Syarat Mutu Roti Tawar

No	Kriteria uji	Satuan	Persyaratan
1	Keadaan		
1.1	Kenampakan	-	Normal,tdk berjamur
1.2	Bau	-	Normal
1.3	Rasa	-	Normal
2.	Air	% b/b	Maks 40
3.	Abu (tidak termasuk garam dihitung atas dasar bahan kering)	% b/b	Maks 1
4.	Abu yang tidak larut dalam asam.	% b/b	Maks 3,0
5.	NaCl	% b/b	Maks 2,5
6.	Gula jumlah	% b/b	-
7.	Lemak	% b/b	-
8.	Serangga / belatung	-	Tidak boleh ada
9.	Bahan tambahan makanan		
9.1.	Pengawet		
9.2.	Pewarna	Sesuai SNI 0222-1987	
9.3.	Pemanis buatan		
9.4.	Sakarin siklamat		Negatif
10.	Cemaran logam		
10.1	Raksa (Hg)	mg/kg	Maks 0,05
10.2	Timbal (Pb)	mg/kg	Maks 1,0
10.3	Tembaga (Cu)	mg/kg	Maks 10,0
10.4	Seng (Zn)	mg/kg	Maks 40,0
11.	Cemaran arsen (As)	mg/kg	Maks 0,5
12.	Cemaran mikroba		
12.1.	Angka lempeng total	koloni/g	Maks 10^6
12.2.	E.Coli	APM/g	<3
12.3.	Kapang	Koloni/g	Maks 10^4

Sumber : SNI 01-3840-1995

KUESIONER
UJI RANKING HEDONIK

Nama : Tanggal Uji :
Produk : *Bread*
Atribut : *overall* rasa

Instruksi
Di hadapan anda tersedia 4 sampel *bread*. Cicipilah sampel secara berurutan dari kiri ke kanan. Anda boleh mengulang sesering yang Anda perlukan.Setiap akan mencicipi sampel yang berbeda berkumurlah dengan air tawar selama kurang lebih 30 detik. Berilah penilaian dengan kisaran nilai 1-4 Antar sampel tidak boleh memiliki nilai yang sama.
1 = paling tidak suka
2 = tidak suka
3 = suka
4 = paling suka

Kode sampel	Ranking

UJI RANKING HEDONIK

Nama : Tanggal Uji :
Produk : *Bread*
Atribut : *overall* tekstur

Instruksi
Di hadapan anda tersedia 4 sampel *bread*. Cicipilah sampel secara berurutan dari kiri ke kanan. Anda boleh mengulang sesering yang Anda perlukan. Setiap akan mencicipi sampel yang berbeda berkumurlah dengan air tawar selama kurang lebih 30 detik. Berilah penilaian dengan kisaran nilai 1-4. Antar sampel tidak boleh memiliki nilai yang sama.
1 = paling tidak suka
2 = tidak suka
3 = suka
4 = paling suka

Kode sampel	Ranking

UJI RANKING HEDONIK

Nama : Tanggal Uji :
Produk : *Bread*
Atribut : *overall* aroma

Instruksi
Di hadapan anda tersedia 4 sampel *bread*. Ciumlah sampel secara berurutan dari kiri ke kanan. Anda boleh mengulang sesering yang Anda perlukan. Berilah penilaian dengan kisaran nilai 1-4. Antar sampel tidak boleh memiliki nilai yang sama.
1 = paling tidak suka
2 = tidak suka
3 = suka
4 = paling suka

Kode sampel	Ranking

UJI RANKING HEDONIK

Nama : Tanggal Uji :
Produk : *Bread*
Atribut : *overall* warna

Instruksi
Di hadapan anda tersedia 4 sampel *bread*. Amatilah sampel secara berurutan dari kiri ke kanan. Anda boleh mengulang sesering yang Anda perlukan. Berilah penilaian dengan kisaran nilai 1-4. Antar sampel boleh memiliki nilai yang sama.
1 = paling tidak suka
2 = tidak suka
3 = suka
4 = paling suka

Kode sampel	Ranking

Worksheet Uji Ranking Hedonik

Tanggal uji : 28 Juni 2008
Jenis sampel : *Bread*
Tujuan : mengetahui tingkat kesukaan prouk CPO *bread* dengan konsentrasi yang berbeda

Identifikasi Sampel
A : Roti tawar kontrol
B : Roti tawar 50% CPO
C : Roti tawar 60% CPO
D : Roti tawar 70% CPO

Kode Kombinasi Penyajian

no	Kode	no	Kode
1, 25, 49	DBAC	14, 38	ADBC
2, 26	ABCD	15, 39	CDBA
3, 27, 50	DCBA	16, 40	DCAB
4, 28	BDAC	17, 41	ABDC
5, 29	CBDA	18, 42	DBCA
6, 30	DABC	19, 43	BCAD
7, 31	ADCB	20, 44	CDAB
8, 32	BDCA	21, 45	BADC
9, 33	CBAD	22, 46	CADB
10, 34	ACBD	23, 47	ACDB
11, 35	BCDA	24, 48	BACD
12, 36	CABD		
13, 37	DACB		

Penyajian

Panelis	Kode sampel			
1, 25, 49	847	314	557	811
2, 26	245	461	313	179
3, 27, 50	448	598	172	861
4, 28	951	513	451	949
5, 29	694	128	773	154
6, 30	487	114	968	881
7, 31	332	712	326	614
8, 32	134	485	415	721
9, 33	452	215	372	946
10, 34	414	286	577	171
11, 35	956	935	244	746
12, 36	743	194	352	519
13, 37	975	449	714	512
14, 38	868	792	549	741

