

LAMPIRAN A
HASIL UJI MUTU FISIK GRANUL

Mutu fisik yang diuji	Batch	Formula Tablet <i>Bukoadhesif</i> Atenolol				Persyaratan
		F I	F II	F III	F IV	
Kelembaban (Kadar air) (Persen)	I	3,25	3,02	3,03	3,24	3 – 5 % (Voigt, 1995)
	II	3,14	3,24	3,65	3,35	
	III	3,07	3,21	3,24	3,42	
	$\bar{X}$	3,15	3,16	3,31	3,34	
	SD	0,09	0,12	0,32	0,09	
Waktu alir (detik)	I	2,24	2,37	2,42	2,37	Kurang dari 2,5 detik
	II	2,56	2,46	2,33	2,24	
	III	2,14	1,96	2,25	2,17	
	$\bar{X}$	2,31	2,26	2,33	2,26	
	SD	0,22	0,27	0,09	0,1	
Sudut diam (derajat)	I	32,21	37,24	35,23	36,45	30 – 40 Dapat mengalir (Lachman <i>et al.</i> , 1989)
	II	32,46	37,53	35,66	36,14	
	III	33,15	36,84	34,62	35,64	
	$\bar{X}$	32,59	37,20	35,17	36,08	
	SD	0,50	0,34	0,52	0,40	
Indeks kompresi-bilitas (persen)	I	20	19,33	19,74	18,78	18 - 21 = Dapat mengalir (Wells, 1993)
	II	20,12	19,54	19,24	19,25	
	III	20,78	19,62	18,68	18,72	
	$\bar{X}$	20,3	19,49	19,22	18,91	
	SD	0,42	0,14	0,53	0,29	

Contoh perhitungan sudut diam :

Formula I :

$$\begin{aligned}
 \text{W persegi panjang} &= 4,81 \text{ gram} \\
 \text{W lingkaran} &= 0,44 \text{ gram} \\
 \text{Luas persegi panjang} &= 29,6 \times 21,1 \\
 &= 624,56 \text{ cm}^2
 \end{aligned}$$

$$\text{Luas lingkaran} = \frac{0,44}{4,81} \times 624,56 = 57,13$$

$$L = \pi r^2$$

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

$$= \frac{57,13}{\pi}$$

$$= 4,26 \text{ cm}$$

$$\text{tg } \alpha = \frac{t}{r} = \frac{2,7}{4,26} = 0,63$$

$$\alpha = 32,21$$

Contoh perhitungan indeks kompresibilitas :

Formula I :

$$\text{Berat gelas ukur} = 102,23 \text{ gram } (W_1)$$

$$\text{Berat gelas ukur + granul} = 123,24 \text{ gram } (W_2)$$

$$V_0 = 65 \text{ mL}$$

$$V_1 = 52 \text{ mL}$$

$$\text{Bj nyata} = \frac{(W_2 - W_1)}{V_0} = \frac{(123,24 - 102,23)}{65} =$$

$$0,3232$$

$$\text{Bj mampat} = \frac{(W_2 - W_1)}{V_1} =$$

$$\frac{(123,24 - 102,23)}{52} = 0,4040$$

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

$$\left[1 - \frac{0,3232}{0,4040} \right] \times 100\% = 20 \%$$

HASIL UJI PERCOBAAN
WAKTU ALIR GRANUL

Replikasi	Berat Granul (gram)	Waktu (detik)	Persyaratan
I	101,25	9,8	Kurang dari 10 detik (Lachman <i>et al.</i> , 1989)
II	100,42	9,6	
III	100,36	9,5	
I	25,45	2,4	Kurang dari 2,5 detik
II	25,12	2,2	
III	26,22	2,3	

Berdasarkan percobaan diatas, dilakukan uji T-test dengan hasil sebagai

Group Statistics

Hubungan	N	Mean	Std. Deviation	Std. Error Mean
Waktu 25 gram granul	3	2.3000	.10000	.05774
100 gram granul	3	2.4100	.03606	.02082

berikut :

	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	1.346	.311	-1.792	4	.148	-.11000	.06137	-.28040	.06040
Equal variances assumed									
Equal variances not assumed			-1.792	2.511	.189	-.11000	.06137	-.32868	.10868

Pada kolom uji T, diperoleh nilai $P\text{-value}$ ($P = 0,148$) $> \alpha = 0,05$, yang menunjukkan bahwa secara statistik tidak ada perbedaan yang bermakna antara waktu alir dari 100 gram granul selama 10 detik dengan waktu alir dari 25 gram granul selama 2,5 detik. Berdasarkan hasil tersebut maka persyaratan untuk 25 gram granul yang diuji harus memiliki waktu kurang dari 2,5 detik.

LAMPIRAN B
HASIL UJI KESERAGAMAN KANDUNGAN TABLET
BUKOADHESIF ATENOLOL

Hasil Uji Keseragaman Kandungan Tablet Bukoadhesif Formula I
Batch 1

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,154	29,30	154,3	30,88	94,90
0,157	30	153,7	30,76	97,51
0,153	29,07	152,3	30,48	95,39
0,155	29,54	153	30,62	96,45
0,156	29,77	148,6	29,74	100,08
0,154	29,30	149,8	29,98	97,75
0,158	30,23	159	31,82	94,99
0,152	28,84	150,9	30,20	95,51
0,15	28,38	148,3	29,68	95,63
0,149	28,15	149,6	29,94	94,03
$\bar{X}$				96,22
SD				1,78
KV				1,85

Contoh Perhitungan :

$$\text{Absorbansi} = 0,154 \rightarrow y = 0,0268 + 4,34 \cdot 10^{-3}X$$

$$\text{Konsentrasi sampel} = 29,30 \text{ ppm}$$

$$\text{Konsentrasi teoritis} = 30,88 \text{ ppm}$$

$$\begin{aligned} \% \text{ Kadar} &= \frac{\text{Konsentrasi sampel}}{\text{Konsentrasi teoritis}} \times 100 \% = \frac{29,30}{30,88} \times 100 \% \\ &= 94,90\% \end{aligned}$$

**Hasil Uji Keseragaman Kandungan Tablet Bukoadhesif Formula II
Batch 1**

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,152	28,84	152,3	30,48	94,63
0,151	28,61	149,8	29,98	95,44
0,159	30,46	154,7	30,96	98,37
0,155	29,54	154,2	30,86	95,70
0,153	29,07	149,2	29,86	97,37
0,15	28,38	150,5	30,12	94,23
0,157	30	150,2	30,06	99,79
0,153	29,07	154,2	30,86	94,21
0,155	29,54	152	30,42	97,09
0,154	29,30	153,1	30,64	95,64
$\bar{X}$				96,25
SD				1,85
KV				1,92

**Hasil Uji Keseragaman Kandungan Tablet Bukoadhesif Formula III
Batch 1**

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,154	29,30	152	30,42	96,33
0,152	28,84	153,6	30,74	93,83
0,156	29,77	149	29,82	99,82
0,155	29,54	149,7	29,96	98,58
0,153	29,07	150,3	30,08	96,65
0,155	29,54	152,3	30,48	96,90
0,158	30,23	154,3	30,88	97,88
0,157	30	155	31,02	96,69
0,154	29,30	151,2	30,26	96,84
0,151	28,61	150,2	30,06	95,19
$\bar{X}$				96,87
SD				1,66
KV				1,71

**Hasil Uji Keseragaman Kandungan Tablet Bukoadhesif Formula IV
Batch 1**

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,156	29,77	151	30,22	98,49
0,154	29,30	152,6	30,54	95,95
0,151	28,61	150,4	30,10	95,06
0,154	29,30	150,7	30,11	97,16
0,15	28,38	151,1	30,24	93,86
0,152	28,84	150	30,02	96,08
0,153	29,07	152,1	30,44	95,51
0,155	29,54	152,6	30,54	96,71
0,147	27,69	150,4	30,10	92
0,154	29,30	151,5	30,32	96,65
$\bar{X}$				95,75
SD				1,81
KV				1,89

**Hasil Uji Keseragaman Kandungan Tablet Bukoadhesif Formula I
Batch 2**

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,152	28,84	154,2	30,86	93,46
0,156	29,77	152	30,42	97,85
0,154	29,30	153	30,62	95,70
0,155	29,54	152,7	30,56	96,64
0,152	28,84	150	30,02	96,08
0,153	29,07	153,1	30,64	94,89
0,149	28,15	149	29,82	94,41
0,156	29,77	150,8	30,18	98,62
0,153	29,07	152,4	30,50	95,32
0,156	29,77	151	30,22	98,49
$\bar{X}$				96,15
SD				1,74
KV				1,80

