1
Z	-.066[a]
Asymp. Sig. (2-tailed)	.947

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.5 - fikosianin_0.5
Z	-1.553[a]
Asymp. Sig. (2-tailed)	.120

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.25 - Spirulina_1.25
Z	-3.948[a]
Asymp. Sig. (2-tailed)	.000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Fikosianin_1.5 - Fikosianin_1.25
Z	-2.511[a]
Asymp. Sig. (2-tailed)	.012

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

Test Statistics[b]

	Spirulina_1 - Spirulina_0.5
Z	-.925[a]
Asymp. Sig. (2-tailed)	.355

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

Friedman

Ranks

	Mean Rank
Spirulina_0.5	4.34
Spirulina_1	3.89
Spirulina_1.25	3.31
Spirulina_1.5	3.66
fikosianin_0.5	5.03
Fikosianin_1	5.20
Fikosianin_1.25	6.10
Fikosianin_1.5	4.47

Test Statistics[a]

N	35
Chi-Square	34.128
df	7
Asymp. Sig.	.000

a. Friedman Test

Friedman

Ranks

	Mean Rank
Spirulina_0.5	4.20
Spirulina_1	2.80
Spirulina_1.25	3.29
Spirulina_1.5	4.11
Fikosianin_0.5	5.41
Fikosianin_1	5.34
Fikosianin_1.25	6.03
Fikosianin_1.5	4.81

Test Statistics[a]

N	35
Chi-Square	50.096
df	7
Asymp. Sig.	.000

a. Friedman Test

Friedman

Ranks

	Mean Rank
Spirulina_0.5	4.51
Spirulina_1	3.03
Spirulina_1.25	3.34
Spirulina_1.5	3.34
Fikosianin_0.5	4.54
Fikosianin_1	5.46
Fikosianin_1.25	6.46
Fikosianin_1.5	5.31

Test Statistics[a]

N	35
Chi-Square	59.819
df	7
Asymp. Sig.	.000

a. Friedman Test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Perlakuan	Statistic	df	Sig.	Statistic	df	Sig.
Hardness	Kontrol	.240	5	.200*	.904	5	.430
	spirulina 0,5%	.329	5	.082	.785	5	.061
	spirulina 1,5%	.227	5	.200*	.876	5	.290
Overrun	Kontrol	.223	5	.200*	.888	5	.346
	spirulina 0,5%	.339	5	.061	.755	5	.033
	spirulina 1,5%	.181	5	.200*	.988	5	.972
Visko_sebelum	Kontrol	.231	5	.200*	.881	5	.314
	spirulina 0,5%	.279	5	.200*	.766	5	.041
	spirulina 1,5%	.254	5	.200*	.803	5	.086
Visko_sesudah	Kontrol	.231	5	.200*	.881	5	.314
	spirulina 0,5%	.254	5	.200*	.803	5	.086
	spirulina 1,5%	.300	5	.161	.833	5	.146
Time_to_melt	kontrol	.250	5	.200*	.814	5	.105
	spirulina 0,5%	.241	5	.200*	.821	5	.119
	spirulina 1,5%	.339	5	.062	.754	5	.033

a. Lilliefors Significance Correction

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

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Hardness	.084	2	12	.920
Overrun	.168	2	12	.848
Visko_sebelum	11.207	2	12	.002
Visko_sesudah	1.460	2	12	.271
Time_to_melt	2.721	2	12	.106

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Hardness	Between Groups	15149.589	2	7574.794	.153	.859
	Within Groups	592209.907	12	49350.826		
	Total	607359.496	14			
Overrun	Between Groups	3343.545	2	1671.773	94.601	.000
	Within Groups	212.062	12	17.672		
	Total	3555.608	14			
Visko_sebelum	Between Groups	1568.933	2	784.467	242.619	.000
	Within Groups	38.800	12	3.233		
	Total	1607.733	14			
Visko_sesudah	Between Groups	270.933	2	135.467	90.311	.000
	Within Groups	18.000	12	1.500		
	Total	288.933	14			
Time_to_melt	Between Groups	118.533	2	59.267	14.694	.001
	Within Groups	48.400	12	4.033		
	Total	166.933	14			

Post Hoc Tests
Homogeneous Subsets

Hardness

Duncan

Perlakuan	N	Subset for alpha = 0.05
		1
spirulina 1,5%	5	1315.0480
kontrol	5	1343.0980
spirulina 0,5%	5	1391.9600
Sig.		.612

Means for groups in homogeneous subsets are displayed.

