

LAMPIRAN A
HASIL UJI MUTU FISIK GRANUL

Mutu fisik yang diuji	Replikasi	Formula Tablet <i>Buccoadhesive Propranolol Hcl</i>				Persyaratan
		F1(-1)	F2(a)	F3(b)	F4(ab)	
Kadar air (Persen)	I	3,05	3,27	3,11	3,19	3 – 5 % (Voigt, 1995)
	II	3,14	3,05	3,34	3,41	
	III	3,25	3,19	3,04	3,25	
	\bar{X}	3,15	3,17	3,16	3,28	
	SD	0,10	0,11	0,16	0,07	
Waktu alir (detik)	I	2,38	2,58	2,45	2,44	Tidak lebih dari 10 detik (Siregar, 2010)
	II	2,43	2,39	2,52	2,57	
	III	2,54	2,32	2,21	2,50	
	\bar{X}	2,45	2,43	2,39	2,50	
	SD	0,08	0,13	0,16	0,07	
Sudut diam (derajat)	I	32,01	30,58	30,76	31,75	25 – 40 (Wells, 1993)
	II	33,84	34,62	31,62	31,76	
	III	34,97	31,53	32,57	30,74	
	\bar{X}	33,61	32,24	31,65	31,42	
	SD	1,49	2,11	0,91	0,59	
Indeks kompresi-bilitas (persen)	I	17,65	15,39	22,51	17,09	18 – 21 Dapat mengalir (Wells, 1993)
	II	22,50	14,29	17,95	21,63	
	III	18,18	20,59	17,07	16,68	
	\bar{X}	20,34	16,76	19,18	18,47	
	SD	3,05	3,37	2,92	2,75	

Contoh perhitungan sudut diam :

Formula 1 (-1) Replikasi I

W persegi panjang = 4,69 gram

W lingkaran = 0,49 gram

Luas persegi panjang = 29 x 24 = 696 cm²

Luas lingkaran = $\frac{0,49}{4,69} \times 696 = 72,7164$

$$L = \pi r^2$$

$$r^2 = \sqrt{\frac{L}{\pi}}$$

$$= \sqrt{\frac{72,7164}{3,14}}$$

$$= 4,8 \text{ cm}$$

$$\text{tg } \alpha = \frac{t}{r} = \frac{3}{4,8} = 0,6$$

$$\alpha = 32,01$$

Contoh perhitungan indeks kompresibilitas :

Formula 1 (-1) Replikasi I

Berat gelas ukur = 125,40 gram (W_1)

Berat gelas ukur + granul = 147,60 gram (W_2)

V_0 = 78 mL

V_1 = 65 mL

$$\text{Bj nyata} = \frac{(W_2 - W_1)}{V_0} = \frac{(147,60 - 125,40)}{78} = 0,28$$

$$\text{Bj mampat} = \frac{(W_2 - W_1)}{V_1} = \frac{(147,60 - 125,40)}{65} = 0,34$$

$$\% \text{ Kompresibilitas} = \left[1 - \frac{\text{Bj nyata}}{\text{Bj mampat}} \right] \times 100\% =$$

$$\left[1 - \frac{0,28}{0,34} \right] \times 100\% = 17,65 \%$$

LAMPIRAN B
HASIL UJI PERCOBAAN WAKTU ALIR GRANUL

Hasil Uji Waktu Alir Untuk 100 gram Granul

Replikasi	Berat Granul (gram)	Waktu (detik)	Persyaratan
I	100,00	9,6	≤ 10 detik (Lieberman <i>et al.</i> , 1989)
II	100,56	10,0	≤ 10 detik (Lieberman <i>et al.</i> , 1989)
III	100,52	9,6	≤ 10 detik (Lieberman <i>et al.</i> , 1989)

Hasil Uji Waktu Alir Untuk 25 gram Granul

Replikasi	Berat Granul (gram)	Waktu (detik)	Persyaratan
I	25,54	2,5	≤ 2,5 detik
II	25,16	2,5	≤ 2,5 detik
III	25,23	2,4	≤ 2,5 detik

Group Statistics

hubungan		N	Mean	Std. Deviation	Std. Error Mean
waktu	25 gram granul	3	2.4433	.01155	.00667
	100 gram granul	3	2.4333	.05774	.03333

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Waktu	Equal variances assumed	9,846	.035	.294	4	.783	.0100	.03399	-.08438	.10438
	Equal variances not assumed			.294	2.160	.795	.0100	.03399	-.12637	.14637

LAMPIRAN C
HASIL UJI KESERAGAMAN KANDUNGAN TABLET BUKAL
PROPRANOLOL HCl

Hasil Uji Keseragaman Kandungan Tablet F1 (-1) Replikasi I

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,816	49,61	151,4	50,87	97,52
0,881	53,98	153,8	51,68	104,46
0,799	48,47	151,7	50,97	95,09
0,837	51,02	150,5	50,57	100,90
0,875	53,58	148,2	49,80	107,59
0,879	53,85	153,5	51,58	104,40
0,868	53,11	152,7	51,31	103,51
0,877	53,71	154,2	51,81	103,67
0,891	54,65	153,2	51,48	106,17
0,874	53,51	153,5	51,58	103,75
			\bar{X}	102,71
			SD	3,84
			KV	3,74

Hasil Uji Keseragaman Kandungan Tablet F2 (a) Replikasi I

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,799	48,47	152,7	51,31	94,47
0,879	53,85	152,6	51,27	105,02
0,798	48,40	152,4	51,21	94,52
0,846	51,63	145,3	48,82	105,75
0,877	53,71	153,5	51,58	104,14
0,869	53,17	154,9	52,05	102,16
0,881	53,98	154,5	51,91	103,98
0,884	54,18	149,7	50,30	107,72
0,829	50,48	153,7	51,64	97,76
0,893	54,79	153,8	51,68	106,02
			\bar{X}	102,15
			SD	4,84
			KV	4,74

Hasil Uji Keseragaman Kandungan Tablet F3 (b) Replikasi I

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,873	53,44	152	51,07	104,64
0,884	54,18	154,7	51,98	104,24
0,824	50,15	155,1	52,11	96,23
0,833	50,75	155,6	52,28	97,08
0,875	53,58	153,9	51,71	103,61
0,839	51,16	153,2	51,48	99,38
0,83	50,55	147,6	49,59	101,93
0,87	53,24	154,6	51,95	102,49
0,819	49,81	154,2	51,81	96,14
0,816	49,61	151,9	51,04	97,20
			\bar{X}	100,29
			SD	3,46
			KV	3,45

Hasil Uji Keseragaman Kandungan Tablet F4 (ab) Replikasi I

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,797	48,33	154,1	51,78	93,35
0,851	51,96	152,4	51,21	101,48
0,828	50,42	151,8	51,00	98,85
0,797	48,33	157,2	52,82	91,51
0,87	53,24	148,3	49,83	106,85
0,873	53,44	153,9	51,71	103,35
0,834	50,82	152,9	51,37	98,92
0,824	50,15	153,7	51,64	97,10
0,849	51,83	154,1	51,78	100,10
0,884	54,18	150,9	50,70	106,86
			\bar{X}	99,84
			SD	5,10
			KV	5,11

Hasil Uji Keseragaman Kandungan Tablet F1 (-1) Replikasi II

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,754	45,44	145,4	48,85	93,02
0,899	55,19	146,7	49,29	111,97
0,776	46,92	145,2	48,79	96,18
0,784	47,46	146,5	49,22	96,41
0,878	53,78	147,6	49,59	108,44
0,856	52,30	146,3	49,16	106,39
0,809	49,14	149,3	50,16	97,96
0,839	51,16	149,1	50,10	102,11
0,872	53,37	153,5	51,58	103,49
0,828	50,42	148,3	49,83	101,18
			\bar{X}	101,71
			SD	6,00
			KV	5,90

Hasil Uji Keseragaman Kandungan Tablet F2 (a) Replikasi II

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,734	44,10	148,1	49,76	88,62
0,926	57,00	145,2	48,79	116,84
0,763	46,05	145,6	48,92	94,12
0,856	52,30	144,4	48,52	107,79
0,868	53,11	146,6	49,26	107,81
0,828	50,42	151,4	50,87	99,11
0,773	46,72	150,6	50,60	92,33
0,735	44,17	150,8	50,67	87,16
0,725	43,49	145,9	49,02	88,72
0,729	43,76	150,3	50,50	86,66
			\bar{X}	96,92
			SD	10,56
			KV	10,90