**Hasil Uji Keseragaman Kandungan Tablet Bukoadhesif Formula II
Batch 2**

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,153	29,0	156,3	31,28	92,94
0,15	28,38	151,6	30,34	93,55
0,154	29,30	149,3	29,88	98,07
0,155	29,54	152,8	30,58	96,58
0,152	28,84	149,4	29,90	96,47
0,151	28,61	153,2	30,66	93,32
0,157	30	152	30,42	98,60
0,154	29,30	158	31,62	92,67
0,155	29,54	151,1	30,24	97,67
0,152	28,84	153,4	30,70	93,95
$\bar{X}$				95,38
SD				2,31
KV				2,43

**Hasil Uji Keseragaman Kandungan Tablet Bukoadhesif Formula III
Batch 2**

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,152	28,84	151	30,22	95,44
0,154	29,309	152,4	30,50	96,08
0,154	29,30	155,9	31,20	93,92
0,153	29,07	154,8	30,98	93,85
0,157	30	153,8	30,78	97,45
0,152	28,84	152	30,42	94,82
0,151	28,61	150	30,02	95,31
0,159	30,46	153,1	30,64	99,40
0,156	29,77	151,2	30,26	98,36
0,154	29,30	150	30,02	97,62
$\bar{X}$				96,22
SD				1,9
KV				1,93

Hasil Uji Keseragaman Kandungan Tablet Bukoadhesif Formula IV Batch 2

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,155	29,54	152,2	30,46	96,96
0,154	29,30	153,2	30,66	95,58
0,157	30	152	30,42	98,60
0,158	30,23	154,2	30,86	97,94
0,157	30	150	30,02	99,92
0,155	29,54	152,7	30,56	96,64
0,156	29,77	149	29,82	99,82
0,159	30,46	152,1	30,44	100,05
0,152	28,84	151	30,22	95,44
0,155	29,54	152,8	30,58	96,58
$\bar{X}$				97,75
SD				1,77
KV				1,81

Hasil Uji Keseragaman Kandungan Tablet Bukoadhesif Formula I Batch 3

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,155	29,540	149,9	29,5	100,13
0,153	29,07	150,9	29,10	99,90
0,156	29,77	153,1	30,13	98,80
0,151	28,61	152,4	28,28	101,19
0,156	29,77	150,9	29,69	100,24
0,147	27,69	152	27,55	100,52
0,151	28,61	152,4	28,39	100,77
0,159	30,46	151	30,81	98,84
0,158	30,23	154,8	30,50	99,10
0,157	30	153,6	30,60	98,03
$\bar{X}$				99,75
SD				1,02
KV				1

Hasil Uji Keseragaman Kandungan Tablet Bukoadhesif Formula II Batch 3

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,156	29,77	153,2	30,62	97,21
0,155	29,54	151	29,99	98,49
0,152	28,84	152	29,22	98,71
0,15	28,38	152,7	29,14	97,39
0,154	29,30	149,8	29,22	100,29
0,151	28,61	150,9	28,51	100,35
0,152	28,84	152,5	29,38	98,18
0,165	31,84	153,4	32,09	99,20
0,164	31,61	152,1	31,40	100,65
0,158	30,23	150	29,93	100,99
$\bar{X}$				99,35
SD				1,36
KV				1,37

Hasil Uji Keseragaman Kandungan Tablet Bukoadhesif Formula III Batch 3

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,156	29,77	149,8	29,69	100,26
0,152	28,84	150	29,73	97,03
0,154	29,30	151,2	29,96	97,80
0,156	29,77	153,6	30,44	97,78
0,157	30	150,2	29,76	100,77
0,154	29,30	152,6	30,24	96,90
0,156	29,77	150	29,73	100,13
0,157	30	151	29,92	100,24
0,155	29,54	152,5	30,22	97,73
0,158	30,23	151,8	30,08	100,48
$\bar{X}$				98,91
SD				1,58
KV				1,59

Hasil Uji Keseragaman Kandungan Tablet Bukoadhesif Formula IV Batch 3

Absorbansi	C sampel	W sampel	C teoritis	Kadar (%)
0,156	29,77	153,2	30,14	98,74
0,157	30	152,5	30,01	99,96
0,154	29,30	150	29,52	99,28
0,153	29,07	152	29,91	97,21
0,156	29,77	153,4	30,18	98,61
0,158	30,23	152,8	30,07	100,53
0,156	29,77	154,2	30,34	98,10
0,157	30	153	30,11	99,63
0,155	29,54	150	29,52	100,06
0,154	29,30	151,5	29,81	98,30
$\bar{X}$				99,04
SD				1,03
KV				1,04

LAMPIRAN C
HASIL UJI KESERAGAMAN UKURAN TABLET BUKOADHESIF ATENOLOL
Batch I

No	Formula							
	(I)		(II)		(III)		(IV)	
	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)
1	7,8	2,75	8,0	2,8	8,0	2,85	7,95	2,95
2	8,0	2,65	8,0	2,8	7,85	2,75	8,0	2,9
3	7,9	2,8	7,9	2,8	8,0	2,7	7,95	2,9
4	8,0	2,7	8,0	2,85	8,0	2,95	8,0	3,9
5	7,8	2,75	7,95	2,9	7,9	2,7	8,0	2,85
6	8,0	2,65	8,0	2,8	8,0	2,7	8,0	2,9
7	8,0	2,75	8,0	2,9	8,0	2,95	7,9	2,9
8	7,7	2,8	7,9	2,8	7,8	2,8	8,0	3,0
9	8,0	2,85	8,0	2,8	8,0	2,85	8,0	2,95
10	8,0	2,65	8,0	2,85	8,0	2,9	7,8	2,9
11	7,7	2,8	8,0	2,8	8,0	2,8	8,0	2,9
12	8,0	2,85	8,0	2,85	8,0	2,75	8,0	2,9
13	7,8	2,75	7,9	2,75	7,8	2,9	7,95	2,9
14	8,0	2,8	8,0	2,9	8,0	2,95	8,0	2,9
15	8,0	2,65	7,95	2,95	8,0	2,85	7,95	2,95
16	7,95	2,75	8,0	2,9	8,0	2,9	7,95	2,9
17	8,0	2,85	8,1	2,75	7,95	2,75	8,05	2,95
18	8,05	2,75	7,95	2,95	8,05	2,95	8,0	2,9
19	7,95	2,65	8,05	2,85	8,0	2,8	8,05	2,95

20	8,0	2,8	8,05	2,75	8,0	2,8	8,0	3,0
$\bar{X}$	7,93	2,75	7,99	2,84	7,97	2,83	7,98	2,97
SD	0,11	0,07	0,05	0,06	0,07	0,09	0,05	0,22
SD Rel	1,38	2,54	0,62	2,11	0,87	3,18	0,62	7,40

Batch 2

No	Formula							
	(I)		(II)		(III)		(IV)	
	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)
1	7,9	2,75	8,05	2,9	7,8	3,0	8,0	2,85
2	8,0	2,75	7,9	2,9	8,0	3,0	8,0	2,9
3	8,0	2,8	7,95	3,0	7,9	3,0	7,95	3,0
4	8,0	2,85	8,0	2,95	8,0	2,9	8,0	2,9
5	8,0	2,75	8,0	2,8	8,05	3,05	7,9	3,0
6	7,9	2,75	8,05	2,95	8,0	2,9	8,05	3,0
7	8,0	2,85	8,0	3,0	7,95	3,0	8,0	3,05
8	8,0	2,7	8,0	2,9	8,0	2,9	8,0	2,95
9	7,85	2,7	7,85	2,8	7,9	2,9	8,1	2,95
10	8,0	2,75	8,0	3,0	8,0	2,95	8,0	3,0
11	8,0	2,8	8,0	3,0	8,0	3,0	8,0	3,0
12	7,9	2,85	7,9	2,9	7,9	2,9	7,9	2,95
13	8,0	2,75	8,05	3,0	8,0	3,0	8,0	3,05
14	8,0	2,8	8,0	2,8	7,95	2,9	8,0	3,1
15	8,0	2,85	7,9	3,0	7,9	3,0	7,9	3,0
16	7,85	2,75	8,0	2,8	7,8	3,0	7,9	3,1