Overrun

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
kontrol	5	25.8340		
spirulina 0,5%	5		35.8020	
spirulina 1,5%	5			61.2900
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Visko_sebelum

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
kontrol	5	68.2000		
spirulina 1,5%	5		76.4000	
spirulina 0,5%	5			92.8000
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Visko_sesudah

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
spirulina 1,5%	5	26.0000		
kontrol	5		30.8000	
spirulina 0,5%	5			36.4000
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Time_to_melt

Duncan

Perlakuan	N	Subset for alpha = 0.05	
		1	2
kontrol	5	52.6000	
spirulina 1,5%	5	53.6000	
spirulina 0,5%	5		59.0000
Sig.		.446	1.000

Means for groups in homogeneous subsets are displayed.

Pengujian Sifat Fisik Es Krim Fikosianin

Tests of Normality

	Perlakuan	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Hardness	kontrol	.240	5	.200*	.904	5	.430
	fikosianin 1%	.155	5	.200*	.994	5	.991
	fikosianin 1,25%	.336	5	.067	.807	5	.093
Overrun	kontrol	.223	5	.200*	.888	5	.346
	fikosianin 1%	.163	5	.200*	.993	5	.990
	fikosianin 1,25%	.241	5	.200*	.821	5	.119
Visko_sebelum	kontrol	.231	5	.200*	.881	5	.314
	fikosianin 1%	.245	5	.200*	.871	5	.272
	fikosianin 1,25%	.255	5	.200*	.865	5	.247
Visko_sesudah	kontrol	.231	5	.200*	.881	5	.314
	fikosianin 1%	.273	5	.200*	.852	5	.201
	fikosianin 1,25%	.300	5	.161	.833	5	.146
Time_to_melt	kontrol	.250	5	.200*	.814	5	.105
	fikosianin 1%	.254	5	.200*	.803	5	.086
	fikosianin 1,25%	.250	5	.200*	.814	5	.105

a. Lilliefors Significance Correction

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

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Hardness	12.828	2	12	.001
Overrun	.513	2	12	.611
Visko_sebelum	6.383	2	12	.013
Visko_sesudah	.800	2	12	.472
Time_to_melt	1.572	2	12	.248

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Hardness	Between Groups	417057.346	2	208528.673	9.953	.003
	Within Groups	251412.545	12	20951.045		
	Total	668469.891	14			
Overrun	Between Groups	3886.305	2	1943.153	130.295	.000
	Within Groups	178.962	12	14.913		
	Total	4065.267	14			
Visko_sebelum	Between Groups	1004.933	2	502.467	85.164	.000
	Within Groups	70.800	12	5.900		
	Total	1075.733	14			
Visko_sesudah	Between Groups	582.400	2	291.200	218.400	.000
	Within Groups	16.000	12	1.333		
	Total	598.400	14			
Time_to_melt	Between Groups	388.800	2	194.400	39.141	.000
	Within Groups	59.600	12	4.967		
	Total	448.400	14			

Post Hoc Tests
Homogeneous Subsets

Hardness

Duncan

Perlakuan	N	Subset for alpha = 0.05	
		1	2
fikosianin 1,25%	5	955.2600	
fikosianin 1%	5	1.0383E3	
kontrol	5		1.3431E3
Sig.		.382	1.000

Means for groups in homogeneous subsets are displayed.

Visko_sebelum

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
fikosianin 1,25%	5	53.6000		
kontrol	5		68.2000	
fikosianin 1%	5			72.8000
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Visko_sesudah

Duncan

Perlakuan	N	Subset for alpha = 0.05	
		1	2
fikosianin 1,25%	5	30.0000	
kontrol	5	30.8000	
fikosianin 1%	5		43.6000
Sig.		.295	1.000

Means for groups in homogeneous subsets are displayed.

Time_to_melt

Duncan

Perlakuan	N	Subset for alpha = 0.05	
		1	2
kontrol	5	52.6000	
fikosianin 1,25%	5	52.6000	
fikosianin 1%	5		63.4000
Sig.		1.000	1.000

Means for groups in homogeneous subsets are displayed.