Hasil Uji Keseragaman Kandungan Tablet F3 (b) Replikasi II

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,769	46,45	144,3	48,48	95,80
0,786	47,59	155,2	52,15	91,27
0,781	47,26	153,6	51,61	91,57
0,754	45,44	146,3	49,16	92,44
0,772	46,65	145,2	48,79	95,62
0,756	45,58	150,9	50,70	89,89
0,738	44,37	149,1	50,10	88,56
0,745	44,84	146,2	49,12	91,28
0,769	46,45	152,2	51,14	90,83
0,784	47,46	148,2	49,80	95,31
			\bar{X}	92,26
			SD	2,52
			KV	2,73

Hasil Uji Keseragaman Kandungan Tablet F4 (ab) Replikasi II

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,832	50,69	145,4	48,85	103,75
0,887	54,38	148	49,73	109,36
0,811	49,27	149,1	50,10	98,36
0,822	50,01	154,3	51,84	96,47
0,879	53,85	150,4	50,53	106,55
0,824	50,15	149,2	50,13	100,03
0,827	50,35	146	49,06	102,64
0,867	53,04	151,1	50,77	104,47
0,813	49,41	156,9	52,72	93,72
0,797	48,33	148,5	49,90	96,87
			\bar{X}	101,22
			SD	4,96
			KV	4,90

Hasil Uji Keseragaman Kandungan Tablet F1 (-1) Replikasi III

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,773	46,72	149,8	50,33	92,82
0,857	52,37	151,6	50,94	102,81
0,815	49,54	151,2	50,80	97,52
0,793	48,06	153,1	51,44	93,43
0,881	53,98	150,2	50,47	106,96
0,869	53,17	147,6	49,59	107,22
0,832	50,69	152,1	51,11	99,18
0,798	48,40	149,5	50,23	96,35
0,847	51,69	154,8	52,01	99,39
0,891	54,65	152,6	51,27	106,59
			\bar{X}	100,23
			SD	5,44
			KV	5,43

Hasil Uji Keseragaman Kandungan Tablet F2 (a) Replikasi III

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,765	46,18	145,7	48,96	94,33
0,871	53,31	155,1	52,11	102,29
0,798	48,40	154,6	51,95	93,17
0,891	54,65	152,8	51,34	106,45
0,857	52,37	153,5	51,58	101,53
0,811	49,27	146,9	49,36	99,83
0,823	50,08	151,4	50,87	98,45
0,877	53,71	151,5	50,90	105,51
0,883	54,11	155,1	52,11	103,84
0,829	50,48	153,7	51,64	97,76
			\bar{X}	100,32
			SD	4,47
			KV	4,45

Hasil Uji Keseragaman Kandungan Tablet F3 (b) Replikasi III

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,875	53,58	152,1	51,11	104,83
0,891	54,65	154,4	51,88	105,35
0,826	50,28	153,9	51,71	97,24
0,832	50,69	154,8	52,01	97,45
0,874	53,51	155,1	52,11	102,68
0,837	51,02	153,8	51,68	98,73
0,834	50,82	150,5	50,57	100,50
0,872	53,37	154,7	51,98	102,68
0,817	49,68	151,3	50,84	97,72
0,799	48,47	148,3	49,83	97,27
			\bar{X}	100,45
			SD	3,21
			KV	3,20

Hasil Uji Keseragaman Kandungan Tablet F4 (ab) Replikasi III

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,772	46,65	148,5	49,90	93,50
0,869	53,17	145,7	48,96	108,62
0,798	48,40	154,2	51,81	93,42
0,789	47,80	152,3	51,17	93,40
0,874	53,51	153,2	51,48	103,95
0,847	51,69	153,7	51,64	100,10
0,816	49,61	152,1	51,11	97,07
0,843	51,43	152,4	51,21	100,43
0,877	53,71	152,7	51,31	104,69
0,836	50,95	152,7	51,31	99,31
			\bar{X}	99,45
			SD	5,24
			KV	5,27

Contoh Perhitungan :

Absorbansi = 0,772 → $y = 0,0104 + 0,0151X$

Konsentrasi sampel = 46,65 ppm

Konsentrasi teoritis = 49,90 ppm

$$\% \text{ Kadar} = \frac{\text{Konsentrasi sampel}}{\text{Konsentrasi teoritis}} \times 100 \% = \frac{46,65}{49,90} \times 100 \% =$$

93,50 %

LAMPIRAN D
HASIL UJI KESERAGAMAN UKURAN TABLET BUKAL
PROPRANOLOL HCl

Hasil Uji Keseragaman Ukuran Tablet Replikasi I

No	FORMULA							
	F1(-1)		F2(a)		F3(b)		F4(ab)	
	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)
1	8,05	3,3	8,05	3,2	8,05	3,15	8,05	8,05
2	8	3,2	8,1	3,15	8,1	3,1	8,1	8
3	8,1	3	8,1	3,15	8,05	2,9	8,05	8,1
4	8,1	3,1	8,1	3	8,1	3,1	8,05	8,1
5	8,1	3,15	8,1	3,1	8,1	3,05	8,1	8,1
6	8,05	3,05	8,1	3,05	8,1	2,65	8,1	8,05
7	8	3,1	8,05	2,7	8,1	3,25	8,05	8
8	8	3,1	8,2	3	8	3,1	8,1	8
9	8,1	3,1	8,1	3,35	8,05	3,1	8,05	8,1
10	8,1	2,85	8,05	3,05	8,05	2,8	8,2	8,1
11	8,1	3,15	8,05	3,15	8,1	3,1	8,1	8,1
12	8	3,1	8,1	3,15	8	2,8	8,05	8
13	8,1	3,05	8,2	3	8,05	3,1	8,05	8,1
14	8,1	3,2	8,1	2,7	8,1	3,1	8,1	8,1
15	8	3,1	8,05	3,15	8,1	2,65	8,05	8
16	8,05	3	8,1	3,2	8,05	3,1	8,05	8,05
17	8,1	2,85	8,05	3,15	8,1	3,05	8,2	8,1
18	8	3,3	8,1	3,05	8,1	3,25	8,1	8
19	8,1	3,1	8,1	3,05	8,05	3,15	8,05	8,1
20	8,05	3,1	8,1	3	8,05	2,9	8,1	8,05
\bar{X}	8,06	3,10	8,09	3,07	8,07	3,02	8,09	3,19
SD	0,04	0,12	0,04	0,15	0,03	0,18	0,05	0,24
SD Rel (%)	0,55	3,74	0,54	5,00	0,42	5,84	0,57	7,47

Hasil Uji Keseragaman Ukuran Tablet Replikasi II

No	FORMULA							
	F1(-1)		F2(a)		F3(b)		F4(ab)	
	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)
1	8,05	3,30	7,85	3,20	8,05	3,15	8,05	3,15
2	8,00	3,20	7,80	3,15	8,05	3,10	8,10	3,05
3	8,10	3,00	7,85	3,15	8,20	2,90	8,05	3,10
4	8,10	3,10	8,00	3,00	8,10	3,10	8,05	3,20
5	8,10	3,15	8,00	3,10	8,05	3,05	8,10	3,15
6	8,10	3,05	8,15	3,05	8,10	2,65	8,10	3,20
7	8,05	3,10	7,95	2,70	8,10	3,25	8,05	3,05
8	8,20	3,20	8,00	3,00	8,00	3,20	8,10	3,65
9	8,1	3,15	8,15	3,35	8,05	3,05	8,05	3,40
10	8,05	3,15	8,15	3,05	8,05	3,65	8,10	2,90
11	8,10	3,00	8,00	3,15	8,10	3,40	8,10	3,20
12	8,00	3,05	8,00	3,15	8,00	2,90	8,05	3,30
13	8,05	3,15	8,00	3,00	8,05	3,05	8,05	3,40
14	8,10	3,15	7,85	2,70	8,10	2,90	8,10	2,90
15	8,1	3,00	7,90	3,15	8,10	3,40	8,05	3,05
16	8,05	2,70	7,95	3,20	8,05	3,05	8,05	2,90
17	8,05	3,25	7,95	3,15	8,10	3,65	8,20	3,40
18	8,10	3,10	8,00	3,05	8,10	3,25	8,10	3,05
19	8,05	3,10	8,00	3,05	8,05	3,15	8,05	3,65
20	8,20	2,80	8,10	3,00	8,05	2,90	8,10	3,05
\bar{X}	8,08	3,09	7,98	3,07	8,07	3,14	8,08	3,19
SD	0,05	0,14	0,10	0,15	0,05	0,25	0,04	0,22
SD Rel (%)	0,68	4,56	1,27	5,00	0,56	7,97	0,47	6,94