17	8,0	2,85	7,95	2,85	8,05	2,9	7,85	3,05
18	8,0	2,75	8,05	3,0	8,0	3,0	8,05	2,8
19	8,0	2,8	8,0	2,95	8,0	3,05	7,9	2,8
20	8,0	2,75	8,05	2,9	8,0	3,0	8,0	3,05
$\bar{X}$	7,97	2,78	7,98	2,92	7,96	2,97	7,98	2,98
SD	0,05	0,05	0,07	0,08	0,07	0,05	0,06	0,09
SD Rel	0,62	1,79	0,87	2,73	0,87	1,68	0,75	3,02

Batch 3

No	Formula							
	(I)		(II)		(III)		(IV)	
	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)	Diameter (mm)	Tebal (mm)
1	8,0	2,8	7,9	2,9	7,9	3,0	7,9	2,95
2	8,0	2,8	8,0	2,8	7,8	3,0	7,8	3,0
3	8,0	2,8	7,95	3,0	7,95	2,95	8,05	2,9
4	8,0	2,8	8,1	2,95	8,0	3,05	8,05	3,1
5	8,05	2,7	7,9	2,8	8,0	2,85	8,0	2,75
6	8,0	2,75	7,9	2,9	8,0	3,0	8,05	3,0
7	7,9	2,85	8,05	2,8	8,05	3,05	7,8	3,05
8	8,0	2,85	8,0	2,8	8,0	2,95	8,0	2,95
9	8,0	2,8	8,1	2,9	7,95	2,9	7,9	2,95
10	8,0	2,7	8,05	2,85	8,0	2,85	8,0	2,85
11	8,0	2,8	8,0	2,85	8,0	3,0	8,0	2,8
12	8,0	2,85	8,05	2,95	7,8	2,95	7,95	2,95
13	7,9	2,7	8,0	3,0	7,95	3,0	8,0	3,05

14	8,0	2,8	8,0	2,85	7,9	2,85	7,8	2,95
15	8,0	2,85	7,95	3,0	7,9	2,95	7,9	3,0
16	8,0	2,85	8,0	3,0	8,0	3,0	7,9	2,85
17	7,9	2,8	7,9	2,8	8,0	2,95	8,05	3,05
18	8,0	2,75	8,05	2,85	8,05	3,0	7,95	2,9
19	7,9	2,8	7,95	2,85	8,0	3,05	8,0	2,8
20	8,0	2,85	8,0	2,9	7,8	2,85	7,9	3,0
	7,99	2,8	7,99	2,89	7,95	2,96	7,95	2,94
SD	0,04	0,05	0,06	0,07	0,08	0,07	0,08	0,09
SD Rel	0,50	1,78	0,75	2,42	1	2,36	1	3,06

LAMPIRAN D
HASIL UJI KEKERASAN TABLET BUKOADHESIF
ATENOLOL
Batch 1

No.	Kekerasan Tablet Atenolol (kp)			
	Formula I	Formula II	Formula III	Formula IV
1	5,6	5,2	6,2	5,3
2	5,2	5,6	6,8	5,4
3	5,3	5,8	6,2	5,5
4	5,4	5,8	6,4	5,4
5	5,2	5,2	6,4	5,5
6	5,6	5,4	6,6	5,6
7	5,8	4,8	6,6	5,7
8	4,4	5,3	6,7	5,3
9	4,8	4,1	5,8	6,2
10	5,5	4,6	5,4	6,4
$\bar{X} \pm SD$	$5,28 \pm 0,41$	$5,18 \pm 0,54$	$6,13 \pm 0,43$	$5,63 \pm 0,37$

Batch 2

No.	Kekerasan Tablet Atenolol (kp)			
	Formula I	Formula II	Formula III	Formula IV
1	6,2	5,4	6,6	5,3
2	6,4	6,5	6,7	5,5
3	6,4	6,3	6,6	5,6
4	6,6	6,2	6,5	5,7
5	6,7	6,4	6,3	6,1
6	6,8	6,4	6,2	6,3
7	6,5	6,6	6,2	6,4
8	6,5	5,6	7,4	6,5
9	7,2	5,6	7,2	6,3
10	7,3	6,2	7,3	6,3
$\bar{X} \pm SD$	$6,66 \pm 0,35$	$6,12 \pm 0,42$	$6,7 \pm 0,44$	$6 \pm 0,43$

Batch 3

No.	Kekerasan Tablet Atenolol (kp)			
	Formula I	Formula II	Formula III	Formula IV
1	5,6	4,7	5,3	5,8
2	5,4	4,8	5,4	5,9
3	5,4	4,3	5,6	5,3
4	5,3	4,2	5,7	5,7
5	5,2	4,8	5,6	5,4
6	5,5	5,2	5,2	5,9
7	5,6	5,6	4,4	4,6
8	5,4	5,4	4,5	4,6
9	4,3	5,7	4,8	5,8
10	4,6	5,3	5,8	5,3
$\bar{X} \pm SD$	$5,23 \pm 0,43$	$5 \pm 0,52$	$5,23 \pm 0,50$	$5,43 \pm 0,49$

LAMPIRAN E
HASIL UJI KERAPUHAN TABLET BUKOADHESIF
ATENOLOL

Formula	Replikasi	Berat awal (gram)	Berat akhir (gram)	Kerapuhan (%)	$\bar{X} \pm$ SD
I	1	3,13	3,11	0,63	$0,73 \pm$ 0,18
	2	3,15	3,13	0,63	
	3	3,18	3,15	0,94	
II	1	3,12	3,09	0,96	$0,75 \pm$ 0,19
	2	3,18	3,16	0,63	
	3	3,06	3,04	0,65	
III	1	3,09	3,07	0,65	$0,63 \pm$ 0,06
	2	3,8	3,73	0,53	
	3	3,15	3,13	0,63	
IV	1	3,08	3,06	0,65	$0,65 \pm$ 0,01
	2	3,14	3,12	0,64	
	3	3,07	3,05	0,65	

Contoh perhitungan :

$$\begin{aligned}
 \% \text{ kerapuhan} &= \frac{\text{berat awal} - \text{berat akhir}}{\text{berat awal}} \times 100\% \\
 &= \frac{3,13 - 3,11}{3,13} \times 100\% \\
 &= 0,63\%
 \end{aligned}$$

LAMPIRAN F
HASIL UJI INDEKS PENGEMBANGAN TABLET BUKOADHESIF ATENOLOL

Hasil uji indeks pengembangan tablet *bukoadhesif* formula 1 (-1)

t jam	Replikasi									X± SD
	I			II			III			
	W1 (g)	W2 (g)	SI (%)	W1 (g)	W2 (g)	SI (%)	W1 (g)	W2 (g)	SI (%)	
0,5	151,2	201,5	33,26	151,7	204,6	34,87	151,8	204,8	34,91	34,35 ± 0,94
1	153,4	242,5	58,08	153,2	242,8	58,48	153,4	243,4	58,67	58,41 ± 0,3
2	150	265,8	77,2	150	265,2	76,8	151	266,8	76,02	76,67 ± 0,6
3	152,4	292,9	92,19	152,6	293,2	92,13	152,8	294,5	92,73	92,35 ± 0,33
4	151,7	324,1	113,6	151,5	324,8	114,3	152	325,8	114,3	114,1 ± 0,4
5	152,8	346,8	126,9	152	346,2	127,7	153,7	347,4	126	126,9 ± 0,85
6	151,4	350,4	131,4	151,7	350,6	131	151,8	386	131,1	131,2 ± 0,2

Hasil uji indeks pengembangan tablet *bukoadhesif* formula 2 (a)

t jam	Replikasi									$\bar{X} \pm SD$
	I			II			III			
	W1 (g)	W2 (g)	SI (%)	W1 (g)	W2 (g)	SI (%)	W1 (g)	W2 (g)	SI (%)	
0,5	151	210,8	39,60	152	212,4	39,73	150,8	210,2	39,38	39,57 ± 0,17
1	152,8	230,5	50,85	153,8	232,4	51,1	153,7	233,2	51,72	51,22 ± 0,44
2	153,4	250,4	63,23	152,4	248,6	63,12	152,6	249,6	63,56	63,30 ± 0,22
3	150	292,4	94,93	149,6	291,7	94,98	150,4	292,2	94,28	94,73 ± 0,39
4	151,8	352,1	131,9	152	351,8	131,4	152,9	352,6	130,6	131,3 ± 0,65
5	152,8	385,4	152,2	153,8	387,5	151,9	153,6	387,2	152	152 ± 0,15
6	151,4	395	160,8	151,2	395,7	161,7	152,1	396,4	160,6	161,03 ± 0,5