15, 39	441	446	349	941
16, 40	122	193	786	756
17, 41	637	777	195	158
18, 42	755	287	1635	164
19, 43	127	617	792	165
20, 44	721	191	152	299
21, 45	674	813	133	222
22, 46	145	581	317	397
23, 47	951	966	911	544
24, 48	117	332	553	313

Rekap Kode Sampel

Kode	Rekap								
A	557	245	861	451	154	114	332	721	372
	414	746	194	449	868	941	786	637	164
	792	152	813	581	951	232			
B	314	461	172	951	128	968	614	134	215
	577	956	352	512	549	349	756	777	287
	127	299	674	397	544				
C	811	313	598	949	694	881	326	415	452
	286	935	743	714	741	441	193	158	635
	617	721	222	145	966	553			
D	847	179	448	513	513	773	487	712	485
	946	171	244	519	975	792	446	122	195
	755	165	191	133	317	911	313		

HARGA POKOK PENJUALAN (HPP)

Bahan	Harga per satuan (Rp)	kontrol	CPO		
			50%	60%	70%
Terigu (500g)	8000/kg	4000	4000	4000	4000
Yeast (5 g)	2000/sachet	1000	1000	1000	1000
Gula (25 g)	6000/kg	500	500	500	500
Garam (10 g)	1000/kg	100	100	100	100
Susu (10 g)	6000/ons	600	600	600	600
Improver(1,5g)	3000/ons	100	100	100	100
Mentega putih	12500/kg	500	250	200	150
CPO	10000/kg	-	200	240	280
Total		6800	6750	6740	6730

UJI KIMIA (NORMALITAS DATA)

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	konsentrasi	Statistic	df	Sig.	Statistic	df	Sig.
kdr_air	"kontrol"	.269	6	.200*	.870	6	.228
	"Roti CPO 50%"	.171	6	.200*	.964	6	.849
	"roti CPO 60%"	.226	6	.200*	.946	6	.711
	"Roti CPO 70%"	.195	6	.200*	.967	6	.868
kdr_abu	"kontrol"	.288	6	.130	.824	6	.096
	"Roti CPO 50%"	.247	6	.200*	.875	6	.246
	"roti CPO 60%"	.215	6	.200*	.931	6	.591
	"Roti CPO 70%"	.256	6	.200*	.855	6	.171
kdr_lemak	"kontrol"	.265	6	.200*	.854	6	.168
	"Roti CPO 50%"	.265	6	.200*	.799	6	.058
	"roti CPO 60%"	.342	6	.027	.847	6	.149
	"Roti CPO 70%"	.217	6	.200*	.848	6	.152
antioksidan	"kontrol"	.260	6	.200*	.872	6	.235
	"Roti CPO 50%"	.189	6	.200*	.940	6	.659
	"roti CPO 60%"	.267	6	.200*	.835	6	.118
	"Roti CPO 70%"	.144	6	.200*	.970	6	.891
vit_A	"kontrol"	.188	6	.200*	.916	6	.479
	"Roti CPO 50%"	.388	6	.005	.725	6	.011
	"roti CPO 60%"	.363	6	.013	.739	6	.016
	"Roti CPO 70%"	.189	6	.200*	.919	6	.496
kdr_prot	"kontrol"	.224	6	.200*	.938	6	.644
	"Roti CPO 50%"	.248	6	.200*	.871	6	.230
	"roti CPO 60%"	.202	6	.200*	.853	6	.167
	"Roti CPO 70%"	.277	6	.168	.773	6	.033
TBA_0	"kontrol"	.225	6	.200*	.885	6	.295
	"Roti CPO 50%"	.165	6	.200*	.975	6	.923
	"roti CPO 60%"	.194	6	.200*	.919	6	.498
	"Roti CPO 70%"	.211	6	.200*	.924	6	.537
TBA_3	"kontrol"	.149	6	.200*	.979	6	.946
	"Roti CPO 50%"	.273	6	.185	.917	6	.486
	"roti CPO 60%"	.255	6	.200*	.890	6	.317
	"Roti CPO 70%"	.239	6	.200*	.897	6	.359
karbohidrat	"kontrol"	.217	6	.200*	.922	6	.522
	"Roti CPO 50%"	.267	6	.200*	.851	6	.159
	"roti CPO 60%"	.167	6	.200*	.983	6	.967
	"Roti CPO 70%"	.321	6	.053	.864	6	.203
porositas	"kontrol"	.227	6	.200*	.894	6	.340
	"Roti CPO 50%"	.270	6	.197	.892	6	.331
	"roti CPO 60%"	.200	6	.200*	.931	6	.584
	"Roti CPO 70%"	.193	6	.200*	.944	6	.694