Hasil Uji Keseragaman Ukuran Tablet Replikasi III

No	FORMULA							
	F1(-1)		F2(a)		F3(b)		F4(ab)	
	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)
1	8,10	3,10	7,85	3,10	8,00	3,05	7,95	3,10
2	8,00	3,05	7,70	3,05	8,05	2,90	7,95	3,05
3	8,15	3,00	7,90	3,15	8,00	3,05	7,85	3,15
4	8,00	3,05	8,10	3,05	8,00	2,90	7,85	3,05
5	8,15	3,05	8,05	3,00	8,05	2,95	7,85	3,00
6	8,15	2,95	7,95	3,05	7,95	3,00	7,85	3,05
7	8,10	3,00	7,95	3,15	8,15	3,10	7,95	3,15
8	7,95	3,05	8,15	3,10	8,00	3,05	7,90	3,10
9	8,20	3,05	8,05	3,00	8,15	3,10	7,90	3,00
10	8,10	3,00	8,00	3,20	8,05	3,00	7,85	3,20
11	8,15	3,00	7,85	3,05	8,00	2,95	7,85	3,05
12	8,15	2,95	7,90	3,00	8,05	3,00	7,95	3,00
13	8,10	3,00	8,00	3,15	8,00	3,05	7,90	3,15
14	8,15	3,05	8,00	3,05	7,85	2,95	7,85	3,05
15	7,95	3,00	8,15	3,10	7,85	3,05	7,85	3,10
16	8,15	2,95	8,10	3,05	8,05	3,05	7,95	3,05
17	8,00	3,15	8,10	3,10	8,00	3,05	7,95	3,10
18	8,00	3,00	8,00	3,05	8,15	3,00	7,80	3,05
19	8,00	2,95	8,05	3,00	8,00	2,95	7,85	3,00
20	8,05	3,05	7,95	3,15	7,95	3,05	7,95	3,15
\bar{X}	8,08	3,02	7,99	3,08	8,02	3,01	7,89	3,08
SD	0,08	0,05	0,11	0,06	0,08	0,06	0,05	0,06
SD Rel (%)	0,97	1,73	1,42	1,93	1,01	1,99	0,64	1,93

LAMPIRAN E
HASIL UJI KEKERASAN TABLET BUKAL
PROPRANOLOL HCl

Hasil Uji Kekerasan Tablet Replikasi I

No,	Kekerasan Tablet Bukal Propranolol Hcl (kp)			
	F1(-1)	F2(a)	F3(b)	F4(ab)
1	4,8	4,5	5,1	4,4
2	5,3	4,7	5,5	4,4
3	4,2	6,2	6,2	5,0
4	5,6	4,0	5,1	4,7
5	4,1	6,4	6,0	4,6
6	5,6	4,7	6,0	4,5
7	4,1	5,1	5,7	4,1
8	6,8	4,7	4,0	4,2
9	4,3	4,2	5,8	4,0
10	6,0	4,9	5,5	4,2
$\bar{X} \pm SD$	$5,08 \pm 0,93$	$4,94 \pm 0,78$	$5,49 \pm 0,64$	$4,41 \pm 0,30$

Hasil Uji Kekerasan Tablet Replikasi II

No,	Kekerasan Tablet Propranolol HCl (kp)			
	F1(-1)	F2(a)	F3(b)	F4(ab)
1	5,0	4,6	5,2	4,5
2	5,3	4,8	5,6	4,6
3	4,8	6,1	6,1	5,1
4	4,1	4,2	5,3	4,7
5	4,6	6,5	6,1	4,8
6	6,2	4,9	6,1	4,9
7	4,8	5,2	5,8	5,1
8	5,6	4,6	4,2	5,2
9	6,1	4,8	5,5	4,1
10	4,2	5,1	5,4	4,7
$\bar{X} \pm SD$	$5,07 \pm 0,73$	$5,08 \pm 0,71$	$5,53 \pm 0,58$	$4,77 \pm 0,33$

Hasil Uji Kekerasan Tablet Replikasi III

No,	Kekerasan Tablet Propranolol Hcl (kp)			
	F1(-1)	F2(a)	F3(b)	F4(ab)
1	5,1	4,2	4,4	4,6
2	5,4	4,3	5,1	4,3
3	5,6	4,7	5,4	5,1
4	5,2	4,6	5,2	4,5
5	5,7	4,1	5,1	4,7
6	5,6	5,3	4,5	4,8
7	5,2	5,2	4,4	4,1
8	5,1	5,5	4,6	5,2
9	4,5	5,4	4,2	5,4
10	4,2	5,7	5,1	4,7
$\bar{X} \pm SD$	$5,16 \pm 0,48$	$4,90 \pm 0,59$	$4,80 \pm 0,42$	$4,74 \pm 0,40$

LAMPIRAN F
HASIL UJI KERAPUHAN TABLET BUKAL
PROPRANOLOL HCl

Formula	Replikasi	Berat awal (gram)	Berat akhir (gram)	Kerapuhan (%)	$\bar{X} \pm SD$
I	1	2,85	2,83	0,70	0,71 ± 0,01
	2	2,79	2,77	0,72	
	3	2,82	2,80	0,71	
II	1	2,76	2,74	0,72	0,74 ± 0,02
	2	2,66	2,64	0,75	
	3	2,71	2,69	0,74	
III	1	2,79	2,77	0,65	0,71 ± 0,05
	2	2,70	2,68	0,74	
	3	2,75	2,73	0,73	
IV	1	2,95	2,93	0,68	0,58 ± 0,20
	2	2,76	2,74	0,72	
	3	2,85	2,84	0,35	

Contoh perhitungan :

Formula 1 (-1) Replikasi I :

Berat awal = 2,85 (W_0)

Berat akhir = 2,83 (W)

% Kerapuhan = $[(W_0 - W) / W_0] \times 100 \%$

= $[(2,85 - 2,83) / 2,85] \times 100 \%$

= 0,70 %

LAMPIRAN G
HASIL UJI INDEKS PENGEMBANGAN TABLET BUKAL
PROPRANOLOL HCl

Hasil Uji Indeks Pengembangan Tablet Formula 1 (-1)

t jam	Replikasi									$\bar{X} \pm SD$
	I			II			III			
	W1 (mg)	W2 (mg)	IP (%)	W1 (mg)	W2 (mg)	IP (%)	W1 (mg)	W2 (mg)	IP (%)	
0,5	146,2	201,9	38,10	140,4	193,5	37,82	161,8	226,3	39,86	38,59 ± 1,11
1	140,7	244,3	73,63	140,7	221,3	57,29	150,9	221,3	46,65	59,19 ± 13,59
2	148,9	263,5	76,96	148,7	241,4	62,34	160,6	238,6	48,57	62,62 ± 14,20
3	145,4	266,0	82,94	144,1	243,5	68,98	161,5	265,5	64,40	72,62 ± 9,66
4	141,1	258,5	83,20	140,4	245,6	74,93	154,5	257,6	66,73	74,95 ± 8,24
5	146,6	269,5	83,83	146,5	257,8	75,97	149,4	252,3	68,88	76,23 ± 7,48
6	150,5	276,8	83,92	144,2	258,4	79,20	140,5	237,7	69,18	77,43 ± 7,53

Keterangan : W1 = berat awal sediaan;
W2 = berat sediaan setelah mengembang
SI = swelling index

Hasil Uji Indeks Pengembangan Tablet Formula 2 (a)

t jam	Replikasi									$\bar{X} \pm SD$
	I			II			III			
	W1 (mg)	W2 (mg)	IP (%)	W1 (mg)	W2 (mg)	IP (%)	W1 (mg)	W2 (mg)	IP (%)	
0,5	149,8	231,8	54,74	163,5	267,8	63,79	154,7	241,3	55,98	58,17 ± 4,91
1	140,6	230,2	63,73	140,9	262,7	86,44	141,8	226,8	59,94	70,04 ± 14,33
2	144,2	251,3	74,27	141,0	267,4	89,65	150,4	261,0	73,54	79,15 ± 9,10
3	141,3	247,7	75,30	143,6	274,3	91,02	154,1	284,2	84,43	82,58 ± 7,89
4	146,8	263,1	79,22	154,6	299,4	93,66	156,8	293,7	87,31	86,73 ± 7,24
5	152,6	275,6	80,60	151,0	294,3	94,90	156,7	294,5	87,94	87,81 ± 7,15
6	147,8	269,3	82,21	140,5	274,2	95,16	151,5	285,6	88,51	88,63 ± 6,48

Hasil Uji Indeks Pengembangan Tablet Formula 3 (b)

t jam	Replikasi									X ± SD
	I			II			III			
	W1 (mg)	W2 (mg)	IP (%)	W1 (mg)	W2 (mg)	IP (%)	W1 (mg)	W2 (mg)	IP (%)	
0,5	149,9	197,7	31,89	158,4	210,3	32,77	157,2	210,1	33,65	32,77 ± 0,88
1	141,2	191,6	35,69	147,0	201,1	36,80	163,7	231,2	41,23	37,91 ± 2,93
2	142,1	210,2	47,92	160,3	240,6	50,09	152,5	232,4	52,39	50,14 ± 2,24
3	151,6	231,0	52,37	147,5	229,5	55,59	142,5	224,3	57,40	55,12 ± 2,55
4	143,1	223,1	55,90	142,4	231,0	62,22	146,3	242,1	65,48	61,20 ± 4,87
5	151,7	238,1	56,95	143,0	232,3	62,45	144,7	239,9	65,79	61,73 ± 4,46
6	149,6	249,5	66,78	154,6	253,7	64,10	147,0	247,8	68,57	66,48 ± 2,25