Pengujian Melting Rate

ANOVA

melting_rate

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.146	2	.573	6.311	.002
Within Groups	17.433	192	.091		
Total	18.579	194			

Post Hoc Tests

Homogeneous Subsets

melting_rate

Duncan

Perlakuan	N	Subset for alpha = 0.05	
		1	2
spirulina 0,5%	65	.3338	
spirulina 1,5%	65		.4930
kontrol	65		.4997
Sig.		1.000	.900

Means for groups in homogeneous subsets are displayed.

MR_25

Duncan

konsentrasi	N	Subset for alpha = 0.05	
		1	2
soirulina 0,5%	5	.0000	
kontrol	5		10.8000
spirulina 1,5%	5		11.6000
Sig.		1.000	.512

Means for groups in homogeneous subsets are displayed.

Oneway

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
mr_20	Between Groups	99.233	2	49.617	38.413	.000
	Within Groups	15.500	12	1.292		
	Total	114.733	14			
MR_25	Between Groups	419.733	2	209.867	59.962	.000
	Within Groups	42.000	12	3.500		
	Total	461.733	14			
MR_30	Between Groups	388.233	2	194.117	23.411	.000
	Within Groups	99.500	12	8.292		
	Total	487.733	14			

Post Hoc Tests

Homogeneous Subsets

mr_20

Duncan

konsentrasi	N	Subset for alpha = 0.05	
		1	2
soirulina 0,5%	5	.0000	
kontrol	5		5.3000
spirulina 1,5%	5		5.6000
Sig.		1.000	.684

Means for groups in homogeneous subsets are displayed.

MR_30

Duncan

konsentrasi	N	Subset for alpha = 0.05	
		1	2
soirulina 0,5%	5	5.3000	
spirulina 1,5%	5		15.5000
kontrol	5		16.6000
Sig.		1.000	.557

Means for groups in homogeneous subsets are displayed.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
kontrol	Between Groups	1210.375	5	242.075	41.263	.000
	Within Groups	140.800	24	5.867		
	Total	1351.175	29			
Spiru_0.5	Between Groups	117.042	5	23.408	312.111	.000
	Within Groups	1.800	24	.075		
	Total	118.842	29			
Spiru_1.5	Between Groups	1032.975	5	206.595	259.596	.000
	Within Groups	19.100	24	.796		
	Total	1052.075	29			
Fiko_1	Between Groups	88.167	5	17.633	156.741	.000
	Within Groups	2.700	24	.112		
	Total	90.867	29			
Fiko_1.25	Between Groups	1255.367	5	251.073	415.570	.000
	Within Groups	14.500	24	.604		
	Total	1269.867	29			

Post Hoc Tests
Homogeneous Subsets

kontrol

Duncan

waktu	N	Subset for alpha = 0.05			
		1	2	3	4
5 menit	5	.0000			
10 menit	5	.0000			
15 menit	5	.0000			
20 menit	5		5.3000		
25 menit	5			10.8000	
30 menit	5				16.6000
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Spiru_0.5

Duncan

waktu	N	Subset for alpha = 0.05	
		1	2
5 menit	5	.0000	
10 menit	5	.0000	
15 menit	5	.0000	
20 menit	5	.0000	
25 menit	5	.0000	
30 menit	5		5.3000
Sig.		1.000	1.000

Spiru_1.5

Duncan

waktu	N	Subset for alpha = 0.05				
		1	2	3	4	5
5 menit	5	.0000				
10 menit	5	.0000				
15 menit	5		2.4000			
20 menit	5			5.6000		
25 menit	5				11.6000	
30 menit	5					15.5000
Sig.		1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Fiko_1

Duncan

waktu	N	Subset for alpha = 0.05	
		1	2
5 menit	5	.0000	
10 menit	5	.0000	
15 menit	5	.0000	
20 menit	5	.0000	
25 menit	5	.0000	
30 menit	5		4.6000
Sig.		1.000	1.000

Means for groups in homogeneous subsets are displayed.