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

a. Lilliefors Significance Correction

NPar Tests
Kruskal-Wallis Test

UJI BEDA ANTAR BATCH

Test Statistics[a,b]

	kdr_air	kdr_abu	kdr_lemak	antioksidan	vit_A	kdr_prot	TBA_0	TBA_3	karbohidrat	porositas	hardness	spring	baking
Chi-Square	.021	6.327	.303	.013	.053	.630	2.347	.404	.030	1.478	1.203	.563	.270
df	1	1	1	1	1	1	1	1	1	1	1	1	1
Asymp. Sig.	.885	.012	.582	.908	.817	.427	.126	.525	.862	.224	.273	.453	.603

a. Kruskal Wallis Test

b. Grouping Variable: batch

UJI BEDA ANTAR KONSENTRASI

Test Statistics[a,b]

	kdr_air	kdr_abu	kdr_lemak	antioksidan	vit_A	kdr_prot	TBA_0	TBA_3	karbohidrat
Chi-Square	21.609	5.465	20.227	21.600	21.600	10.148	3.822	21.609	20.707
df	3	3	3	3	3	3	3	3	3
Asymp. Sig.	.000	.141	.000	.000	.000	.017	.281	.000	.000

a. Kruskal Wallis Test

b. Grouping Variable: konsentrasi

Mann-Whitney Test

kontrol VS 50%

Test Statistics[b]

	kdr_air	kdr_lemak	antioksidan	vit_A	kdr_prot	TBA_3	karbohidrat
Mann-Whitney U	.000	4.000	.000	.000	12.500	.000	3.000
Wilcoxon W	21.000	25.000	21.000	21.000	33.500	21.000	24.000
Z	-2.882	-2.290	-2.882	-2.882	-.898	-2.882	-2.402
Asymp. Sig. (2-tailed)	.004	.022	.004	.004	.369	.004	.016
Exact Sig. [2*(1-tailed Sig.)]	.002[a]	.026[a]	.002[a]	.002[a]	.394[a]	.002[a]	.015[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

50% VS 60%

Test Statistics[b]

	kdr_air	kdr_lemak	antioksidan	vit_A	kdr_prot	TBA_3	karbohidrat
Mann-Whitney U	.000	.000	.000	.000	8.000	.000	.000
Wilcoxon W	21.000	21.000	21.000	21.000	29.000	21.000	21.000
Z	-2.882	-2.913	-2.882	-2.882	-1.630	-2.887	-2.882
Asymp. Sig. (2-tailed)	.004	.004	.004	.004	.103	.004	.004
Exact Sig. [2*(1-tailed Sig.)]	.002[a]	.002[a]	.002[a]	.002[a]	.132[a]	.002[a]	.002[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

60% VS 70%

Test Statistics[b]

	kdr_air	kdr_lemak	antioksidan	vit_A	kdr_prot	TBA_3	karbohidrat
Mann-Whitney U	.000	3.000	.000	.000	15.000	.000	1.000
Wilcoxon W	21.000	24.000	21.000	21.000	36.000	21.000	22.000
Z	-2.887	-2.419	-2.882	-2.882	-.509	-2.887	-2.722
Asymp. Sig. (2-tailed)	.004	.016	.004	.004	.611	.004	.006
Exact Sig. [2*(1-tailed Sig.)]	.002[a]	.015[a]	.002[a]	.002[a]	.699[a]	.002[a]	.004[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

kontrol vs 60%

Test Statistics[b]

	kdr_air	kdr_lemak	antioksidan	vit_A	kdr_prot	TBA_3	karbohidrat
Mann-Whitney U	.000	.000	.000	.000	3.000	.000	.000
Wilcoxon W	21.000	21.000	21.000	21.000	24.000	21.000	21.000
Z	-2.882	-2.913	-2.882	-2.882	-2.432	-2.887	-2.882
Asymp. Sig. (2-tailed)	.004	.004	.004	.004	.015	.004	.004
Exact Sig. [2*(1-tailed Sig.)]	.002[a]	.002[a]	.002[a]	.002[a]	.015[a]	.002[a]	.002[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

kontrol vs 70%

Test Statistics[b]

	kdr_air	kdr_lemak	antioksidan	vit_A	kdr_prot	TBA_3	karbohidrat
Mann-Whitney U	.000	.000	.000	.000	2.500	.000	.000
Wilcoxon W	21.000	21.000	21.000	21.000	23.500	21.000	21.000
Z	-2.887	-2.892	-2.882	-2.882	-2.527	-2.882	-2.882
Asymp. Sig. (2-tailed)	.004	.004	.004	.004	.012	.004	.004
Exact Sig. [2*(1-tailed Sig.)]	.002[a]	.002[a]	.002[a]	.002[a]	.009[a]	.002[a]	.002[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

60% vs 70%

Test Statistics[b]

	kdr_air	kdr_lemak	antioksidan	vit_A	kdr_prot	TBA_3	karbohidrat
Mann-Whitney U	.000	.000	.000	.000	6.500	.000	.000
Wilcoxon W	21.000	21.000	21.000	21.000	27.500	21.000	21.000
Z	-2.887	-2.892	-2.882	-2.882	-1.892	-2.882	-2.882
Asymp. Sig. (2-tailed)	.004	.004	.004	.004	.059	.004	.004
Exact Sig. [2*(1-tailed Sig.)]	.002[a]	.002[a]	.002[a]	.002[a]	.065[a]	.002[a]	.002[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

UJI FISIK

Normality

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	konsentrasi	Statistic	df	Sig.	Statistic	df	Sig.
baking_loss	kontrol	.270	6	.197	.915	6	.473
	50% CPO	.185	6	.200*	.935	6	.617
	60% CPO	.298	6	.103	.821	6	.090
	70% CPO	.275	6	.177	.893	6	.333
springiness	kontrol	.179	6	.200*	.957	6	.798
	50% CPO	.349	6	.022	.726	6	.012
	60% CPO	.301	6	.096	.778	6	.037
	70% CPO	.379	6	.007	.708	6	.008
hardness	kontrol	.191	6	.200*	.930	6	.576
	50% CPO	.186	6	.200*	.950	6	.740
	60% CPO	.242	6	.200*	.875	6	.248
	70% CPO	.294	6	.114	.831	6	.109