Hasil Uji Indeks Pengembangan Tablet Formula 4 (ab)

t jam	Replikasi									X ± SD
	I			II			III			
	W1 (mg)	W2 (mg)	IP (%)	W1 (mg)	W2 (mg)	IP (%)	W1 (mg)	W2 (mg)	IP (%)	
0,5	148,5	213,8	43,97	145,9	199,6	36,81	158,5	235,8	48,77	43,18 ± 6,02
1	151,5	222,9	47,13	149,2	216,6	45,17	161,2	243,7	51,18	47,83 ± 3,06
2	154,5	231,8	50,03	146,4	217,5	48,57	147,3	224,9	52,68	50,43 ± 2,09
3	142,9	224	56,75	145,1	224,1	54,45	149,8	232,4	55,14	55,45 ± 1,18
4	147,7	238,9	61,75	151,2	247,1	63,43	147,0	230,7	56,94	60,70 ± 3,37
5	151,2	247,1	63,43	144,7	237,2	63,93	153,1	242,3	58,26	61,87 ± 3,14
6	144,5	236,7	63,81	143,5	236,7	64,95	163,5	262,1	60,31	63,02 ± 2,42

LAMPIRAN H
HASIL UJI LAMA MEREKAT TABLET BUKAL
PROPRANOLOL HCl

Formula	Replikasi	Lama Perekatan (jam)	$\bar{X} \pm SD$
F1 (-1)	I	4	4 \pm 0
	II	4	
	III	4	
F2 (a)	I	5	5 \pm 0
	II	5	
	III	5	
F3 (b)	I	6	6 \pm 0
	II	6	
	III	6	
F4 (ab)	I	6	6 \pm 0
	II	6	
	III	6	

LAMPIRAN I
HASIL UJI pH PERMUKAAN TABLET BUKAL
PROPRANOLOL HCl

Formula	Replikasi	pH permukaan	$\bar{X} \pm SD$
F1 (-1)	I	6,0	6,0 \pm 0
	II	6,0	
	III	6,0	
F2 (a)	I	6,1	6,1 \pm 0
	II	6,1	
	III	6,1	
F3 (b)	I	5,9	5,9 \pm 0
	II	5,9	
	III	5,9	
F4 (ab)	I	6,3	6,3 \pm 0
	II	6,3	
	III	6,3	

LAMPIRAN J
HASIL UJI F KURVA BAKU
DALAM METANOL

Replikasi I

Konsentrasi	Absorbansi	x²	y²	xy
25,450	0,509	647,703	0,259	12,954
38,175	0,750	1457,331	0,563	28,631
50,900	1,029	2590,810	1,059	52,376
63,625	1,198	4048,141	1,435	76,223
76,350	1,418	5829,323	2,011	108,264
		14573,306	5,326	278,448

Replikasi II

Konsentrasi	Absorbansi	x²	y²	xy
25,1	0,416	630,010	0,173	10,442
37,65	0,524	1417,523	0,275	19,729
50,2	0,804	2520,040	0,646	40,361
62,75	0,953	3937,563	0,908	59,801
75,3	1,361	5670,090	1,852	102,483
		14175,225	3,855	232,815

Replikasi III

Konsentrasi	Absorbansi	x²	y²	xy
25,45	0,457	647,703	0,209	11,631
38,175	0,628	1457,331	0,394	23,974
50,9	0,858	2590,810	0,736	43,672
63,63	1,031	4048,777	1,063	65,603
76,35	1,202	5829,323	1,445	91,773
		14573,943	3,847	236,652

Replika si	Σx^2	Σxy	Σy^2	N	Ssi	RDF
I	14573,306	278,448	5,326	5	5,307	3
II	10175,225	232,815	3,855	5	3,838	3
III	14573,943	236,652	3,847	5	3,831	3
	43322,474	747,915	13,028	5	12,976	9

Contoh Perhitungan :

Misal : replikasi I

$$\begin{aligned} Ssi &= Yc - [(Xyc)^2 / Xc] \\ &= 5,326 - ((278,448)^2 / 14573,306) \\ &= 0,0062 \end{aligned}$$

$$\begin{aligned} SSc &= \Sigma Yc - [(\Sigma XYc)^2 / \Sigma Xc] \\ &= 13,028 - ((747,915)^2 / 43322,474) \\ &= 0,1162 \end{aligned}$$

$$\begin{aligned} SSp &= SSi I + SSi II + SSi III \\ &= 5,307 + 3,838 + 3,831 \\ &= 0,0414 \end{aligned}$$

$$\begin{aligned} F_{hitung} &= (SSc - SSp / k - 1) / (SSp / 12) \\ &= (0,1162 - 0,0414 / 3 - 1) / (0,1162 / 12) \\ &= 0,0374 / 0,0129 \end{aligned}$$

$$F_{hitung} = 2,8992 < F_{tabel 0,05 (2,9)} = 4,26$$

Karena $F_{hitung} < F_{tabel}$ maka tidak ada perbedaan yang bermakna antar persamaan regresi

LAMPIRAN K
HASIL UJI AKURASI DAN PREKISI
DALAM METANOL

Replikasi	%	Abs	C (ppm)	C Teoritis (ppm)	% Perolehan kembali	
1	80	0,669	39,73	40,32	98,53	$\bar{X} = 99,11$ SD = 0,53 KV = 0,54
2	80	0,679	40,40	40,57	99,58	
3	80	0,675	40,13	40,45	99,22	
1	100	0,761	45,91	51,03	99,98	$\bar{X} = 99,86$ SD = 0,16 KV = 0,16
2	100	0,751	45,24	50,53	99,92	
3	100	0,773	46,72	50,78	99,69	
1	120	0,881	53,98	60,98	99,76	$\bar{X} = 99,44$ SD = 0,70 KV = 0,71
2	120	0,892	54,72	60,61	99,94	
3	120	0,875	53,58	60,86	98,64	

Contoh perhitungan :

Dari hasil serapan dimasukkan kedalam persamaan regresi linear untuk kurva baku yang terpilih, yaitu : $y = 0,0149 x + 0,0780$, dimana :

y = Serapan

x = Konsentrasi yang teramat

Kemudian hitung % perolehan kembali dengan rumus :

$$\frac{C_{\text{sampel}}}{C_{\text{teoritis}}} \times 100\%$$

Misal : replikasi I pada 80% :

y = 0,719

x = 43,09

$$\begin{aligned} \% \text{perolehan kembali} &= \frac{C_{\text{sampel}}}{C_{\text{teoritis}}} \times 100\% \\ &= \frac{39,73}{40,32} \times 100\% = 98,53\% \end{aligned}$$

LAMPIRAN L
HASIL UJI PENETAPAN KADAR PROPRANOLOL HCl
DALAM METANOL

Formula	Replikasi	Absorbansi	Csampel	Cteoritis	Kadar	X rata2	SD
1	1	0,778	47,06	50,40	93,36	95,19	1,86
	2	0,789	47,80	50,67	94,33		
	3	0,771	46,59	51,34	90,74		
2	1	0,819	49,81	51,07	97,53	95,98	1,52
	2	0,806	48,94	50,90	96,14		
	3	0,828	50,42	50,84	99,17		
3	1	0,774	46,79	50,94	91,85	95,17	1,55
	2	0,785	47,53	50,40	94,30		
	3	0,769	46,45	50,80	91,43		
4	1	0,821	49,95	50,87	98,18	97,81	0,34
	2	0,818	49,74	50,90	97,72		
	3	0,814	49,48	50,74	97,52		

Contoh perhitungan :

Formula 1 (-1) Replikasi I

$$\begin{aligned} \text{Csampel (ppm)} &= (\text{serapan} - a) / b \\ &= (0,778 - 0,0780) / 0,0149 \\ &= 93,36 \end{aligned}$$

Nilai a dan b merupakan intersep dan slope dari persamaan regresi linear yang terpilih

Misal pada F1 (-1) Replikasi I

Cteoritis dari penimbangan dicari konsentrasi dalam ppm

$$\begin{aligned} \% \text{ kadar} &= \frac{\text{Csampel}}{\text{Cteoritis}} \times 100\% \\ &= \frac{47,06}{50,40} \times 100\% \\ &= 93,36 \% \end{aligned}$$