Hasil uji indeks pengembangan tablet *bukoadhesif* formula 3 (b)

t jam	Replikasi									X ± SD
	I			II			III			
	W1 (g)	W2 (g)	SI (%)	W1 (g)	W2 (g)	SI (%)	W1 (g)	W2 (g)	SI (%)	
0,5	149,8	210,4	40,45	151,8	212,4	39,92	152,4	213,2	39,89	40,08 ± 0,31
1	151	230,7	52,78	150,6	230,9	53,32	151	230,6	52,71	52,93 ± 0,33
2	151,4	292,4	93,13	150,3	292,8	94,81	151	293,4	94,30	94,08 ± 0,86
3	152,4	321,5	110,9	152,8	322	110,7	152,4	324	112,5	111,3 ± 0,98
4	152,6	335,8	119,7	152,8	335,8	119,7	152	334,2	119,8	119,3 ± 0,97
5	152,4	340,5	123,4	152,8	340,9	123,1	152,4	340,3	123,2	123,2 ± 0,96
6	152,1	344,3	126,3	152	345	126,9	152,7	345,5	126,2	126,5 ± 0,38

Hasil uji indeks pengembangan tablet *bukoadhesif* formula 4 (ab)

t jam	Replikasi									X̄ ± SD
	I			II			III			
	W1 (g)	W2 (g)	SI (%)	W1 (g)	W2 (g)	SI (%)	W1 (g)	W2 (g)	SI (%)	
0,5	153,7	225,4	46,64	153,4	225,8	47,19	153,6	226	47,13	46,98 ± 0,3
1	152,8	232,8	52,35	152	232,2	52,76	153,2	233,7	52,54	52,55 ± 0,2
2	153,8	264,3	71,84	154,1	265,1	72,03	155,4	266,2	71,29	71,72 ± 0,38
3	149,4	295,6	97,85	151	296,4	96,29	150,8	297,2	97,08	97,07 ± 0,78
4	151,4	324,8	114,5	152,7	326,4	113,7	153	327,5	114	114 ± 0,4
5	152,4	331,5	117,5	152,6	331,8	117,4	153,4	333,4	117,3	117,4 ± 0,08
6	152,6	337	121,3	152,5	337,2	121,1	152,4	337,5	121,4	121,3 ± 0,17

Contoh perhitungan Formula 1 replikasi 1 :

$$\begin{aligned}\% \text{ pengembangan} &= \frac{\text{berat akhir} - \text{berat awal}}{\text{berat awal}} \times 100\% \\ &= \frac{225,4 - 153,7}{153,7} \times 100\% \\ &= 46,64 \%\end{aligned}$$

LAMPIRAN G
HASIL UJI LAMA PEREKATAN TABLET BUKOADHESIF ATENOLOL

Formula	Replikasi	Lama Perekatan Di Mukosa Pada Jam						Keterangan
		1	2	3	4	5	6	
I	1	(+)	(+)	(+)	(+)	(+)	(+)	Merekat sampai 6 jam
	2	(+)	(+)	(+)	(+)	(+)	(+)	
	3	(+)	(+)	(+)	(+)	(+)	(+)	
II	1	(+)	(+)	(+)	(+)	(+)	(-)	Merekat sampai 5 jam
	2	(+)	(+)	(+)	(+)	(+)	(-)	
	3	(+)	(+)	(+)	(+)	(+)	(-)	
III	1	(+)	(+)	(+)	(+)	(+)	(+)	Merekat sampai 6 jam
	2	(+)	(+)	(+)	(+)	(+)	(+)	
	3	(+)	(+)	(+)	(+)	(+)	(+)	
IV	1	(+)	(+)	(+)	(+)	(+)	(+)	Merekat sampai 6 jam
	2	(+)	(+)	(+)	(+)	(+)	(+)	
	3	(+)	(+)	(+)	(+)	(+)	(+)	

Keterangan :

(+) : Masih merekat pada mukosa

(-) : Terlepas dari mukosa

LAMPIRAN H
HASIL UJI PH PERMUKAAN TABLET BUKOADHESIF
ATENOLOL

Formula	Replikasi	pH permukaan	$\bar{X} \pm SD$
I	1	6,5	$6,4 \pm 0,11$
	2	6,5	
	3	6,3	
II	1	6,6	$6,5 \pm 0,05$
	2	6,5	
	3	6,6	
III	1	6,3	$6,3 \pm 0,05$
	2	6,3	
	3	6,2	
IV	1	6,2	$6,23 \pm 0,05$
	2	6,3	
	3	6,2	

LAMPIRAN I
HASIL UJI F KURVA BAKU DALAM METANOL

Replikasi 1

Konsentrasi	Absorbansi	x²	y²	xy
15,48	0,098	239,6304	0,0096	1,5170
23,22	0,112	539,1684	0,0125	2,6006
30,96	0,142	958,5216	0,0202	4,3963
38,7	0,186	1497,6900	0,0346	7,1982
46,44	0,219	2156,6736	0,0480	10,1704
		5391,6840	0,1249	25,8826

Replikasi 2

Konsentrasi	Absorbansi	x²	y²	xy
15,3	0,089	234,0900	0,0079	1,3617
22,95	0,13	526,7025	0,0169	2,9835
30,6	0,161	936,3600	0,0259	4,9266
38,25	0,196	1463,0625	0,0384	7,4970
45,9	0,222	2106,8100	0,0493	10,1898
		5267,0250	0,1384	26,9586

Replikasi 3

Konsentrasi	Absorbansi	x²	y²	xy
15,48	0,087	239,6304	0,0076	1,3468
23,22	0,113	539,1684	0,0128	2,6239
30,96	0,139	958,5216	0,0193	4,3034
38,7	0,179	1497,6900	0,0320	6,9273
46,44	0,214	2156,6736	0,0458	9,9382
		5391,6840	0,1175	25,1395

Replikasi	$\sum x^2$	$\sum y^2$	$\sum xy$	N	Residual ss	RDF
1	5391,6840	0,1249	25,8826	5	0,00062	3
2	5267,0250	0,1384	26,9586	5	0,00046	3
3	5391,6840	0,1175	25,1395	5	0,00028	3
					0,00136	9
	16050,3930	0,3808	77,9807		0,00194	11

Contoh Perhitungan :

Contoh Perhitungan :

$$\begin{aligned}
 SS_1 &= \sum y_1 - [(\sum xy_1)^2 / \sum x_1] \\
 &= 0,1249 - (25,8826^2 / 5391,6840) \\
 &= 0,00062
 \end{aligned}$$

$$\begin{aligned}
 SSc &= \sum y_c - [(\sum xy_c)^2 / \sum x_c] \\
 &= 0,3808 - (77,9807^2 / 16050,3930) \\
 &= 0,0019
 \end{aligned}$$

$$\begin{aligned}
 SSp &= Ssi1 + Ssi2 + Ssi3 \\
 &= 0,00062 + 0,00046 + 0,00028 \\
 &= 0,00136
 \end{aligned}$$

$$\begin{aligned}
 F_{hitung} &= (SSc - SSp/k-1) / (SSp/Df_p) \\
 &= (0,0019 - 0,0014/3-1) / (0,0014/9) \\
 &= 1,92
 \end{aligned}$$

$$F_{hitung} = 1,92 < F_{tabel 0,05 (2;9)} = 4,26$$

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

Replikasi 1

Konsentrasi	Absorbansi	x^2	y^2	xy
5,04	0,045	25,4016	0,0020	0,2268
30,24	0,167	914,4576	0,0279	5,0501
50,4	0,255	2540,1600	0,0650	12,8520
80,64	0,335	6502,8096	0,1122	27,0144
100,8	0,513	10160,6400	0,2632	51,7104
		20143,4688	0,4703	96,8537

Replikasi 2

Konsentrasi	Absorbansi	x^2	y^2	xy
5,1	0,057	26,0100	0,0032	0,2907
30,6	0,192	936,3600	0,0369	5,8752
51	0,284	2601,0000	0,0807	14,4840
81,6	0,474	6658,5600	0,2247	38,6784
102	0,515	10404,0000	0,2652	52,5300
		20625,9300	0,6107	111,8583