Fiko_1.25

Duncan

waktu	N	Subset for alpha = 0.05				
		1	2	3	4	5
5 menit	5	.0000				
10 menit	5	.0000				
15 menit	5		3.5000			
20 menit	5			8.2000		
25 menit	5				12.4000	
30 menit	5					17.5000
Sig.		1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Oneway

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
MRF_20	Between Groups	172.900	2	86.450	58.943	.000
	Within Groups	17.600	12	1.467		
	Total	190.500	14			
MRF_25	Between Groups	454.933	2	227.467	69.990	.000
	Within Groups	39.000	12	3.250		
	Total	493.933	14			
MRF_30	Between Groups	518.700	2	259.350	30.998	.000
	Within Groups	100.400	12	8.367		
	Total	619.100	14			
MRF_15	Between Groups	40.833	2	20.417	245.000	.000
	Within Groups	1.000	12	.083		
	Total	41.833	14			

Post Hoc Tests
Homogeneous Subsets

MRF_20

Duncan

Konsentrasi	N	Subset for alpha = 0.05		
		1	2	3
soirulina 0,5%	5	.0000		
Kontrol	5		5.3000	
spirulina 1,5%	5			8.2000
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

MRF_25

Duncan

Konsentrasi	N	Subset for alpha = 0.05	
		1	2
soirulina 0,5%	5	.0000	
kontrol	5		10.8000
spirulina 1,5%	5		12.4000
Sig.		1.000	.186

Means for groups in homogeneous subsets are displayed.

MRF_30

Duncan

konsentrasi	N	Subset for alpha = 0.05	
		1	2
soirulina 0,5%	5	4.6000	
kontrol	5		16.6000
spirulina 1,5%	5		17.5000
Sig.		1.000	.632

Means for groups in homogeneous subsets are displayed.

MRF_15

Duncan

konsentrasi	N	Subset for alpha = 0.05	
		1	2
kontrol	5	.0000	
soirulina 0,5%	5	.0000	
spirulina 1,5%	5		3.5000
Sig.		1.000	1.000

Means for groups in homogeneous subsets are displayed.

Oneway

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
mr_20	Between Groups	99.233	2	49.617	38.413	.000
	Within Groups	15.500	12	1.292		
	Total	114.733	14			
MR_25	Between Groups	419.733	2	209.867	59.962	.000
	Within Groups	42.000	12	3.500		
	Total	461.733	14			
MR_30	Between Groups	388.233	2	194.117	23.411	.000
	Within Groups	99.500	12	8.292		
	Total	487.733	14			

Post Hoc Tests

Homogeneous Subsets

mr_20

Duncan

konsentrasi	N	Subset for alpha = 0.05	
		1	2
soirulina 0,5%	5	.0000	
kontrol	5		5.3000
spirulina 1,5%	5		5.6000
Sig.		1.000	.684

Means for groups in homogeneous subsets are displayed.

MR_25

Duncan

konsentrasi	N	Subset for alpha = 0.05	
		1	2
soirulina 0,5%	5	.0000	
kontrol	5		10.8000
spirulina 1,5%	5		11.6000
Sig.		1.000	.512

Means for groups in homogeneous subsets are displayed.

MR_30

Duncan

konsentrasi	N	Subset for alpha = 0.05	
		1	2
soirulina 0,5%	5	5.3000	
spirulina 1,5%	5		15.5000
kontrol	5		16.6000
Sig.		1.000	.557

Means for groups in homogeneous subsets are displayed.

Pengujian Kandungan Fikosianin

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
kontrol	Between Groups	2.601	5	.520	11.685	.000
	Within Groups	1.069	24	.045		
	Total	3.670	29			
spirulina_0.5	Between Groups	30.013	5	6.003	71.255	.000
	Within Groups	2.022	24	.084		
	Total	32.035	29			
spirulina_1.5	Between Groups	66.610	5	13.322	234.406	.000
	Within Groups	1.364	24	.057		
	Total	67.974	29			
Fiko_1	Between Groups	49.953	5	9.991	369.316	.000
	Within Groups	.649	24	.027		
	Total	50.602	29			
Fiko_1.25	Between Groups	28.986	5	5.797	144.195	.000
	Within Groups	.965	24	.040		
	Total	29.951	29			

Post Hoc Tests

Homogeneous Subsets

Kontrol

Duncan

Hari	N	Subset for alpha = 0.05		
		1	2	3
15 hari	5	2.2296		
12 hari	5	2.4759	2.4759	
0 hari	5		2.6678	
3 hari	5			2.9439
9 hari	5			2.9662
6 hari	5			3.0468
Sig.		.077	.163	.475

spirulina_0.5

Duncan

Hari	N	Subset for alpha = 0.05				
		1	2	3	4	5
15 hari	5	9.1825				
12 hari	5		10.3859			
9 hari	5			10.8182		
6 hari	5			10.9717		
3 hari	5				11.4987	
0 hari	5					12.4555
Sig.		1.000	1.000	.411	1.000	1.000