LAMPIRAN M
HASIL UJI F KURVA BAKU
DALAM DAPAR FOSFAT ISOTONIS pH 6,8

Replikasi I

Konsentrasi	Absorbansi	x^2	y^2	Xy
5,2	0,082	27,040	0,007	0,426
26	0,396	676,000	0,157	10,296
52	0,810	2704,000	0,656	42,120
78	1,220	6084,000	1,488	95,160
104	1,561	10816,000	2,437	162,344
		20307,040	4,745	310,346

Replikasi II

Konsentrasi	Absorbansi	x^2	y^2	Xy
5,06	0,085	25,604	0,007	0,430
25,3	0,393	640,090	0,154	9,943
50,6	0,870	2560,360	0,757	44,022
75,9	1,248	5760,810	1,558	94,723
101,2	1,538	10241,440	2,365	155,646
		19228,304	4,842	304,764

Replikasi III

Konsentrasi	Absorbansi	x^2	y^2	Xy
5,08	0,086	25,806	0,007	0,437
25,4	0,355	645,160	0,126	9,017
50,8	0,888	2580,640	0,789	45,110
76,2	1,212	5806,440	1,469	92,354
101,6	1,673	10322,560	2,799	169,977
		19380,606	5,190	316,895

Replikasi	Σx^2	Σxy	Σy^2	N	SSi	RD F
I	20307,040	310,346	4,745	5	0,002	3
II	19228,304	304,764	4,842	5	0,011	3
III	19380,606	316,895	5,190	5	0,008	3
	58915,950	932,006	14,776		0,021	9

Contoh Perhitungan :

Misal : replikasi I

$$\begin{aligned} Ssi &= Yc - [(Xyc)^2 / Xc] \\ &= 4,745 - ((310,346)^2 / 20307,040) \\ &= 0,002 \end{aligned}$$

$$\begin{aligned} SSc &= \Sigma Yc - [(\Sigma XYc)^2 / \Sigma Xc] \\ &= 14,776 - ((932,006)^2 / 58915,950) \\ &= 0,032 \end{aligned}$$

$$\begin{aligned} SSp &= SSi I + SSi II + SSi III \\ &= 0,002 + 0,011 + 0,008 \\ &= 0,021 \end{aligned}$$

$$\begin{aligned} F_{hitung} &= (SSc - SSp / k - 1) / (SSp / 12) \\ &= (0,032 - 0,021 / 3 - 1) / (0,021 / 12) \\ &= 2,414 \end{aligned}$$

$$F_{hitung} = 2,414 < F_{tabel 0,05 (2,9)} = 4,26$$

Karena $F_{hitung} < F_{tabel}$ maka tidak ada perbedaan yang bermakna antar persamaan regresi

LAMPIRAN N
HASIL UJI AKURASI DAN PREKISI
DALAM DAPAR FOSFAT ISOTONIS pH 6,8

Replikasi	Abs	C (ppm)	C Teoritis (ppm)	% Perolehan kembali	
1	0,166	10,27	10,12	101,49	$\bar{X} = 100,80$ SD = 1,00 KV = 0,99
2	0,165	10,20	10,24	99,66	
3	0,169	10,47	10,34	101,25	
1	0,779	50,74	50,60	100,28	$\bar{X} = 99,86$ SD = 0,43 KV = 0,43
2	0,785	51,14	51,20	99,88	
3	0,789	51,40	51,40	99,42	
1	1,559	102,24	101,20	101,03	$\bar{X} = 100,15$ SD = 0,80 KV = 0,80
2	1,561	102,37	102,40	99,97	
3	1,568	102,83	102,83	99,45	

Contoh perhitungan :

Dari hasil serapan dimasukkan kedalam persamaan regresi linear untuk kurva baku yang terpilih, yaitu :

$$y = 0,0104 + 0,0151x$$

dimana :

y = Serapan

x = Konsentrasi yang teramat

Kemudian hitung % perolehan kembali dengan rumus :

$$\frac{\text{Csampel}}{\text{Cteoritis}} \times 100\%$$

Misal : replikasi I pada 10 ppm

$$y = 0,0104 + 0,0151x$$

$$0,166 = 0,0104 + 0,0151x$$

$$X = 10,3046$$

$$\% \text{ Perolehan kembali} = (C \text{ sampel} / C \text{ teoritis}) \times 100\% = (10,27 / 10,12) \times 100$$

$$\% = 101,49 \%$$

LAMPIRAN O

HASIL UJI PELEPASAN SECARA *IN-VITRO* TABLET BUKAL PROPRANOLOL HCl

Hasil Uji Pelepasan Tablet *Buccoadhesive* Formula I

t (jam)	Replikasi									Qt rata- rata	SD
	1			2			3				
	Abs	Cn' (ppm)	Qt ($\mu\text{g}/\text{cm}^2$)	Abs	Cn' (ppm)	Qt ($\mu\text{g}/\text{cm}^2$)	Abs	Cn' (ppm)	Qt ($\mu\text{g}/\text{cm}^2$)		
0,25	0,257	16,28	1953,48	0,259	16,41	1969,32	0,252	15,95	1913,87	1945,56	28,57
0,5	0,301	19,18	2302,07	0,311	19,84	2381,30	0,299	19,05	2286,23	2323,20	50,94
0,75	0,379	24,33	2920,04	0,389	24,99	2999,27	0,388	24,93	2991,34	2970,22	43,63
1	0,435	28,03	3363,71	0,442	28,49	3419,17	0,437	28,16	3379,55	3387,47	28,57
2	0,479	30,94	3712,30	0,486	31,40	3767,76	0,477	30,80	3696,46	3725,51	37,44
3	0,666	43,28	5193,83	0,673	43,74	5249,29	0,661	42,95	5154,22	5199,12	47,76
4	0,791	51,53	6184,16	0,797	51,93	6231,70	0,785	51,14	6136,63	6184,16	47,54
5	0,828	53,98	6477,30	0,832	54,24	6508,99	0,821	53,52	6421,84	6469,38	44,11
6	0,936	61,11	7332,95	0,943	61,57	7388,40	0,931	60,78	7293,33	7338,23	47,76

Hasil Uji Pelepasan Tablet *Buccoadhesive* Formula II

t (jam)	Replikasi									Qt rata- rata	SD
	1			2			3				
	Abs	Cn' (ppm)	Qt ($\mu\text{g}/\text{cm}^2$)	Abs	Cn' (ppm)	Qt ($\mu\text{g}/\text{cm}^2$)	Abs	Cn' (ppm)	Qt ($\mu\text{g}/\text{cm}^2$)		
0,25	0,188	11,72	1406,82	0,197	12,32	1478,12	0,185	11,53	1383,05	1422,66	49,48
0,5	0,24	15,16	1818,79	0,245	15,49	1858,41	0,234	14,76	1771,26	1816,15	43,63
0,75	0,266	16,87	2024,78	0,271	17,20	2064,40	0,266	16,87	2024,78	2037,99	22,87
1	0,373	23,94	2872,50	0,379	24,33	2920,04	0,369	23,67	2840,81	2877,79	39,88
2	0,676	43,94	5273,06	0,683	44,40	5328,52	0,670	43,55	5225,53	5275,70	51,55
3	0,939	61,31	7356,71	0,943	61,57	7388,40	0,935	61,04	7325,02	7356,71	31,69
4	1,213	79,40	9527,51	1,215	79,53	9543,36	1,219	79,79	9575,05	9548,64	24,20
5	1,419	93,00	11159,58	1,422	93,19	11183,35	1,417	92,86	11143,73	11162,22	19,94
6	1,441	94,45	11333,88	1,448	94,91	11389,33	1,439	94,32	11318,03	11347,08	37,44

Hasil Uji Pelepasan Tablet Bukal Formula III

t (jam)	Replikasi									Qt rata- rata	SD
	1			2			3				
	Abs	Cn' (ppm)	Qt ($\mu\text{g}/\text{cm}^2$)	Abs	Cn' (ppm)	Qt ($\mu\text{g}/\text{cm}^2$)	Abs	Cn' (ppm)	Qt ($\mu\text{g}/\text{cm}^2$)		
0,25	0,239	15,09	1810,87	0,243	15,35	1842,56	0,235	14,83	1779,18	1810,87	31,69
0,5	0,329	21,03	2523,91	0,338	21,63	2595,21	0,327	20,90	2508,06	2542,39	46,42
0,75	0,347	22,22	2666,52	0,356	22,82	2737,82	0,344	22,02	2642,75	2682,36	49,48
1	0,369	23,67	2840,81	0,375	24,07	2888,35	0,365	23,41	2809,12	2846,09	39,88
2	0,519	33,58	4029,21	0,527	34,10	4092,59	0,515	33,31	3997,52	4039,77	48,41
3	0,569	36,88	4425,34	0,573	37,14	4457,03	0,564	36,55	4385,73	4422,70	35,73
4	0,663	43,08	5170,07	0,669	43,48	5217,60	0,661	42,95	5154,22	5180,63	32,98
5	0,713	46,38	5566,20	0,702	45,66	5479,05	0,711	46,25	5550,35	5531,87	46,42
6	0,853	55,63	6675,37	0,846	55,17	6619,91	0,848	55,30	6635,75	6643,68	28,57