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

a. Lilliefors Significance Correction

Kruskal-Wallis Test

Ranks

	konsentrasi	N	Mean Rank
baking_loss	kontrol	6	19.00
	50% CPO	6	17.50
	60% CPO	6	10.00
	70% CPO	6	3.50
	Total	24	
hardness	kontrol	6	15.17
	50% CPO	6	14.33
	60% CPO	6	11.50
	70% CPO	6	9.00
	Total	24	
springiness	kontrol	6	12.33
	50% CPO	6	15.00
	60% CPO	6	10.33
	70% CPO	6	12.33
	Total	24	

Test Statistics[a,b]

	baking_loss	hardness	springiness
Chi-Square	18.540	2.847	1.320
df	3	3	3
Asymp. Sig.	.000	.416	.724

a. Kruskal Wallis Test

b. Grouping Variable: konsentrasi

Mann-Whitney Test
kontrol vs 50%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
baking_loss	kontrol	6	7.50	45.00
	50% CPO	6	5.50	33.00
	Total	12		
hardness	kontrol	6	6.83	41.00
	50% CPO	6	6.17	37.00
	Total	12		
springiness	kontrol	6	5.67	34.00
	50% CPO	6	7.33	44.00
	Total	12		

Test Statistics[b]

	baking_loss	hardness	springiness
Mann-Whitney U	12.000	16.000	13.000
Wilcoxon W	33.000	37.000	34.000
Z	-.961	-.320	-.801
Asymp. Sig. (2-tailed)	.337	.749	.423
Exact Sig. [2*(1-tailed Sig.)]	.394[a]	.818[a]	.485[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

kontrol vs 60%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
baking_loss	kontrol	6	9.00	54.00
	60% CPO	6	4.00	24.00
	Total	12		
hardness	kontrol	6	7.50	45.00
	60% CPO	6	5.50	33.00
	Total	12		
springiness	kontrol	6	7.17	43.00
	60% CPO	6	5.83	35.00
	Total	12		

Test Statistics[b]

	baking_loss	hardness	springiness
Mann-Whitney U	3.000	12.000	14.000
Wilcoxon W	24.000	33.000	35.000
Z	-2.402	-.961	-.641
Asymp. Sig. (2-tailed)	.016	.337	.522
Exact Sig. [2*(1-tailed Sig.)]	.015[a]	.394[a]	.589[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

kontrol vs 70%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
baking_loss	kontrol	6	9.50	57.00
	70% CPO	6	3.50	21.00
	Total	12		
hardness	kontrol	6	7.83	47.00
	70% CPO	6	5.17	31.00
	Total	12		
springiness	kontrol	6	6.50	39.00
	70% CPO	6	6.50	39.00
	Total	12		

Test Statistics[b]

	baking_loss	hardness	springiness
Mann-Whitney U	.000	10.000	18.000
Wilcoxon W	21.000	31.000	39.000
Z	-2.882	-1.281	.000
Asymp. Sig. (2-tailed)	.004	.200	1.000
Exact Sig. [2*(1-tailed Sig.)]	.002[a]	.240[a]	1.000[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

50% vs 60%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
baking_loss	50% CPO	6	9.50	57.00
	60% CPO	6	3.50	21.00
	Total	12		
hardness	50% CPO	6	7.50	45.00
	60% CPO	6	5.50	33.00
	Total	12		
springiness	50% CPO	6	7.67	46.00
	60% CPO	6	5.33	32.00
	Total	12		

Test Statistics[b]

	baking_loss	hardness	springiness
Mann-Whitney U	.000	12.000	11.000
Wilcoxon W	21.000	33.000	32.000
Z	-2.882	-.961	-1.121
Asymp. Sig. (2-tailed)	.004	.337	.262
Exact Sig. [2*(1-tailed Sig.)]	.002[a]	.394[a]	.310[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

50% vs 70%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
baking_loss	50% CPO	6	9.50	57.00
	70% CPO	6	3.50	21.00
	Total	12		
hardness	50% CPO	6	7.67	46.00
	70% CPO	6	5.33	32.00
	Total	12		
springiness	50% CPO	6	7.00	42.00
	70% CPO	6	6.00	36.00
	Total	12		

Test Statistics[b]

	baking_loss	hardness	springiness
Mann-Whitney U	.000	11.000	15.000
Wilcoxon W	21.000	32.000	36.000
Z	-2.882	-1.121	-.480
Asymp. Sig. (2-tailed)	.004	.262	.631
Exact Sig. [2*(1-tailed Sig.)]	.002[a]	.310[a]	.699[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

60% vs 70%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
baking_loss	60% CPO	6	9.50	57.00
	70% CPO	6	3.50	21.00
	Total	12		
hardness	60% CPO	6	7.50	45.00
	70% CPO	6	5.50	33.00
	Total	12		
springiness	60% CPO	6	6.17	37.00
	70% CPO	6	6.83	41.00
	Total	12		

Test Statistics[b]

	baking_loss	hardness	springiness
Mann-Whitney U	.000	12.000	16.000
Wilcoxon W	21.000	33.000	37.000
Z	-2.882	-.961	-.320
Asymp. Sig. (2-tailed)	.004	.337	.749
Exact Sig. [2*(1-tailed Sig.)]	.002[a]	.394[a]	.818[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