Means for groups in homogeneous subsets are displayed.

spirulina_1.5

Duncan

Hari	N	Subset for alpha = 0.05		
		1	2	3
15 hari	5	11.2753		
12 hari	5	11.5180		
9 hari	5		12.9735	
6 hari	5		13.2294	
3 hari	5			14.9173
0 hari	5			15.1469
Sig.		.121	.103	.141

Means for groups in homogeneous subsets are displayed.

Fiko_1

Duncan

Hari	N	Subset for alpha = 0.05				
		1	2	3	4	5
15 hari	5	13.6948				
12 hari	5	13.9018	13.9018			
9 hari	5		14.0185	14.0185		
6 hari	5			14.1749		
3 hari	5				15.8912	
0 hari	5					17.2023
Sig.		.058	.273	.146	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Fiko_1.25

Duncan

Hari	N	Subset for alpha = 0.05				
		1	2	3	4	5
15 hari	5	15.2665				
12 hari	5		15.6314			
9 hari	5			16.2398		
6 hari	5				16.8815	
3 hari	5					17.3765
0 hari	5					18
Sig.		1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
HAri_3	Between Groups	380.389	2	190.195	2.139E3	.000
	Within Groups	1.067	12	.089		
	Total	381.457	14			
HAri_6	Between Groups	285.978	2	142.989	3.402E3	.000
	Within Groups	.504	12	.042		
	Total	286.482	14			
Hari_9	Between Groups	277.409	2	138.704	2.970E3	.000
	Within Groups	.560	12	.047		
	Total	277.969	14			
Hari_12	Between Groups	242.684	2	121.342	2.103E3	.000
	Within Groups	.692	12	.058		
	Total	243.376	14			
HAri_0	Between Groups	431.283	2	215.641	4.545E3	.000
	Within Groups	.569	12	.047		
	Total	431.852	14			
Hari_15	Between Groups	224.246	2	112.123	1.268E3	.000
	Within Groups	1.061	12	.088		
	Total	225.307	14			

Post Hoc Tests

Homogeneous Subsets

HAri_3

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
Kontrol	5	2.9439		
spirulina 0.5%	5		11.4987	
Spirulina 1,5%	5			14.9173
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

HAri_6

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
Kontrol	5	3.0468		
spirulina 0.5%	5		10.9717	
Spirulina 1,5%	5			13.2294
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Hari_9

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
Kontrol	5	2.9662		
spirulina 0.5%	5		10.8182	
Spirulina 1,5%	5			12.9735
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Hari_12

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
Kontrol	5	2.4759		
spirulina 0.5%	5		10.3859	
Spirulina 1,5%	5			11.5180
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

HAri_0

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
Kontrol	5	2.6678		
spirulina 0.5%	5		12.4555	
Spirulina 1,5%	5			15.1469

Hari_15

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
Kontrol	5	2.2296		
spirulina 0.5%	5		9.1825	
Spirulina 1,5%	5			11.2753
Sig.		1.000	1.000	1.000

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
hari_0	Between Groups	750.719	2	375.359	8.420E3	.000
	Within Groups	.535	12	.045		
	Total	751.254	14			
Hari_3	Between Groups	630.231	2	315.115	4.941E3	.000
	Within Groups	.765	12	.064		
	Total	630.996	14			
HAri_6	Between Groups	537.599	2	268.799	6.179E3	.000
	Within Groups	.522	12	.044		
	Total	538.121	14			
Hari_9	Between Groups	505.461	2	252.730	8.016E3	.000
	Within Groups	.378	12	.032		
	Total	505.839	14			
Hari_12	Between Groups	511.015	2	255.508	1.678E4	.000
	Within Groups	.183	12	.015		
	Total	511.198	14			
Hari_15	Between Groups	506.468	2	253.234	1.014E4	.000
	Within Groups	.300	12	.025		
	Total	506.768	14			

hari_0

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
kontrol	5	2.6678		
fiko_1	5		17.2023	
Fiko_3	5			18.1068
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Hari_3