Hasil Uji Pelepasan Tablet Bukal Formula IV

t (jam)	Replikasi									Qt rata- rata	SD
	1			2			3				
	Abs	Cn' (ppm)	Qt ($\mu\text{g}/\text{cm}^2$)	Abs	Cn' (ppm)	Qt ($\mu\text{g}/\text{cm}^2$)	Abs	Cn' (ppm)	Qt ($\mu\text{g}/\text{cm}^2$)		
0,25	0,177	11,00	1319,67	0,182	11,33	1359,28	0,178	11,06	1327,59	1335,51	20,96
0,5	0,215	13,51	1620,73	0,221	13,90	1668,26	0,219	13,77	1652,42	1647,14	24,20
0,75	0,234	14,76	1771,26	0,239	15,09	1810,87	0,229	14,43	1731,64	1771,26	39,61
1	0,25	15,82	1898,02	0,258	16,35	1961,40	0,251	15,88	1905,94	1921,79	34,53
2	0,393	25,26	3030,96	0,392	25,19	3023,03	0,387	24,86	2983,42	3012,47	25,47
3	0,542	35,10	4211,43	0,543	35,16	4219,35	0,551	35,69	4282,73	4237,84	39,08
4	0,659	42,82	5138,38	0,654	42,49	5098,76	0,653	42,42	5090,84	5109,33	25,47
5	0,822	53,58	6429,77	0,831	54,18	6501,07	0,824	53,71	6445,61	6458,82	37,44
6	0,941	61,44	7372,56	0,951	62,10	7451,79	0,943	61,57	7388,40	7404,25	41,92

LAMPIRAN P

ANALISA DESAIN FAKTORIAL INDEKS PENGEMBANGAN

Response 1 Indeks Pengembangan ANOVA for selected factorial model

Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value Prob>F	
Model	1208,22	3	402,74	14,71	0,0013	Significant
<i>A-</i>	1002,25	1	1002,25	36,61	0,0003	
<i>karbopol 940</i>						
<i>B-CMC-</i>	44,84	1	44,84	1,64	0,2366	
<i>Na</i>						
<i>AB</i>	161,14	1	161,14	5,89	0,0415	
Pure	219,03	8	27,38			
Error						
Cor Total	1427,25	11				

The Model F-value of 14,71 implies the model is significant, There is only a 0,13% chance that a "Model F-Value" this large could occur due to noise,

Values of "Prob > F" less than 0,0500 indicate model terms are significant, In this case A, AB are significant model terms, Values greater than 0,1000 indicate the model terms are not significant, If there are many insignificant model terms (not counting those required to support hierarchy), model reduction may improve your model

Final Equation in Terms of Coded Factors:

$$\begin{aligned}
 \text{indeks pengembangan} &= \\
 &+73,89 \\
 &-9,14 && * \text{Karbopol 940} \\
 &+1,93 && * \text{CMC - Na} \\
 &-3,66 && * \text{Karbopol 940 CMC - Na}
 \end{aligned}$$

LAMPIRAN Q
ANALISA DESAIN FAKTORIAL pH PERMUKAAN

Response 2 pH Permukaan
ANOVA for selected factorial model
Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value Prob>F	
Model	0,26	3	0,087	6,366E+007	< 0,0001	Significant
<i>A-Karbopol 940</i>	7,500E-003	1	7,500E-003	6,366E+007	< 0,0001	t
<i>B-CMC-Na</i>	0,19	1	0,19	6,366E+007	< 0,0001	
<i>AB</i>	0,068	1	0,068	6,366E+007	< 0,0001	
Pure Error	0,000	8	0,000			
Cor Total	0,26	11				

The Model F-value of 63660000,00 implies the model is significant, There is only a 0,01% chance that a "Model F-Value" this large could occur due to noise,

Values of "Prob > F" less than 0,0500 indicate model terms are significant, In this case A, B, AB are significant model terms, Values greater than 0,1000 indicate the model terms are not significant, If there are many insignificant model terms (not counting those required to support hierarchy), model reduction may improve your model

Final Equation in Terms of Coded Factors:

pH permukaan =
+6,07
+0,025 * Karbopol 940
+0,12 * CMC – Na
+0,075 * Karbopol 940 * CMC – Na

LAMPIRAN R

ANALISA DESAIN FAKTORIAL LAMA PEREKATAN

Response 3 Lama Perekatan ANOVA for selected factorial model

Analysis of variance table [Partial sum of squares – Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value Prob>F	
Model	8,25	3	2,75	6,366E+007	0,0001	significant
<i>A-</i>	0,75	1	0,75	6,366E+007	0,0001	
<i>Karbopol</i>						
<i>B-CMC-</i>	6,75	1	6,75	6,366E+007	0,0001	
<i>Na</i>						
<i>AB</i>	0,75	1	0,75	6,366E+007	0,0001	
Pure	0,000	8	0,000			
Error						
Cor	8,25	11				
Total						

The Model F-value of 63660000,00 implies the model is significant, There is only a 0,01% chance that a "Model F-Value" this large could occur due to noise,

Values of "Prob > F" less than 0,0500 indicate model terms are significant, In this case A, B, AB are significant model terms, Values greater than 0,1000 indicate the model terms are not significant, If there are many insignificant model terms (not counting those required to support hierarchy), model reduction may improve your model,

Final Equation in Terms of Coded Factors:

$$\begin{aligned}
 \text{daya mukoadhesive} &= \\
 &+5,25 \\
 &+0,25 && * \text{Karbopol 940} \\
 &+0,75 && * \text{CMC - Na} \\
 &-0,25 && * \text{Karbopol 940} * \text{CMC - Na}
 \end{aligned}$$

LAMPIRAN S

ANALISA DESAIN FAKTORIAL PELEPASAN *IN-VITRO*

Response 4 Pelepasan In-vitro ANOVA for selected factorial model

Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value Prob>F	
Model	2,413E+006	3	8,042E+005	15805,02	< 0,0001	significant
<i>A-Karbopol 940</i>	7,597E+005	1	7,597E+005	14931,04	< 0,0001	
<i>B-CMC-Na</i>	1,296E+006	1	1,296E+006	25475,37	< 0,0001	
<i>AB</i>	3,566E+005	1	3,566E+005	7008,66	< 0,0001	
Pure Error	407,06	8	50,88			
Cor Total	2,413E+006	11				

The Model F-value of 15805,02 implies the model is significant, There is only a 0,01% chance that a "Model F-Value" this large could occur due to noise,

Values of "Prob > F" less than 0,0500 indicate model terms are significant, In this case A, B, AB are significant model terms,

Values greater than 0,1000 indicate the model terms are not significant,

If there are many insignificant model terms (not counting those required to support hierarchy),

model reduction may improve your model,

Final Equation in Terms of Coded Factors:

$$\begin{aligned}
 \text{uji pelepasan} &= \\
 &+1163,61 \\
 &-251,62 && * \text{Karbopol 940} \\
 &+328,66 && * \text{CMC - Na} \\
 &-172,39 && * \text{Karbopol 940 *CMC - Na}
 \end{aligned}$$