Replikasi 3

konsentrasi	Absorbansi	x^2	y^2	xy
5,1	0,068	26,0100	0,0046	0,3468
30,6	0,177	936,3600	0,0313	5,4162
51	0,268	2601,0000	0,0718	13,6680
81,6	0,373	6658,5600	0,1391	30,4368
102	0,511	10404,0000	0,2611	52,1220
		20625,9300	0,5080	101,9898

Replikasi	$\sum x^2$	$\sum y^2$	$\sum xy$	N	Residual ss	RDF
1	20143,4688	0,4703	96,8537	5	0,0046	3
2	20625,9300	0,6107	111,8583	5	0,0040	3
3	20625,9300	0,5080	101,9898	5	0,0037	3
					0,0124	9
	61395,3288	1,5890	310,7018		0,0167	11

$$F_{hitung} = 1,55 < F_{tabel\ 0,05\ (2:9)} = 4,26$$

LAMPIRAN K
HASIL UJI AKURASI DAN PRESISI TABLET BUKOADHESIF
ATENOLOL DALAM METANOL

Replikasi	%	Abs	C (ppm)	C Teoritis (ppm)	% Perolehan Kembali	
1	80	0,131	24,01	24,1	99,64	$\bar{X}$ = 99,64
2	80	0,130	23,78	24,1	98,69	SD = 0,96
3	80	0,132	24,24	24,09	100,6	KV= 0,96
1	100	0,159	30,46	30,32	100,5	$\bar{X}$ = 99,67
2	100	0,158	30,23	30,31	99,74	SD = 0,82
3	100	0,157	30	30,36	98,82	KV = 0,82
1	120	0,184	36,22	36,58	99,03	$\bar{X}$ = 99,03
2	120	0,183	35,99	36,57	98,43	SD = 0,59
3	120	0,185	36,45	36,59	99,63	KV= 0,59

Contoh perhitungan :

$$\text{Absorbansi} = 0,131 \rightarrow y = 0,0268 + 4,34 \cdot 10^{-3}X$$

$$\text{Konsentrasi} = 24,01 \text{ ppm}$$

$$\text{Konsentrasi teoritis} = 24,1 \text{ ppm}$$

$$\% \text{ Perolehan Kembali} = \frac{\text{Konsentrasi}}{\text{Konsentrasi teoritis}} \times 100 \%$$

$$= \frac{24,01}{24,11} \times 100 \% = 99,64$$

LAMPIRAN L
HASIL UJI AKURASI DAN PRESISI TABLET BUKOADHESIF
ATENOLOL DALAM LARUTAN DAPAR FOSFAT ISOTONIS
pH 6,8

Replikasi	Abs	C (ppm)	C Teoritis (ppm)	% Perolehan Kembali	
1	0,086	10,12	10,10	100,19	$\bar{X} = 100,27$
2	0,086	10,12	10,16	99,60	SD = 0,72
3	0,087	10,35	10,24	101,04	KV = 0,72
1	0,260	49,65	50,50	98,32	$\bar{X} = 99,31$
2	0,265	50,79	50,80	99,98	SD = 0,87
3	0,266	51,02	51,20	99,64	KV = 0,88
1	0,487	101,23	101	100,22	$\bar{X} = 100,01$
2	0,491	102,14	101,60	100,53	SD = 0,64
3	0,489	101,68	102,40	99,30	KV = 0,64

Contoh perhitungan :

$$\text{Absorbansi} = 0,086 \rightarrow y = 0,0414 + 4,4 \cdot 10^{-3}X$$

$$\text{Konsentrasi} = 10,12 \text{ ppm}$$

$$\text{Konsentrasi teoritis} = 10,10 \text{ ppm}$$

$$\% \text{ Perolehan Kembali} = \frac{\text{Konsentrasi}}{\text{Konsentrasi teoritis}} \times 100 \%$$

$$= 10,12 / 10,10 \times 100 \% = 100,19 \%$$

LAMPIRAN M
HASIL UJI PENETAPAN KADAR TABLET BUKOADHESIF ATENOLOL

Formula	Repli-kasi	Absorbansi	C sampel µg/mL	C teoritis (µg/mL)	Kadar (%)	$\bar{X} \pm SD$	KV
I	1	0,162	31,15	30,34	102,68	103+ 0,74	0,71
	2	0,162	31,15	30,4	102,47		
	3	0,163	31,38	30,22	103,85		
II	1	0,154	29,30	30,3	96,73	97,47 ± 0,69	0,70
	2	0,155	29,54	30,28	97,55		
	3	0,156	29,77	30,34	98,12		
III	1	0,162	31,15	30,88	100,88	101,08 ± 0,29	0,28
	2	0,163	31,38	30,94	101,43		
	3	0,162	31,15	30,86	100,94		
IV	1	0,164	31,61	30,08	105,09	105,7±0,62	0,58
	2	0,166	32,07	30,16	106,34		
	3	0,165	31,84	30,1	105,79		

Contoh perhitungan :

Formula I (rep. 1)

Absorbansi = 0,162 → $y = 0,0268 + 4,34 \cdot 10^{-3}X$

Konsentrasi sampel = 31,15 ppm

Konsentrasi teoritis = 30,34 ppm

% Kadar = $\frac{\text{Konsentrasi sampel}}{\text{Konsentrasi teoritis}} \times 100 \% = \frac{31,15}{30,34} \times 100 \% = 102,68 \%$

Lampiran N

Hasil Uji Pelepasan Tablet Bukoadhesif Atenolol secara *in vitro*

Hasil Disolusi Tablet Bukoadhesif Atenolol Formula 1

t (jam)	Replikasi									
	1					2				
	Abs	Cn' (ppm)	Qt (µg/mL)	Abs	Cn' (ppm)	Qt (µg/mL)	Abs	Cn' (ppm)	Qt (µg/mL)	Qt Rata- rata
0,25	0,194	34,66	2252,72	0,2	36	2341,32	0,188	33,294	2164	2252,72
0,5	0,216	39,66	2577,61	0,214	39,2	2548,07	0,212	38,747	2519	2548,07
0,75	0,259	49,43	3212,63	0,254	48,3	3138,79	0,258	49,198	3198	3183,1
1	0,268	51,47	3345,55	0,27	51,9	3375,08	0,264	50,561	3286	3335,7
2	0,283	54,88	3567,06	0,289	56,2	3655,67	0,286	55,56	3611	3611,37
3	0,384	77,83	5058,63	0,388	78,7	5117,7	0,38	76,916	5000	5058,63
4	0,399	81,23	5280,15	0,402	81,9	5324,45	0,396	80,551	5236	5280,15
5	0,452	93,27	6062,85	0,453	93,5	6077,62	0,45	92,82	6033	6057,93
6	0,453	93,5	6077,62	0,456	94,2	6121,92	0,454	93,729	6092	6097,31
										22,2

t (jam)	Replikasi														
	1					2					3				
	Abs	Cn'	Qt (µg/mL)	Abs	Cn'	Qt (µg/mL)	Abs	Cn'	Qt (µg/mL)	Abs	Cn'	Qt (µg/mL)	Abs	Cn'	Qt (µg/mL)
0,25	0,121	18,07	1174,55	0,115	16,7	1086,05	0,117	17,163	1116	1125,43	45,12				
0,5	0,238	44,65	2902,51	0,232	43,3	2813,9	0,235	43,972	2858	2858,2	44,3				
0,75	0,251	47,61	3094,49	0,253	48,1	3124,03	0,255	48,516	3154	3124,03	29,54				
1	0,29	56,47	3670,44	0,291	56,7	3685,21	0,296	57,832	3759	3704,9	47,47				
2	0,305	59,88	3891,96	0,302	59,2	3847,66	0,308	60,558	3936	3891,96	44,3				
3	0,443	91,23	5929,94	0,442	91	5915,17	0,446	91,911	5974	5939,78	30,74				
4	0,448	92,37	6003,78	0,455	94	6107,16	0,452	93,275	6063	6057,93	51,86				
5	0,452	93,27	6062,85	0,451	93	6048,08	0,456	94,183	6122	6077,62	39,07				
6	0,459	94,87	6166,23	0,456	94,2	6121,92	0,458	94,638	6151	6146,54	22,56				

$$\text{Absorbansi} = 0,121 \rightarrow y = 0,04146 + 4,4 \cdot 10^{-3}x$$

$$Q_t = C_n' \times 60 \text{ mL} = 18,07 \times 65 = 1174,55 \text{ } \mu\text{g/mL}$$