Porositas

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	konsentrasi	Statistic	df	Sig.	Statistic	df	Sig.
porositas	"kontrol"	.227	6	.200*	.894	6	.340
	"Roti CPO 50%"	.270	6	.197	.892	6	.331
	"roti CPO 60%"	.200	6	.200*	.931	6	.584
	"Roti CPO 70%"	.193	6	.200*	.944	6	.694

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

a. Lilliefors Significance Correction

kruskal walis

Ranks

	konsentrasi	N	Mean Rank
porositas	"kontrol"	6	21.50
	"Roti CPO 50%"	6	9.67
	"roti CPO 60%"	6	12.17
	"Roti CPO 70%"	6	6.67
	Total	24	

Test Statistics[a,b]

	porositas
Chi-Square	14.858
df	3
Asymp. Sig.	.002

a. Kruskal Wallis Test

b. Grouping Variable: konsentrasi

mann whitney

kontrol vs 50%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
porositas	"kontrol"	6	9.50	57.00
	"Roti CPO 50%"	6	3.50	21.00
	Total	12		

Test Statistics[b]

	porositas
Mann-Whitney U	.000
Wilcoxon W	21.000
Z	-2.887
Asymp. Sig. (2-tailed)	.004
Exact Sig. [2*(1-tailed Sig.)]	.002[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

kontrol vs 60%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
porositas	"kontrol"	6	9.50	57.00
	"roti CPO 60%"	6	3.50	21.00
	Total	12		

Test Statistics[b]

	porositas
Mann-Whitney U	.000
Wilcoxon W	21.000
Z	-2.882
Asymp. Sig. (2-tailed)	.004
Exact Sig. [2*(1-tailed Sig.)]	.002[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

kontrol vs 70%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
porositas	"kontrol"	6	9.50	57.00
	"Roti CPO 70%"	6	3.50	21.00
	Total	12		

Test Statistics[b]

	porositas
Mann-Whitney U	.000
Wilcoxon W	21.000
Z	-2.887
Asymp. Sig. (2-tailed)	.004
Exact Sig. [2*(1-tailed Sig.)]	.002[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

50% vs 60%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
porositas	"Roti CPO 50%"	6	5.50	33.00
	"roti CPO 60%"	6	7.50	45.00
	Total	12		

Test Statistics[b]

	porositas
Mann-Whitney U	12.000
Wilcoxon W	33.000
Z	-.971
Asymp. Sig. (2-tailed)	.332
Exact Sig. [2*(1-tailed Sig.)]	.394[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

50% vs 70%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
porositas	"Roti CPO 50%"	6	7.67	46.00
	"Roti CPO 70%"	6	5.33	32.00
	Total	12		

Test Statistics[b]

	porositas
Mann-Whitney U	11.000
Wilcoxon W	32.000
Z	-1.129
Asymp. Sig. (2-tailed)	.259
Exact Sig. [2*(1-tailed Sig.)]	.310[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

60% vs 70%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
porositas	"roti CPO 60%"	6	8.17	49.00
	"Roti CPO 70%"	6	4.83	29.00
	Total	12		

Test Statistics[b]

	porositas
Mann-Whitney U	8.000
Wilcoxon W	29.000
Z	-1.610
Asymp. Sig. (2-tailed)	.107
Exact Sig. [2*(1-tailed Sig.)]	.132[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

PENGEMBANGAN
Kruskal Walis

Ranks

	konsentrasi	N	Mean Rank
pengembangan	kontrol	3	2.00
	50%	3	5.00
	60%	3	8.00
	70%	3	11.00
	Total	12	

Test Statistics[a,b]

	pengembangan
Chi-Square	10.385
df	3
Asymp. Sig.	.016

a. Kruskal Wallis Test

b. Grouping Variable: konsentrasi

Mann-whitney
kontrol vs 50%

Test Statistics[b]

	pengembangan
Mann-Whitney U	.000
Wilcoxon W	6.000
Z	-1.964
Asymp. Sig. (2-tailed)	.050
Exact Sig. [2*(1-tailed Sig.)]	.100[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

50% vs 60%

Test Statistics[b]

	pengembangan
Mann-Whitney U	.000
Wilcoxon W	6.000
Z	-1.964
Asymp. Sig. (2-tailed)	.050
Exact Sig. [2*(1-tailed Sig.)]	.100[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

60% vs 70%

Test Statistics[b]

	pengembangan
Mann-Whitney U	.000
Wilcoxon W	6.000
Z	-1.964
Asymp. Sig. (2-tailed)	.050
Exact Sig. [2*(1-tailed Sig.)]	.100[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

kontrol vs 60%

Test Statistics[b]

	pengembangan
Mann-Whitney U	.000
Wilcoxon W	6.000
Z	-1.964
Asymp. Sig. (2-tailed)	.050
Exact Sig. [2*(1-tailed Sig.)]	.100[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

kontrol vs 70%

Test Statistics[b]

	pengembangan
Mann-Whitney U	.000
Wilcoxon W	6.000
Z	-1.964
Asymp. Sig. (2-tailed)	.050
Exact Sig. [2*(1-tailed Sig.)]	.100[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

60% vs 70%

Test Statistics[b]

	pengembangan
Mann-Whitney U	.000
Wilcoxon W	6.000
Z	-1.964
Asymp. Sig. (2-tailed)	.050
Exact Sig. [2*(1-tailed Sig.)]	.100[a]

a. Not corrected for ties.