LAMPIRAN T
FORMULA OPTIMUM BERDASARKAN
METODE *DESIGN EXPERT*®

Solution Number	Karbopol 940	CMC-Na	Indeks Pengembangan n	Lama Perekata n	pH Permukaan n	Pelepasan n <i>In-Vitro</i>	Desirability	
1	<u>1</u>	<u>1</u>	<u>63,0199</u>	<u>6</u>	<u>6,3</u>	<u>1068,27</u>	<u>1</u>	Selected
2	<u>1</u>	<u>-1</u>	<u>66,4835</u>	<u>5</u>	<u>5,9</u>	<u>755,717</u>	<u>1</u>	
3	<u>-1</u>	<u>1</u>	<u>88,6269</u>	<u>6</u>	<u>6,1</u>	<u>1916,28</u>	<u>1</u>	
4	<u>-1</u>	<u>-1</u>	<u>77,4324</u>	<u>4</u>	<u>6</u>	<u>914,17</u>	<u>1</u>	
5	<u>0,06</u>	<u>-0,09</u>	<u>73,1744</u>	<u>5,20151</u>	<u>6,06525</u>	<u>1120,26</u>	<u>1</u>	
6	<u>0,09</u>	<u>0,87</u>	<u>74,4471</u>	<u>5,90402</u>	<u>6,1917</u>	<u>1412,38</u>	<u>1</u>	
7	<u>-0,26</u>	<u>0,18</u>	<u>76,7781</u>	<u>5,32893</u>	<u>6,08713</u>	<u>1295,05</u>	<u>1</u>	
8	<u>-0,77</u>	<u>0,33</u>	<u>82,5001</u>	<u>5,36455</u>	<u>6,07758</u>	<u>1508,49</u>	<u>1</u>	
9	<u>0,93</u>	<u>0,17</u>	<u>65,1484</u>	<u>5,56818</u>	<u>6,1305</u>	<u>957,522</u>	<u>1</u>	
10	<u>-0,63</u>	<u>-0,7</u>	<u>76,647</u>	<u>4,4582</u>	<u>6,00463</u>	<u>1015,05</u>	<u>1</u>	
11	<u>0,19</u>	<u>-0,68</u>	<u>71,2991</u>	<u>4,81909</u>	<u>5,98472</u>	<u>913,73</u>	<u>1</u>	
12	<u>0,87</u>	<u>0,21</u>	<u>65,7214</u>	<u>5,57865</u>	<u>6,1366</u>	<u>983,637</u>	<u>1</u>	
13	<u>-0,11</u>	<u>0,74</u>	<u>76,6203</u>	<u>5,79437</u>	<u>6,15809</u>	<u>1447,19</u>	<u>1</u>	
14	<u>0,82</u>	<u>-0,67</u>	<u>67,093</u>	<u>5,09247</u>	<u>5,97096</u>	<u>831,883</u>	<u>1</u>	
15	<u>0,96</u>	<u>-0,25</u>	<u>65,5381</u>	<u>5,36311</u>	<u>6,0504</u>	<u>882,585</u>	<u>1</u>	
16	<u>0,8</u>	<u>0,35</u>	<u>66,2004</u>	<u>5,64095</u>	<u>6,15921</u>	<u>1027,37</u>	<u>1</u>	
17	<u>0,6</u>	<u>0,67</u>	<u>68,2599</u>	<u>5,80049</u>	<u>6,20334</u>	<u>1164,01</u>	<u>1</u>	
18	<u>-0,64</u>	<u>0,97</u>	<u>83,944</u>	<u>5,97573</u>	<u>6,13364</u>	<u>1753,27</u>	<u>1</u>	

19	<u>-0,33</u>	<u>-0,16</u>	<u>76,3626</u>	<u>5,03115</u>	<u>6,05026</u>	<u>1182,4</u>	<u>1</u>
20	<u>0,22</u>	<u>0,74</u>	<u>72,6642</u>	<u>5,82054</u>	<u>6,18575</u>	<u>1322,17</u>	<u>1</u>
21	<u>0,2</u>	<u>-0,03</u>	<u>72,0255</u>	<u>5,27678</u>	<u>6,07536</u>	<u>1103,61</u>	<u>1</u>
22	<u>0,88</u>	<u>-0,36</u>	<u>66,2888</u>	<u>5,28221</u>	<u>6,02902</u>	<u>878,732</u>	<u>1</u>
23	<u>-0,73</u>	<u>0,87</u>	<u>84,5654</u>	<u>5,87414</u>	<u>6,1174</u>	<u>1741,03</u>	<u>1</u>
24	<u>-0,91</u>	<u>0,51</u>	<u>84,8806</u>	<u>5,51796</u>	<u>6,081</u>	<u>1638,8</u>	<u>1</u>
25	<u>-0,39</u>	<u>-0,65</u>	<u>75,2486</u>	<u>4,59849</u>	<u>6,00259</u>	<u>1002,6</u>	<u>1</u>
26	<u>0,78</u>	<u>0,22</u>	<u>66,5475</u>	<u>5,56652</u>	<u>6,13465</u>	<u>1009,42</u>	<u>1</u>
27	<u>-0,72</u>	<u>0,86</u>	<u>84,3423</u>	<u>5,87012</u>	<u>6,11851</u>	<u>1732,27</u>	<u>1</u>
28	<u>0,33</u>	<u>-0,49</u>	<u>70,5171</u>	<u>5,00421</u>	<u>6,00958</u>	<u>946,83</u>	<u>1</u>
29	<u>0,15</u>	<u>0,37</u>	<u>73,0281</u>	<u>5,55227</u>	<u>6,12939</u>	<u>1238,19</u>	<u>1</u>
30	<u>0,39</u>	<u>-0,64</u>	<u>70,0222</u>	<u>4,92555</u>	<u>5,98537</u>	<u>897,339</u>	<u>1</u>
31	<u>-0,04</u>	<u>-0,69</u>	<u>72,8193</u>	<u>4,71323</u>	<u>5,98949</u>	<u>941,264</u>	<u>1</u>
32	<u>-0,82</u>	<u>-0,98</u>	<u>76,5217</u>	<u>4,11221</u>	<u>5,99207</u>	<u>909,224</u>	<u>1</u>
33	<u>-0,62</u>	<u>-0,34</u>	<u>78,1522</u>	<u>4,78288</u>	<u>6,03257</u>	<u>1171,1</u>	<u>1</u>
34	<u>-0,32</u>	<u>-0,45</u>	<u>75,4553</u>	<u>4,79533</u>	<u>6,02166</u>	<u>1072,48</u>	<u>1</u>

LAMPIRAN U
SERTIFIKAT ANALISIS BAHAN CMC-Na

DAI-ICHI KOGYO SEIYAKU CO.,LTD.

To whom it may concern :

Certificate of Analysis

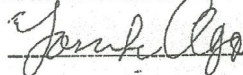
Commodity: CELLOQEN F-3H / CMC Na

Order No. 21E20382

Lot No.	Quantity(kgs)	Moisture(%)	NaCl(%)	D.S.	Viscosity (mPa.s) (1% aq. Soln.)	pH (1% aq. Soln.)
553488	340	5.5	0.66	0.58	1220	6.7
553469	160	5.5	0.69	0.58	1240	6.7

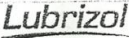
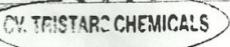
We hereby certify that the analysis outcome of above
meets the standard specification for export at our laboratory.

DAI-ICHI KOGYOSEIYAKU CO.,LTD.



LAMPIRAN V

SERTIFIKAT ANALISIS BAHAN KARBOPOL 940

 <p>LUBRIZOL ADVANCED MATERIALS ASIA PACIFIC LTD 1107-1118 SHILTON CENTRE, 4-S HARBOUR ROAD WANCHAI HONGKONG TEL: +852 2564 1021</p>	<h4>CERTIFICATE OF ANALYSIS</h4>																																											
<p>LZ Sales Order No.: 1365869</p> <p>Customer PO No.: 275843</p> <p>Delivery No.: 81732891</p> <p>Ex-Plant Date: April 25, 2011</p> <p>Delivery Point: JAKARTA</p> <p>Transportation ID: 7B88996</p> <p>Compartment/Seals:</p>	<p>Date: April 29, 2011 Page: 3 of 3</p> <p>Certificate Recipient: PT LAUTAN LUAS TBK K.S. TUBUN RAYA NO.77 GIRAH INDRAMAS JL.AIP II JAKARTA 11410 INDONESIA</p>																																											
<p>Sold-to:</p> <div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center;">  </div> <p style="text-align: center;">www.tristar-chemical.com Jl. Lungkut Mapan Utara CA - 24 Surabaya Telp. 031 - 8708071, Fax 031 - 8708071</p>	<p>Material: CARBOPOL® 940 POLYMER, BOX</p> <p>Qty: 18.0 CT</p> <p>Batch No.: KK138KC342</p> <p>Mfg. Date: March 13, 2011</p> <p>Recommended Retest: March 12, 2013</p> <p>Ship-to:</p>																																											
<p>Characteristics</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2"></th> <th colspan="3" style="text-align: center;">Product Specifications</th> <th rowspan="2">Result</th> </tr> <tr> <th style="text-align: center;">Minimum</th> <th style="text-align: center;">Typical</th> <th style="text-align: center;">Maximum</th> </tr> </thead> <tbody> <tr> <td>BROOKFIELD VIS, 0.2% MUCILAGE @ 25 C</td> <td style="text-align: center;">19000</td> <td></td> <td style="text-align: center;">35000</td> <td></td> </tr> <tr> <td>BROOKFIELD VIS, 0.3% MUCILAGE @ 25 C</td> <td style="text-align: center;">40000</td> <td></td> <td style="text-align: center;">60000</td> <td style="text-align: center;">48800</td> </tr> <tr> <td>BROOKFIELD VIS, 1.0% MUCILAGE @ 25 C</td> <td style="text-align: center;">45000</td> <td></td> <td style="text-align: center;">80000</td> <td></td> </tr> <tr> <td>PPM BENZENE</td> <td style="text-align: center;">ppm</td> <td></td> <td style="text-align: center;">5000</td> <td style="text-align: center;">200</td> </tr> <tr> <td>CLARITY, % TRANSMITTANCE</td> <td style="text-align: center;">%</td> <td style="text-align: center;">85</td> <td></td> <td style="text-align: center;">07</td> </tr> <tr> <td>LOSS ON DRYING</td> <td style="text-align: center;">%</td> <td></td> <td style="text-align: center;">2.0</td> <td></td> </tr> <tr> <td>HM AS (PLAS.HG.SB) 10 PPM MAX</td> <td></td> <td></td> <td></td> <td style="text-align: center;">Pass</td> </tr> </tbody> </table> <p>Where actual values for Loss on Drying (Once/10 lots), 0.2% Brookfield Viscosity (Once/20 lots), 1.0% Brookfield Viscosity (Once/20 lots) and Heavy Metals (Once/ 200 lots) are not given, Lubrizol Advanced Materials, Inc. certifies that each batch/lot meets requirements for the characteristics based on historical process and product data. Because these characteristics are tested on a ship-lot test frequency as indicated on the product specification, results are not reported on the Certificate of Analysis.</p>		Product Specifications			Result	Minimum	Typical	Maximum	BROOKFIELD VIS, 0.2% MUCILAGE @ 25 C	19000		35000		BROOKFIELD VIS, 0.3% MUCILAGE @ 25 C	40000		60000	48800	BROOKFIELD VIS, 1.0% MUCILAGE @ 25 C	45000		80000		PPM BENZENE	ppm		5000	200	CLARITY, % TRANSMITTANCE	%	85		07	LOSS ON DRYING	%		2.0		HM AS (PLAS.HG.SB) 10 PPM MAX				Pass
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LOSS ON DRYING	%		2.0																																									
HM AS (PLAS.HG.SB) 10 PPM MAX				Pass																																								
	<p><i>We guarantee that the above analytical results are in conformity with the agreed upon specifications.</i></p> <p><i>Approved by: Lubrizol Quality Assurance</i></p>																																											