Hasil Disolusi Tablet Bukoadhesif Atenolol Formula 3

t (jam)	Replikasi									
	1			2			3			Qt Rata- rata
	Abs	Cn' (ppm)	Qt (µg/mL)	Abs	Cn' (ppm)	Qt (µg/mL)	Abs	Cn' (ppm)	Qt (µg/mL)	
0,25	0,158	26,5	1721,1	0,155	25,8	1676,8	0,157	26,25	1706,3	1701,4
0,5	0,222	41	2666,2	0,224	41,47	2695,8	0,226	41,93	2725,3	2695,8
0,75	0,23	42,8	2784,4	0,228	42,38	2754,8	0,232	43,29	2813,9	2784,4
1	0,262	50,1	3256,9	0,267	51,24	3330,8	0,264	50,56	3286,5	3291,4
2	0,335	66,7	4335	0,338	67,37	4379,3	0,341	68,06	4423,6	4379,3
3	0,362	72,8	4733,7	0,364	73,28	4763,3	0,365	73,51	4778	4758,3
4	0,369	74,4	4837,1	0,368	74,19	4822,3	0,365	73,51	4778	4812,5
5	0,42	86	5590,3	0,422	86,46	5619,8	0,424	86,91	5649,3	5619,8
6	0,429	88	5723,2	0,43	88,28	5738	0,431	88,5	5752,7	5738
										14,77

Hasil Disolusi Tablet Bukoadhesif Atenolol Formula 4

t (jam)	Replikasi									
	1			2			3			Qt Rata- rata
	Abs	Cn' (ppm)	Qt (µg/mL)	Abs	Cn' (ppm)	Qt (µg/mL)	Abs	Cn' (ppm)	Qt (µg/mL)	
0,25	0,12	17,8	1159,9	0,124	18,75	1219	0,126	19,21	1248,5	1209,1
0,5	0,182	31,9	2075,5	0,187	33,07	2149,3	0,184	32,39	2105	2110
0,75	0,22	40,6	2636,7	0,219	40,34	2621,9	0,218	40,11	2607,1	2621,9
1	0,228	42,4	2754,8	0,224	41,47	2695,8	0,226	41,93	2725,3	2725,3
2	0,271	52,2	3389,8	0,276	53,29	3463,7	0,272	52,38	3404,6	3419,4
3	0,349	69,9	4541,8	0,342	68,28	4438,4	0,346	69,19	4497,4	4492,5
4	0,362	72,8	4733,7	0,368	74,19	4822,3	0,365	73,51	4778	4778
5	0,371	74,9	4866,6	0,376	76,01	4940,5	0,374	75,55	4910,9	4906
6	0,39	79,2	5147,2	0,386	78,28	5088,2	0,388	78,73	5117,7	5117,7
										29,54

LAMPIRAN O
ANALISA DESAIN FAKTORIAL pH PERMUKAAN

Response 1 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	0.25	3	0.082	16.44	0.0009	significant
A-Carbopol 940	0.21	1	0,21	42.67	0.0002	
B-HPMC K4M	3.333E-003	1	3.333E-003	0.67	0.4379	
AB	0.030	1	0.030	6.00	0.0400	
Pure Error	0.040	8	5.000E-003			
Cor Total	0.29	11				

The Model F-value of 16.44 implies the model is significant. There is only a 0.09% 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:

$$\begin{aligned} \text{pH permukaan} &= \\ &+6.37 \\ &-0.13 \quad * A \\ &+0.017 \quad * B \\ &-0.050 \quad * A * B \end{aligned}$$

LAMPIRAN P
ANALISA DESAIN FAKTORIAL INDEKS PENGEMBANGAN

Response 2 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	2855.55	3	951.85	6785.60	< 0.0001	significant
A-Carbopol 940	1476.30	1	1476.30	10524.33	< 0.0001	
B-HPMC K4M	455.59	1	455.59	3247.86	< 0.0001	
AB	923.66	1	923.66	6584.61	< 0.0001	
Pure Error	1.12	8	0.14			
Cor Total	2856.67	11				

The Model F-value of 6785.60 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:

$$\begin{aligned} \text{indeks pengembangan} &= \\ +135.01 & \\ -11.09 & * A \\ +6.16 & * B \\ -8.77 & * A * B \end{aligned}$$

LAMPIRAN Q
ANALISA DESAIN FAKTORIAL LAMA MEREKAT

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	2.25	3	0.75	6.366E+007	< 0.0001	Significant
A-Carbopol 940	0.75	1	0.75	6.366E+007	< 0.0001	
B-HPMC K4M	0.75	1	0.75	6.366E+007	< 0.0001	
AB	0.75	1	0.75	6.366E+007	< 0.0001	
Pure Error	0.000	8	0.000			
Cor Total	2.25	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:

$$\begin{aligned} \text{lama merekat} &= \\ +5.75 & \\ +0.25 & \quad * A \\ -0.25 & \quad * B \\ +0.25 & \quad * A * B \end{aligned}$$

LAMPIRAN R
ANALISA DESAIN FAKTORIAL PELEPASAN ATENOLOL
SECARA *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	42126.59	3	14042.20	1388.70	< 0.0001	Significant
A- Carbopol 940	30295.62	1	30295.62	2996.07	< 0.0001	
B-HPMC K4M	4993.31	1	4993.31	493.81	< 0.0001	
AB	6837.66	1	6837.66	676.21	< 0.0001	
Pure Error	80.89	8	10.11			
Cor Total	42207.48	11				

The Model F-value of 1388.70 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:

$$\begin{aligned} \text{uji disolusi secara in vitro} &= \\ +678.67 & \\ -50.25 & \quad * A \\ +20.40 & \quad * B \\ -23.87 & \quad * A * B \end{aligned}$$

LAMPIRAN S
FORMULA OPTIMUM BERDASARKAN METODE DESIGN EXPERT®

Solution Number	Karbopol 940	HPMC K4M	pH permukaan	Indeks pengembangan	Lama Merekat	Pelepasan <i>In-Vitro</i>	Desirability
0.15	-0.90	6.33842	128.985	5.97875	655.997	1.000	<u>Selected</u>
2	-1.00	-1.00	6.43333	131.167	6	684.647	1.000
3	-0.30	0.90	6.43517	146.252	5.3825	718.548	1.000
4	0.30	0.90	6.32817	134.859	5.6675	675.51	1.000
5	0.18	0.02	6.34218	133.043	5.79254	669.676	1.000
6	-0.43	0.51	6.44306	144.824	5.46036	715.802	1.000
7	-0.14	-0.77	6.36724	130.893	5.93377	667.503	1.000
8	0.49	-0.76	6.3069	128.151	5.96908	647.356	1.000
9	-0.05	-0.77	6.35903	130.521	5.93856	664.757	1.000
10	0.01	0.35	6.37133	137.054	5.66522	685.349	1.000
11	0.15	-0.47	6.34186	131.042	5.88777	663.067	1.000
12	0.10	-0.03	6.35293	133.758	5.78088	673.149	1.000
13	-0.36	-0.63	6.39259	133.096	5.87537	678.36	1.000
14	0.21	0.54	6.34151	134.972	5.69668	676.259	1.000
15	0.33	0.48	6.32284	132.939	5.75122	668.185	1.000
16	0.43	0.72	6.30615	131.98	5.75473	664.433	1.000
17	-0.56	-0.94	6.39909	130.823	5.97582	675.026	1.000
18	-0.95	0.17	6.50343	147.9	5.43287	733.333	1.000
19	-0.20	0.78	6.41358	143.335	5.46792	708.102	1.000
20	-0.31	0.22	6.41546	140.444	5.59934	700.528	1.000
21	0.49	-0.98	6.30865	127.745	5.99707	645.441	1.000
22	0.21	-0.28	6.33673	131.466	5.85762	663.768	1.000