b. Grouping Variable: konsentrasi

UJI SENSORIS

UJI NORMALITAS

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	konsentrasi	Statistic	df	Sig.	Statistic	df	Sig.
rasa	"kontrol"	.315	50	.000	.739	50	.000
	"Roti CPO 50%"	.219	50	.000	.876	50	.000
	"Roti CPO 60%"	.215	50	.000	.880	50	.000
	"Roti CPO 70%"	.243	50	.000	.814	50	.000
warna	"kontrol"	.293	50	.000	.754	50	.000
	"Roti CPO 50%"	.195	50	.000	.878	50	.000
	"Roti CPO 60%"	.260	50	.000	.867	50	.000
	"Roti CPO 70%"	.248	50	.000	.803	50	.000
aroma	"kontrol"	.233	50	.000	.779	50	.000
	"Roti CPO 50%"	.236	50	.000	.866	50	.000
	"Roti CPO 60%"	.186	50	.000	.876	50	.000
	"Roti CPO 70%"	.228	50	.000	.852	50	.000
tekstur	"kontrol"	.194	50	.000	.832	50	.000
	"Roti CPO 50%"	.199	50	.000	.876	50	.000
	"Roti CPO 60%"	.186	50	.000	.844	50	.000
	"Roti CPO 70%"	.188	50	.000	.860	50	.000
hardness	"kontrol"	.233	50	.000	.823	50	.000
	"Roti CPO 50%"	.232	50	.000	.874	50	.000
	"Roti CPO 60%"	.220	50	.000	.843	50	.000
	"Roti CPO 70%"	.208	50	.000	.835	50	.000

a. Lilliefors Significance Correction

NPar Tests
Kruskal-Wallis Test

Ranks

	konsentrasi	N	Mean Rank
hardness	"kontrol"	50	93.50
	"Roti CPO 50%"	50	100.50
	"Roti CPO 60%"	50	117.50
	"Roti CPO 70%"	50	90.50
	Total	200	
rasa	"kontrol"	50	124.50
	"Roti CPO 50%"	50	89.50
	"Roti CPO 60%"	50	103.50
	"Roti CPO 70%"	50	84.50
	Total	200	
warna	"kontrol"	50	111.50
	"Roti CPO 50%"	50	98.50
	"Roti CPO 60%"	50	112.50
	"Roti CPO 70%"	50	79.50
	Total	200	
aroma	"kontrol"	50	100.50
	"Roti CPO 50%"	50	110.50
	"Roti CPO 60%"	50	97.50
	"Roti CPO 70%"	50	93.50
	Total	200	
tekstur	"kontrol"	50	100.50
	"Roti CPO 50%"	50	99.50
	"Roti CPO 60%"	50	105.50
	"Roti CPO 70%"	50	96.50
	Total	200	

Test Statistics[a,b]

	hardness	rasa	warna	aroma	tekstur
Chi-Square	6.973	15.315	11.303	2.515	.669
df	3	3	3	3	3
Asymp. Sig.	.073	.002	.010	.473	.881

a. Kruskal Wallis Test

b. Grouping Variable: konsentrasi

NPar Tests
Mann-Whitney Test
kontrol vs 50%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
rasa	"kontrol"	50	59.46	2973.00
	"Roti CPO 50%"	50	41.54	2077.00
	Total	100		
warna	"kontrol"	50	53.80	2690.00
	"Roti CPO 50%"	50	47.20	2360.00
	Total	100		
aroma	"kontrol"	50	48.66	2433.00
	"Roti CPO 50%"	50	52.34	2617.00
	Total	100		
tekstur	"kontrol"	50	50.76	2538.00
	"Roti CPO 50%"	50	50.24	2512.00
	Total	100		
hardness	"kontrol"	50	48.67	2433.50
	"Roti CPO 50%"	50	52.33	2616.50
	Total	100		

Test Statistics[a]

	rasa	warna	aroma	tekstur	hardness
Mann-Whitney U	802.000	1085.000	1158.000	1237.000	1158.500
Wilcoxon W	2077.000	2360.000	2433.000	2512.000	2433.500
Z	-3.196	-1.179	-.657	-.093	-.652
Asymp. Sig. (2-tailed)	.001	.239	.511	.926	.514

a. Grouping Variable: konsentrasi

kontrol vs 60%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
rasa	"kontrol"	50	56.71	2835.50
	"Roti CPO 60%"	50	44.29	2214.50
	Total	100		
warna	"kontrol"	50	51.52	2576.00
	"Roti CPO 60%"	50	49.48	2474.00
	Total	100		
aroma	"kontrol"	50	51.14	2557.00
	"Roti CPO 60%"	50	49.86	2493.00
	Total	100		
tekstur	"kontrol"	50	49.31	2465.50
	"Roti CPO 60%"	50	51.69	2584.50
	Total	100		
hardness	"kontrol"	50	44.74	2237.00
	"Roti CPO 60%"	50	56.26	2813.00
	Total	100		