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
kontrol	5	2.9439		
fiko_1	5		15.8912	
Fiko_3	5			17.3765
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

HAri_6

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
kontrol	5	3.0468		
fiko_1	5		14.1749	
Fiko_3	5			16.8815
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Hari_9

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
kontrol	5	2.9662		
fiko_1	5		14.0185	
Fiko_3	5			16.2398
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Hari_12

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
kontrol	5	2.4759		
fiko_1	5		13.9018	
Fiko_3	5			15.6314
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Hari_15

Duncan

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
kontrol	5	2.2296		
fiko_1	5		13.6948	
Fiko_3	5			15.2665
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Pengujian Aktivitas Antioksidan

Tests of Normality

	Perlakuan	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Antioksidan_awal	kontrol	.253	5	.200*	.955	5	.773
	spirulina 0,5%	.332	5	.076	.814	5	.105
	spirulina 1,5%	.190	5	.200*	.944	5	.697
	fikosianin 1%	.254	5	.200*	.856	5	.213
	fikosianin 1,25%	.272	5	.200*	.917	5	.511
Antioksidan_akhir	kontrol	.204	5	.200*	.935	5	.631
	spirulina 0,5%	.243	5	.200*	.829	5	.137
	spirulina 1,5%	.130	5	.200*	.992	5	.986
	fikosianin 1%	.200	5	.200*	.916	5	.507
	fikosianin 1,25%	.224	5	.200*	.900	5	.411

a. Lilliefors Significance Correction

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

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Antioksidan_awal	.483	4	20	.748
Antioksidan_akhir	.272	4	20	.893

Post Hoc Tests

Homogeneous Subsets

Antioksidan_awal

Duncan

Perlakuan	N	Subset for alpha = 0.05 1	2	3	4	5
kontrol	5	3.8980				
spirulina 0,5%	5		15.7460			
spirulina 1,5%	5			20.1520		
fikosianin 1%	5				34.7000	
fikosianin 1,25%	5					44.6260
Sig.		1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Antioksidan_akhir

Duncan

Perlakuan	N	Subset for alpha = 0.05 1	2	3	4
kontrol	5	2.7966			
spirulina 0,5%	5		6.0366		
spirulina 1,5%	5		6.6744		
fikosianin 1%	5			11.6180	
fikosianin 1,25%	5				13.5123
Sig.		1.000	.179	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Pengujian Stabilitas Fikosianin Pada Es Krim *Spirulina*

Tests of Normality

	Perlakuan	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Kadar_fikosianin	kontrol	.102	30	.200*	.977	30	.740
	spirulina 0,5%	.123	30	.200*	.961	30	.333
	spirulina 1,5%	.172	30	.023	.905	30	.011

a. Lilliefors Significance Correction

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

Lampiran 2. *Scoresheet* Uji Sensori Penentuan Konsentrasi *Spirulina*

UJI RANGKING HEDONIK

Nama : Tanggal:

Produk : Es Krim *Spirulina*

Atribut : Warna

Instruksi:

Di hadapan Anda terdapat 8 macam sampel produk es krim dengan penggunaan konsentrasi *Spirulina* yang berbeda. Amatilah warna dari masing-masing sampel secara berurutan dari kiri ke kanan. Anda boleh mengulang sesering yang diperlukan. Setelah mengamati semua sampel, berilah nilai sesuai dengan tingkat kesukaan Anda terhadap warna sampel yang tersedia. Urutkan nilai sampel dari yang Anda paling sukai (=8) hingga yang paling Anda tidak sukai (=1).

Kode Sampel	Ranking (jangan sampai ada yang dobel)
.....	.....
.....	.....
.....	.....
.....	.....
….	….
….	….
….	….
….	….

Terima Kasih.

UJI RANGKING HEDONIK

Nama : Tanggal:

Produk : Es Krim *Spirulina*

Atribut : Rasa

Instruksi:

Di hadapan Anda terdapat 8 macam sampel produk Es krim dengan penggunaan konsentrasi *spirulina* yang berbeda. Cicipilah rasa dari masing-masing sampel secara berurutan dari kiri ke kanan. Anda boleh mengulang sesering yang diperlukan. Setelah merasakan semua sampel, berilah nilai sesuai dengan tingkat kesukaan Anda terhadap rasa sampel yang tersedia. Urutkan nilai sampel dari yang Anda paling sukai (=8) hingga yang paling Anda tidak sukai (=1).