23	-0.73	-0.10	6.45881	141.834	5.6116	711.557	1.000
24	-0.72	-0.12	6.45633	141.481	5.62229	710.296	1.000
25	-0.14	-0.80	6.36637	130.677	5.94183	666.77	1.000
26	-0.17	0.90	6.41183	143.767	5.44465	709.161	1.000
27	-0.71	-0.44	6.43882	137.503	5.75839	698.155	1.000
28	0.44	0.20	6.3064	130.552	5.83259	658.379	1.000
29	0.47	0.42	6.30123	130.663	5.81157	658.952	1.000
30	0.20	-0.59	6.33631	130.207	5.91771	659.492	1.000
31	-0.15	-0.09	6.38395	135.978	5.73841	683.903	1.000
32	0.16	-0.68	6.33937	130.001	5.93264	659.346	1.000
33	-0.07	0.27	6.38191	137.681	5.65826	688.39	1.000
34	-0.10	-0.02	6.37969	135.969	5.73116	683.231	1.000

calao

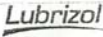
CAS NO. 20122-68-7 - HS NO. 2924.29.90.90

APPROVED



**GLOBAL
CHEMINDO
MEGATRADING**
reliable partner in raw material business

SERTIFIKAT ANALISIS BAHAN
KARBOPOL 940

		CERTIFICATE OF ANALYSIS	
LUBRIZOL ADVANCED MATERIALS ASIA PACIFIC LTD 1107-1110 BUILDING FENWICK, 4-8 MARLBOROUGH ROAD WANGCHAI HWY/KORING TEL: (65) 250-1721		Date: April 29, 2011 Page: 1 of 2 Certificate Recipient: PT LALITA LILAS TBK K.S. TUBUN RAYA NO.77 GRAHA INDRAMAS JALAP II JAKARTA 11410 INDONESIA	
LZ Sales Order No.: 1265859 Customer PO No.: 275843 Delivery No.: 81732891 Ex-Pest Date: April 25, 2011 Delivery Point: JAKARTA Transportation ID: 9-BAS/999 Comparing/Seals:		Material: CARBOPOL® 940 POLYMER, BOX Qty: 18.0 CT Raw & No.: SK138CK342 Mfg. Date: March 13, 2011 Recommended Retest: March 12, 2013	
Sold-to: CV. TRISTAR CHEMICALS or www.tristar-chemical.com L. Jungkut Mapan Utara CA - 24 Surabaja Telp. 031 - 8708071 Fax 031 - 8777777		Ship-to:	
Characteristics		Product Specifications	
		Minimum	Typical
BROOKFIELD VIS, 0.2% MUTE LAG 30 21°C	cP	19000	35000
BROOKFIELD VIS, 0.3% MUTE LAG 30 21°C	cP	40000	60000
BROOKFIELD VISC, 1.0% MUTE LAG 30 21°C	cP	45000	80000
PPM BENZENE	ppm	85	5000
CLARITY, % TRANSMITTANCE	%	85	2.0
LOSS ON DRYING	%	85	2.0
HIM AS (PLAS) 100 to PPM MAX 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 Major Metals (Once/200 lots) are not given, Lubrizol Advanced Materials, Inc. certifies that each batch fulfills requirements for the characteristics based on historical process and product data. Because these characteristics are tested on a 10/20 lot frequency as indicated on the product specification, results are not reported on the Certificate of Analysis.			
Approved by: <i>Lubrizol Quality Assurance</i>			

SERTIFIKAT ANALISIS BAHAN

MANITOL

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

Cargill

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

1500542 Fax: 00492151575939

Certificate of Analysis/Conformity

Customer :
Address :
I.S.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 Castelmaissa (RO) 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	pass test	pass test
Red. sugars Ph.Eur.	%	<0.20		20.0
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 herewith confirm that this batch has been tested to the quality requirements. Test results are within the agreed limits.

Page 1 / 3 Date: 18-aug-2

B **Pharm** **Deriv.** **Specialita**

SERTIFIKAT ANALISIS BAHAN

LAKTOSA

Complete

Vendor Product Code: SX00183

Vendor Product Description: LACTOSE MONO HYDROLYZED

Lot No: 1348

Customer Product Code: SX00183

Customer Product Description: LACTOSE MONO HYDROLYZED

Customer PO: 2011/ /PO390

Shipment Date: 2/3/2012

Shipment Quantity: 760 BAGS

Sales Order No: 7437456

Comment: MEETS ALL REQUIREMENTS OF THE CURRENT USPINF. 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 BY OUR LABS. THE ANALYST SIGNATURES FROM OUR SUPPLIERS THAT THE SOLUBLE LACTOSE IS USED IN THE PRODUCTION OF THIS LOT IS GUARANTEED. THE REQUIREMENT IS NOT PASSED DURING PROCESSING OR USED ORIGIN AT THE MANUFACTURING LOCATION.

KERRY

Kerry Bio-Science

155 State Highway 320

Hanover, NY 13810

USA

Tel: (807) 334-1100

Fax: (807) 334-9027

Today's Date: 2/16/2012

CERTIFICATE OF ANALYSIS			
Analysis	Method	Specifications	Results
ACIDITY	0.1N NADHSD, ML	0.0 - 0.4	0.2
ACIDITY	VISUAL EXAM	COLORLESS	COLORLESS
APPEARANCE OF SOLN	EP REQUIREMENTS	PASS	PASS

Page 1 of 2

Customer PO: 2011/ /PO390

LAMPIRAN U
TABEL UJI R

Tabel r

N	Taraf Signif		N	Taraf Signif		N	Taraf Signif	
	5%	1%		5%	1%		5%	1%
3	0,997	0,999	27	0,381	0,457	55	0,268	0,345
4	0,950	0,990	28	0,374	0,478	60	0,254	0,330
5	0,878	0,959	29	0,367	0,470	65	0,244	0,317
6	0,811	0,917	30	0,361	0,483	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	0,549	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			