LAMPIRAN W

SERTIFIKAT ANALISIS BAHAN MANITOL

18 Aug 2011 15:21 (+0100) GMT Pages 1 of 3



CARGILL SRL-DIV AMIDI DERIV. SPECIALITA
VIA CERESTAR, 1
RO ROVIGO
I-45035 CASTELMASSA

1600542

Fax: 00492151575939

Certificate of Analysis/Conformity

Customer :

Address :

f.a.o. :

Product :	C*PharmMannidex 16700	Volume (kg) :	11000.0
Product description :	Mannitol	Order number :	17559400
Lot number :	05065153	Packing description :	70025 M70025
Number of units :	440	Shipment date :	18-aug-2011
Production date :	18 JUL 2011		

Producing Plant: Cargill srl Div.Amidi-Der-Spec - Via Cerestar 1 - 45035 Castelmaassa (RC) Italy - Tel: +39 0425 84850
Fax: +39 0425 848410

Analysis

Parameter	Unit	Result	Min	Max
Tot. aerobic microbial count Ph.Eur. /g		3		1000
Tot. combined yeasts/moulds count Ph.Eur		3		100
E. coli Ph.Eur. /g		absent	absent	absent
Salmonella Ph.Eur. /10g		absent	absent	absent
Identification C Ph.Eur. IR		pass test	pass test	pass test
Appearance of solution Ph.Eur.		pass test	pass test	pass test
Conductivity Ph.Eur.	µS/cm	0.9		20.0
Red. sugars Ph.Eur.	%	<0.20		0.20
Related substances Ph.Eur. on d.b.	%	pass test	pass test	pass test
Related substances, disregard limit Ph.E	%	0.05		0.05
Related substances, total Ph.Eur. on d.b	%	0.94		2.00
Related substances, unspecified Ph.Eur.	%	<0.05		0.10
Impurity, isomalt Ph.Eur. on d.b.	%	0.13		2.00
Impurity, maltitol Ph.Eur. on d.b.	%	<0.05		2.00
Impurity, sorbitol Ph.Eur. on d.b.	%	0.81		2.00
Water Ph.Eur.	%	0.13		0.50
Mannitol, assay Ph.Eur. on d.b.	%	98.1	98.0	102.0
Tot. aerobic microbial count Ph.Eur. /g		3		1000
Tot. combined yeasts/moulds count Ph.Eur		3		100
E. coli Ph.Eur. /g		absent	absent	absent
Salmonella Ph.Eur. /10g		absent	absent	absent
Lead Ph.Eur.	ppm	<0.5		0.5
Nickel Ph.Eur.	ppm	<1		1

We hereby confirm that this batch has been tested to the quality requirements. Test results are within the agreed limits.

LAMPIRAN X

SERTIFIKAT ANALISIS BAHAN LAKTOSA



KERRY
Kerry Bio-Science
 155 State Highway 320
 Norwich, NY 13851,
 USA
 Tel: (607) 334-1700
 Fax: (607) 334-5022

Today's Date: 2/16/2012

Vendor Product Code: 5X00153
 Vendor Product Description: LACTOSE MONO NF 500MRELRND 00
 Lot No: 1348
 Customer Product Code: 5X00153
 Customer Product Description: LACTOSE MONO NF 500MRELRND
 Customer PO: 2011/ /PO/390
 Shipment Date: 2/3/2012
 Shipment Quantity: 700 BAGS
 Sales Order No: 7437456

Comment: MEETS ALL REQUIREMENTS OF THE CURRENT USP/NF. ALL WHEY AND CRUDE LACTOSE SUPPLIERS HAVE PROVIDED US DOCUMENTATION THAT CALF DERIVED RENNET IS NOT USED IN THE PRODUCTION OF THEIR PRODUCTS. THIS LOT NUMBER COMPLIES WITH THE CURRENT ICH GUIDELINE FOR RESIDUAL SOLVENTS. NO ORGANIC SOLVENTS ARE USED DURING THE MANUFACTURING PROCESS. *GUARANTEED TO MEET SPECIFICATION. TESTING PERFORMED ON THIS LOT SHOWS TO HAVE GUARANTEES FROM OUR SUPPLIERS THAT THE EDIBLE LACTOSE USED IN THE PRODUCTION OF THIS LOT IS MELAMINE FREE. MELAMINE IS NOT ADDED DURING PROCESSING OR USED ORIGINALLY AT THE MANUFACTURING LOCATION.

CERTIFICATE OF ANALYSIS

Analysis	Method	Specifications	Results
ACIDITY	0.1N NAOH/50. ML	0.0 - 0.4	0.2
ACIDITY	VISUAL EXAM	COLORLESS	COLORLESS
APPEARANCE OF SOLN	EP REQUIREMENTS	PASS	PASS

Customer PO: 2011/ /PO/390

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LAMPIRAN Y
TABEL UJI R

Tabel r

N	Tarat Signif		N	Tarat Signif		N	Tarat Signif	
	5%	1%		5%	1%		5%	1%
3	0,997	0,999	27	0,381	0,487	55	0,266	0,345
4	0,950	0,990	28	0,374	0,478	60	0,254	0,330
5	0,878	0,959	29	0,387	0,470	65	0,244	0,317
6	0,811	0,917	30	0,361	0,463	70	0,235	0,306
7	0,754	0,874	31	0,355	0,456	75	0,227	0,296
8	0,707	0,834	32	0,349	0,449	80	0,220	0,288
9	0,668	0,798	33	0,344	0,442	85	0,213	0,278
10	0,632	0,765	34	0,339	0,436	90	0,207	0,270
11	0,602	0,735	35	0,334	0,430	95	0,202	0,263
12	0,576	0,708	36	0,329	0,424	100	0,195	0,256
13	0,553	0,684	37	0,325	0,418	125	0,176	0,230
14	0,532	0,661	38	0,320	0,413	150	0,159	0,210
15	0,514	0,641	39	0,316	0,408	175	0,148	0,194
16	0,497	0,623	40	0,312	0,403	200	0,138	0,181
17	0,482	0,606	41	0,308	0,398	300	0,113	0,148
18	0,468	0,590	42	0,304	0,393	400	0,098	0,128
19	0,456	0,575	43	0,301	0,389	500	0,088	0,115
20	0,444	0,561	44	0,297	0,384	600	0,080	0,105
21	0,433	0,548	45	0,294	0,380	700	0,074	0,097
22	0,423	0,537	46	0,291	0,376	800	0,070	0,091
23	0,413	0,526	47	0,288	0,372	900	0,065	0,086
24	0,404	0,515	48	0,284	0,368	1000	0,062	0,081
25	0,396	0,505	49	0,281	0,364			
26	0,388	0,496	50	0,279	0,361			