Test Statistics[a]

	rasa	warna	aroma	tekstur	hardness
Mann-Whitney U	939.500	1199.000	1218.000	1190.500	962.000
Wilcoxon W	2214.500	2474.000	2493.000	2465.500	2237.000
Z	-2.226	-.365	-.228	-.424	-2.055
Asymp. Sig. (2-tailed)	.026	.715	.820	.671	.040

a. Grouping Variable: konsentrasi

kontrol vs 70%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
rasa	"kontrol"	50	59.33	2966.50
	"Roti CPO 70%"	50	41.67	2083.50
	Total	100		
warna	"kontrol"	50	57.18	2859.00
	"Roti CPO 70%"	50	43.82	2191.00
	Total	100		
aroma	"kontrol"	50	51.70	2585.00
	"Roti CPO 70%"	50	49.30	2465.00
	Total	100		
tekstur	"kontrol"	50	51.43	2571.50
	"Roti CPO 70%"	50	49.57	2478.50
	Total	100		
hardness	"kontrol"	50	51.09	2554.50
	"Roti CPO 70%"	50	49.91	2495.50
	Total	100		

Test Statistics[a]

	rasa	warna	aroma	tekstur	hardness
Mann-Whitney U	808.500	916.000	1190.000	1203.500	1220.500
Wilcoxon W	2083.500	2191.000	2465.000	2478.500	2495.500
Z	-3.182	-2.412	-.429	-.331	-.211
Asymp. Sig. (2-tailed)	.001	.016	.668	.740	.833

a. Grouping Variable: konsentrasi

50% vs 60%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
rasa	"Roti CPO 50%"	50	46.42	2321.00
	"Roti CPO 60%"	50	54.58	2729.00
	Total	100		
warna	"Roti CPO 50%"	50	46.46	2323.00
	"Roti CPO 60%"	50	54.54	2727.00
	Total	100		
aroma	"Roti CPO 50%"	50	54.10	2705.00
	"Roti CPO 60%"	50	46.90	2345.00
	Total	100		
tekstur	"Roti CPO 50%"	50	48.92	2446.00
	"Roti CPO 60%"	50	52.08	2604.00
	Total	100		
hardness	"Roti CPO 50%"	50	45.83	2291.50
	"Roti CPO 60%"	50	55.17	2758.50
	Total	100		

Test Statistics[a]

	rasa	warna	aroma	tekstur	hardness
Mann-Whitney U	1046.000	1048.000	1070.000	1171.000	1016.500
Wilcoxon W	2321.000	2323.000	2345.000	2446.000	2291.500
Z	-1.470	-1.460	-1.289	-.563	-1.672
Asymp. Sig. (2-tailed)	.142	.144	.197	.574	.095

a. Grouping Variable: konsentrasi

50% vs 70%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
rasa	"Roti CPO 50%"	50	52.54	2627.00
	"Roti CPO 70%"	50	48.46	2423.00
	Total	100		
warna	"Roti CPO 50%"	50	55.84	2792.00
	"Roti CPO 70%"	50	45.16	2258.00
	Total	100		
aroma	"Roti CPO 50%"	50	55.06	2753.00
	"Roti CPO 70%"	50	45.94	2297.00
	Total	100		
tekstur	"Roti CPO 50%"	50	51.34	2567.00
	"Roti CPO 70%"	50	49.66	2483.00
	Total	100		
hardness	"Roti CPO 50%"	50	53.34	2667.00
	"Roti CPO 70%"	50	47.66	2383.00
	Total	100		

Test Statistics[a]

	rasa	warna	aroma	tekstur	hardness
Mann-Whitney U	1148.000	983.000	1022.000	1208.000	1108.000
Wilcoxon W	2423.000	2258.000	2297.000	2483.000	2383.000
Z	-.731	-1.909	-1.626	-.300	-1.013
Asymp. Sig. (2-tailed)	.465	.056	.104	.764	.311

a. Grouping Variable: konsentrasi

60% vs 70%

Ranks

	konsentrasi	N	Mean Rank	Sum of Ranks
rasa	"Roti CPO 60%"	50	55.63	2781.50
	"Roti CPO 70%"	50	45.37	2268.50
	Total	100		
warna	"Roti CPO 60%"	50	59.48	2974.00
	"Roti CPO 70%"	50	41.52	2076.00
	Total	100		
aroma	"Roti CPO 60%"	50	51.74	2587.00
	"Roti CPO 70%"	50	49.26	2463.00
	Total	100		
tekstur	"Roti CPO 60%"	50	52.73	2636.50
	"Roti CPO 70%"	50	48.27	2413.50
	Total	100		
hardness	"Roti CPO 60%"	50	57.07	2853.50
	"Roti CPO 70%"	50	43.93	2196.50
	Total	100		

Test Statistics[a]

	rasa	warna	aroma	tekstur	hardness
Mann-Whitney U	993.500	801.000	1188.000	1138.500	921.500
Wilcoxon W	2268.500	2076.000	2463.000	2413.500	2196.500
Z	-1.830	-3.206	-.443	-.794	-2.341
Asymp. Sig. (2-tailed)	.067	.001	.658	.427	.019