LAMPIRAN V
TABEL UJI F

Table of F-statistics $\alpha = 0.05$

df1\df2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	28	30	35	40	45	50	60	70	80	100	200	500	1000
2	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.76	8.74	8.73	8.71	8.70	8.68	8.68	8.67	8.67	8.66	8.65	8.64	8.63	8.62	8.62	8.60	8.59	8.57	8.56	8.55	8.54	8.53	8.52	8.51	8.50	8.48
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.94	5.93	5.91	5.89	5.87	5.86	5.84	5.83	5.82	5.81	5.80	5.79	5.77	5.76	5.75	5.73	5.72	5.71	5.70	5.69	5.68	5.67	5.66	5.65	5.64	5.63
5	6.61	5.79	5.48	5.19	5.06	4.95	4.88	4.82	4.77	4.74	4.70	4.68	4.66	4.64	4.62	4.60	4.59	4.57	4.56	4.54	4.53	4.52	4.50	4.49	4.48	4.46	4.45	4.44	4.43	4.42	4.41	4.39	4.37	4.36	4.35	4.34
6	5.99	5.14	4.85	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.03	4.00	3.98	3.96	3.94	3.92	3.91	3.90	3.88	3.87	3.86	3.84	3.83	3.82	3.81	3.79	3.77	3.76	3.75	3.74	3.73	3.72	3.71	3.69	3.67	3.67
7	5.59	4.74	4.45	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.60	3.57	3.55	3.53	3.51	3.49	3.48	3.46	3.44	3.43	3.41	3.40	3.39	3.38	3.36	3.34	3.32	3.31	3.30	3.29	3.27	3.25	3.24	3.23	3.22	
8	5.32	4.46	4.17	3.84	3.69	3.59	3.50	3.44	3.39	3.35	3.31	3.28	3.26	3.24	3.22	3.20	3.17	3.16	3.15	3.13	3.12	3.10	3.09	3.08	3.06	3.04	3.02	3.01	3.00	2.99	2.97	2.95	2.94	2.93	2.92	
9	5.12	4.26	3.96	3.63	3.48	3.37	3.27	3.21	3.16	3.13	3.10	3.07	3.05	3.03	3.01	2.99	2.97	2.96	2.95	2.94	2.92	2.90	2.89	2.87	2.86	2.84	2.82	2.81	2.80	2.79	2.78	2.77	2.76	2.75	2.74	2.73
10	4.96	4.10	3.79	3.46	3.31	3.20	3.12	3.07	3.02	2.99	2.96	2.93	2.91	2.89	2.87	2.85	2.83	2.81	2.80	2.79	2.77	2.75	2.74	2.72	2.71	2.70	2.68	2.66	2.65	2.64	2.62	2.61	2.60	2.59	2.58	2.57
11	4.84	3.98	3.67	3.34	3.20	3.09	3.01	2.95	2.90	2.87	2.84	2.81	2.79	2.76	2.74	2.72	2.70	2.69	2.67	2.66	2.65	2.63	2.61	2.59	2.58	2.57	2.55	2.53	2.52	2.51	2.49	2.48	2.47	2.46	2.45	2.44
12	4.75	3.89	3.60	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.72	2.69	2.66	2.64	2.62	2.60	2.58	2.57	2.56	2.54	2.52	2.51	2.49	2.48	2.47	2.46	2.44	2.43	2.42	2.41	2.40	2.39	2.37	2.36	2.35	2.34
13	4.67	3.81	3.49	3.16	3.00	2.92	2.83	2.77	2.71	2.67	2.63	2.60	2.58	2.55	2.53	2.51	2.50	2.48	2.46	2.44	2.43	2.41	2.39	2.38	2.37	2.36	2.34	2.33	2.32	2.31	2.30	2.29	2.27	2.26	2.25	2.24
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.57	2.53	2.51	2.49	2.46	2.44	2.43	2.41	2.40	2.39	2.37	2.35	2.33	2.32	2.31	2.29	2.28	2.27	2.25	2.24	2.22	2.21	2.20	2.19	2.18	2.17
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.51	2.48	2.45	2.42	2.40	2.38	2.37	2.35	2.34	2.33	2.31	2.29	2.27	2.26	2.25	2.23	2.22	2.20	2.19	2.17	2.16	2.15	2.14	2.12	2.10	2.08
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.46	2.43	2.40	2.37	2.35	2.33	2.32	2.30	2.29	2.28	2.25	2.24	2.22	2.21	2.19	2.17	2.16	2.15	2.13	2.12	2.11	2.09	2.08	2.07	2.06	2.05
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.42	2.39	2.36	2.33	2.31	2.29	2.27	2.26	2.24	2.23	2.21	2.19	2.17	2.16	2.15	2.13	2.12	2.11	2.09	2.08	2.06	2.05	2.04	2.03	2.02	1.99
18	4.42	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.37	2.34	2.31	2.29	2.27	2.25	2.23	2.22	2.20	2.19	2.17	2.15	2.13	2.12	2.11	2.09	2.08	2.06	2.05	2.04	2.02	2.00	1.99	1.98	1.96	1.95
19	4.39	3.52	3.12	2.89	2.74	2.63	2.54	2.48	2.43	2.39	2.34	2.31	2.29	2.27	2.25	2.23	2.21	2.20	2.19	2.17	2.15	2.13	2.11	2.10	2.09	2.07	2.06	2.04	2.03	2.02	2.00	1.99	1.97	1.96	1.94	1.93
20	4.35	3.49	3.09	2.86	2.71	2.60	2.51	2.45	2.39	2.35	2.32	2.29	2.27	2.25	2.23	2.21	2.19	2.18	2.16	2.15	2.13	2.11	2.10	2.08	2.07	2.05	2.04	2.02	2.01	1.99	1.98	1.96	1.95	1.93	1.92	
22	4.30	3.44	3.04	2.81	2.66	2.55	2.46	2.40	2.35	2.30	2.26	2.23	2.20	2.17	2.15	2.13	2.11	2.10	2.08	2.07	2.05	2.03	2.01	2.00	1.98	1.96	1.95	1.93	1.92	1.90	1.88	1.86	1.85	1.82	1.80	
24	4.26	3.40	3.00	2.76	2.61	2.50	2.42	2.36	2.30	2.25	2.21	2.17	2.14	2.11	2.09	2.07	2.05	2.04	2.02	2.00	1.99	1.97	1.95	1.93	1.91	1.89	1.88	1.87	1.84	1.82	1.80	1.79	1.78	1.76	1.75	
26	4.23	3.37	2.96	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.18	2.15	2.12	2.09	2.07	2.05	2.02	2.00	1.99	1.97	1.95	1.93	1.91	1.89	1.88	1.87	1.84	1.82	1.80	1.79	1.77	1.76	1.75	1.73	1.71	
28	4.20	3.34	2.93	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.15	2.12	2.09	2.06	2.04	2.02	2.00	1.99	1.97	1.95	1.93	1.91	1.89	1.88	1.87	1.84	1.82	1.80	1.79	1.77	1.76	1.75	1.73	1.71	1.69	
30	4.17	3.32	2.91	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.12	2.09	2.06	2.04	2.01	1.99	1.98	1.96	1.95	1.93	1.91	1.89	1.87	1.85	1.84	1.81	1.79	1.77	1.76	1.74	1.72	1.71	1.70	1.68	1.66	
35	4.12	3.27	2.87	2.64	2.49	2.37	2.29	2.22	2.16	2.11	2.06	2.04	2.01	1.99	1.96	1.94	1.92	1.91	1.89	1.88	1.85	1.83	1.82	1.80	1.79	1.76	1.74	1.72	1.70	1.68	1.65	1.63	1.60	1.57	1.55	
40	4.08	3.23	2.84	2.61	2.46	2.34	2.25	2.18	2.12	2.06	2.04	2.00	1.97	1.95	1.92	1.90	1.89	1.87	1.86	1.84	1.82	1.80	1.79	1.77	1.76	1.74	1.72	1.69	1.67	1.66	1.64	1.62	1.61	1.59	1.55	
45	4.06	3.20	2.81	2.58	2.42	2.30	2.21	2.14	2.08	2.02	2.00	1.97	1.94	1.92	1.89	1.87	1.86	1.84	1.82	1.80	1.79	1.77	1.76	1.74	1.72	1.70	1.69	1.66	1.64	1.63	1.60	1.59	1.57	1.53	1.51	
50	4.05	3.19	2.79	2.56	2.40	2.29	2.20	2.13	2.07	2.01	1.99	1.95	1.92	1.89	1.87	1.85	1.83	1.81	1.80	1.78	1.76	1.74	1.72	1.70	1.68	1.66	1.65	1.62	1.59	1.57	1.56	1.53	1.52	1.50	1.46	
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.96	1.93	1.90	1.88	1.86	1.84	1.82	1.80	1.79	1.76	1.74	1.72	1.70	1.68	1.66	1.64	1.62	1.59	1.57	1.55	1.53	1.50	1.48	1.44	1.40	
70	3.98	3.13	2.74	2.50	2.35	2.23	2.14	2.07	2.02	1.97	1.93	1.90	1.88	1.86	1.84	1.81	1.79	1.77	1.75	1.73	1.70	1.68	1.65	1.63	1.60	1.58	1.56	1.54	1.52	1.50	1.47	1.45	1.40	1.37	1.35	
80	3.96	3.11	2.72	2.49	2.33	2.21	2.13	2.06	2.00	1.95	1.90	1.88	1.86	1.84	1.82	1.79	1.77	1.75	1.73	1.70	1.68	1.65	1.63	1.60	1.58	1.56	1.54	1.52	1.49	1.48	1.45	1.40	1.38	1.34	1.31	
100	3.94	3.09	2.70	2.46	2.31	2.19	2.10	2.03	1.97	1.93	1.89	1.87	1.85	1.82	1.79	1.77	1.75	1.73	1.70	1.68	1.65	1.63	1.60	1.58	1.56	1.54	1.52	1.49	1.48	1.45	1.40	1.38	1.34	1.31	1.30	
200	3.89	3.04	2.65	2.42	2.26	2.14	2.06	1.99	1.93	1.89	1.84	1.80	1.77	1.74	1.72	1.69	1.67	1.64	1.62	1.60	1.57	1.55	1.53	1.50	1.48	1.46	1.44	1.41	1.39	1.36	1.35	1.32	1.28	1.25	1.22	
500	3.86	3.01	2.62	2.39	2.23	2.12	2.03	1.96	1.90	1.85	1.81	1.77	1.74	1.71	1.69	1.66	1.64	1.62	1.60	1.57	1.54	1.52	1.50	1.47	1.45	1.43	1.39	1.35	1.32	1.30	1.28	1.25	1.22	1.20	1.18	
1000	3.85	3.00	2.61	2.38	2.22	2.11	2.02	1.95	1.89	1.84	1.80	1.76	1.73	1.70	1.68	1.65	1.63	1.60	1.58	1.55	1.53	1.51	1.49	1.47	1.45	1.42	1.39	1.34	1.33	1.31	1.29	1.26	1.19	1.13	1.11	