Kode Sampel	Ranking (jangan sampai ada yang dobel)
.....	.....
.....	.....
.....	.....
.....	.....
….	….
….	….
….	….
….	….

UJI RANGKING HEDONIK

Nama : Tanggal:

Produk : Es Krim *Spirulina*

Atribut : Tekstur

Instruksi:

Di hadapan Anda terdapat 8 macam sampel produk Es Krim dengan penggunaan konsentrasi *spirulina* yang berbeda. Rasakan Tekstur dari masing-masing sampel secara berurutan dari kiri ke kanan. Anda boleh mengulang sesering yang diperlukan. Setelah mengamati semua sampel, berilah nilai sesuai dengan tingkat kesukaan Anda terhadap tekstur sampel yang tersedia. Urutkan nilai sampel dari yang Anda paling sukai (=8) hingga yang paling Anda tidak sukai (=1).

Kode Sampel	Ranking (jangan sampai ada yang dobel)
.....	.....
.....	.....
.....	.....
.....	.....
….	….
….	….
….	….
….	….

UJI RANGKING HEDONIK

Nama : Tanggal:

Produk : Es Krim *Spirulina*

Atribut : *Overall*

Instruksi:

Di hadapan Anda terdapat 8 macam sampel produk Es Krim dengan penggunaan konsentrasi *spirulina* yang berbeda. Perhatikan keseluruhan parameter mutu seperti warna, rasa, dan tekstur pada masing-masing sampel secara berurutan dari kiri ke kanan. Anda boleh mengulang sesering yang diperlukan. Setelah mengamati semua sampel, berilah nilai sesuai dengan tingkat kesukaan Anda terhadap *overall* sampel yang tersedia. Urutkan nilai sampel dari yang Anda paling sukai (=8) hingga yang paling Anda tidak sukai (=1).

Kode Sampel	Ranking (jangan sampai ada yang dobel)
.....	.....
.....	.....
.....	.....
.....	.....
….	….
….	….
….	….
….	….

Terima Kasih.

Lampiran 3. Worksheet Uji Sensori Penentuan Konsentrasi *Spirulina* dan fikosianin

Worksheet Uji Ranking Hedonik

Tanggal uji : 28 Juni 2013

Jenis sampel : Es Krim Spirulina

Identifikasi sampel	**Kode**
Es Krim *Spirulina* 0,5 %	A
Es Krim *Spirulina* 1 %	B
Es Krim *Spirulina* 1,25 %	C
Es Krim *Spirulina* 1,5 %	D
Es Krim *Fikosianin 0*,5 %	E
Es Krim *Fikosianin* 1 %	F
Es Krim *Fikosianin* 1,25 %	G
Es Krim *Fikosianin* 1,5 %	H

Kode kombinasi urutan penyajian

ABCDEFGH = 1

BCDEFGHA = 2

CDEFGHAB = 3

DEFGHABC = 4

EFGHABCD = 5

FGHABCDE = 6

GHABCDEF = 7

HABCDEFG = 8

Penyajian

Booth	**Panelis**	**Kode sampel** urutan penyajian							
I	#1;9;17;25	591	636	415	383	975	257	723	448[1]
II	#2;10;18;26	214	167	982	349	973	752	395	524[2]
III	#3;11;19;27	851	789	543	468	235	667	174	951[3]
IV	#4;12;20;28	669	438	743	122	811	227	453	982[4]
V	#5;13;21;29	394	413	835	771	761	813	276	455[5]
VI	#6;14;22;30	921	313	278	889	461	695	249	374[6]
VII	#7;15;23	569	446	874	918	991	222	676	559[7]
VIII	#8;16;24	811	225	373	768	792	633	461	577[8]

Rekap kode sampel

Sampel A	591	524	174	227	761	889	874	225
Sampel B	636	214	951	453	813	461	918	373
Sampel C	415	167	851	982	276	695	991	768
Sampel D	383	982	789	669	455	249	222	792
Sampel E	975	349	543	438	394	374	676	633
Sampel F	257	973	468	743	413	921	559	461
Sampel G	723	752	235	122	835	313	569	577
Sampel H	448	395	667	811	771	278	446	811