a. Grouping Variable: konsentrasi

Tabel Hasil Penelitian
Uji Kimia

Sample	batch	Kadar air (%)	Kadar abu (%)	Lemak (%)	Protein (%)	Karbo(%)	Antioksidan(%)	Vit. A (IU)	TBA-0	TBA-3
kontrol	1	29.43	2.00	3.51	9.58	55.48	8.46	2643.28	0.078	1.527
		30.10	1.95	4.21	11.18	52.56	6.18	2562.55	0.078	1.563
		29.98	2.00	3.86	10.86	53.30	7.00	2518.28	0.092	1.459
	2	29.35	2.05	3.51	9.58	55.51	7.21	2427.13	0.125	1.429
		30.28	1.80	4.21	8.94	54.77	6.09	2820.37	0.087	1.331
		29.48	1.55	4.35	8.30	56.32	5.93	2450.57	0.109	1.391
Rata2		**29.77**	**1.89**	**3.94**	**9.74**	**54.66**	**6.81**	**2570.36**	**0.095**	**1.450**
50%	1	32.38	1.70	4.74	9.58	51.61	9.68	10062.70	0.071	0.359
		32.15	1.86	4.74	9.26	51.99	9.24	10075.72	0.088	0.372
		32.48	1.72	4.06	9.58	52.16	9.70	10565.32	0.059	0.303
	2	32.73	1.62	4.06	9.90	51.69	9.07	9989.78	0.073	0.279
		32.23	1.68	4.60	7.98	53.51	8.94	10091.35	0.079	0.312
		32.05	1.86	4.53	8.30	53.25	9.79	9948.12	0.083	0.314
Rata2		**32.33**	**1.74**	**4.45**	**9.10**	**52.37**	**9.40**	**10122.16**	**0.075**	**0.323**
60%	1	35.50	1.73	4.84	8.62	49.31	13.32	11200.74	0.066	0.276
		35.45	1.87	5.16	8.62	48.90	13.89	11161.68	0.125	0.251
		34.95	1.60	5.16	7.98	50.31	13.08	11146.06	0.092	0.251
	2	35.35	1.72	5.16	8.30	49.47	11.72	11578.36	0.137	0.221
		35.60	1.56	5.81	8.30	48.73	13.82	11205.95	0.103	0.225
		36.13	1.62	6.45	7.98	47.82	12.80	11607.00	0.065	0.151
Rata2		**35.50**	**1.68**	**5.43**	**8.30**	**49.56**	**13.10**	**11316.63**	**0.098**	**0.229**
70%	1	36.40	1.87	6.45	7.98	47.29	18.71	12297.12	0.052	0.130
		36.60	1.73	5.76	7.98	47.92	17.74	12672.13	0.092	0.085
		37.08	1.87	5.82	7.98	47.25	18.84	12625.25	0.085	0.092
	2	36.60	1.43	6.14	8.30	47.52	18.34	12166.91	0.118	0.073
		36.75	1.52	7.66	8.30	45.77	17.84	11906.49	0.122	0.139
		36.92	1.50	7.53	8.94	45.10	18.05	11817.94	0.084	0.125
Rata2		**36.73**	**1.65**	**6.56**	**8.25**	**46.81**	**18.25**	**12247.64**	**0.092**	**0.107**

Uji Fisik

Sample	batch	baking loss(%)	hardness(N)	elastisitas(mm)	porositas	jumlah pori
kontrol	1	10.07	2.42	11.62	1.93	80
		10.79	2.54	12.42	1.92	82
		9.66	3.24	12.02	1.86	90
	2	10.24	2.81	12.81	1.9	83
		9.71	3.11	11.46	1.91	86
		8.30	2.63	11.88	1.85	89
rata-rata		**9.80**	**2.79**	**12.04**	**1.90**	**85.00**
50%	1	10.04	2.84	20.31	1.76	102
		9.91	2.37	15.20	1.79	105
		9.46	2.89	11.89	1.81	98
	2	9.57	2.57	11.64	1.75	105
		9.78	2.47	12.18	1.80	106
		9.40	3.14	11.67	1.76	101
rata-rata		**9.69**	**2.71**	**13.81**	**1.78**	**102.83**
60%	1	8.17	2.80	10.78	1.83	90
		8.61	2.84	11.44	1.81	92
		6.96	2.36	11.23	1.80	98
	2	8.84	2.45	11.69	1.76	95
		8.54	2.49	12.89	1.84	88
		8.27	2.75	16.36	1.74	92
rata-rata		**8.23**	**2.61**	**12.40**	**1.80**	**92.50**
70%	1	6.70	2.35	12.67	1.74	96
		6.19	3.39	11.23	1.77	96
		6.25	3.09	11.16	1.80	95
	2	4.78	2.11	12.80	1.75	90
		5.45	2.25	10.82	1.69	97
		6.57	2.05	11.72	1.77	99
rata-rata		**5.99**	**2.54**	**11.74**	**1.75**	**95.50**

Uji Tambahan

Sample	batch	hardness hari ke-3 (N)	springiness hari ke-3 (mm)
kontrol	1	4.35	5.33
		5.14	4.79
		5.00	5.20
	2	4.74	4.23
		3.94	4.75
		4.97	4.77
rata-rata		**4.69**	**4.85**
50%	1	3.47	7.04
		4.11	6.92
		3.61	7.40
	2	3.65	6.88
		4.09	5.39
		4.04	5.28
rata-rata		**3.83**	**6.48**
60%	1	3.47	5.77
		3.68	5.05
		3.49	4.90
	2	3.61	4.08
		3.81	4.04
		3.39	4.33
rata-rata		**3.57**	**4.70**
70%	1	2.64	2.94
		2.40	3.96
		2.20	3.46
	2	3.13	2.83
		3.68	2.54
		3.74	3.65
rata-rata		**2.96**	**3.23**

Cara Pengukuran Porositas

Rata –rata diameter pori = $\frac{a\ cm + b\ cm + cm + d\ cm + \ldots}{n}$

= X cm

Rata – rata ukuran pori - pori (dalam luas 9 cm^2)

= X / perbesaran

a,b,c,d,.... = diameter pori

n = jumlah pori – pori