

LAMPIRAN A
HASIL UJI MUTU FISIK GRANUL

Mutu fisik yang diuji	Replikasi	Formula Tablet Sublingual Propranolol HCl				Persyaratan
		F I	F II	F III	F IV	
Kadar air (%)	I	3,63	3,3	3,8	3	3-5% (Voigt, 1995)
	II	3,93	3,72	3,5	3,29	
	III	3,99	3,39	3,72	3,48	
	\bar{x}	3,85	3,47	3,67	3,25	
	SD	0,19	0,22	0,15	0,24	
Waktu alir (detik)	I	6,78	6,79	8,2	6,99	Tidak lebih dari 10 detik (Banker & Anderson, 1994)
	II	6,96	6,54	6,75	8,36	
	III	7,27	7,1	6,34	8,54	
	\bar{x}	7,00	6,81	7,09	7,96	
	SD	0,24	0,28	0,97	0,85	
Sudut diam (derajat)	I	28,27	29,11	29,99	30,00	25-30 = baik, 30-40 = cukup baik (Wells, 1993)
	II	32,41	31,88	30,84	33,54	
	III	34,06	28,85	33,25	33,98	
	\bar{x}	29,49	30,1	31,85	32,67	
	SD	2,98	1,68	1,69	2,18	
Indeks kompresibilitas (persen)	I	15	15	16,99	18	5-15 = sangat baik, 15-18 = baik (Wells, 1993)
	II	14,99	15,99	17	19	
	III	15	16	10	19	
	\bar{x}	14,99	15,66	14,66	18,67	
	SD	0,006	0,57	4,04	0,58	

LAMPIRAN B
HASIL UJI KEKERASAN TABLET SUBLINGUAL
PROPRANOLOL HCL

BATCH I

No	Kekerasan Tablet Sublingual Propranolol HCl (kp)			
	Formula I	Formula II	Formula III	Formula IV
1	4,6	4,8	7	5,1
2	5,4	4,8	7	6,2
3	5,4	4,5	6,5	5,9
4	5,3	4,4	6,5	5,4
5	5	4,5	7,5	5,2
6	5	4	6	6,7
7	4,8	5	7	5,7
8	5,2	4,5	7,8	6,6
9	4,6	4	7,5	6,6
10	4,8	5	7	7,5
$\bar{X} \pm SD$	$5,01 \pm 0,31$	$4,55 \pm 0,36$	$6,98 \pm 0,54$	$6,09 \pm 0,77$
SD rel (%)	6,13	7,91	7,75	12,63

BATCH II

No	Kekerasan Tablet Sublingual Propranolol HCl (kp)			
	Formula I	Formula II	Formula III	Formula IV
1	4,5	4,6	6,8	6,7
2	5,1	4,4	7,2	5,6
3	4,5	4,9	6,7	6,8
4	5,4	4,5	6,9	6,3
5	5,2	4,6	7,8	5,5
6	5,1	4	6,8	5,8
7	4,5	4,8	7	5,6
8	5,6	5	6,6	7,3
9	5,3	4,8	7,5	6
10	5	4	6,3	5,5
$\bar{X} \pm SD$	$5,02 \pm 0,39$	$4,56 \pm 0,35$	$6,96 \pm 0,44$	$6,11 \pm 0,64$
SD rel (%)	7,90	7,61	6,32	10,42

BATCH III

No	Kekerasan Tablet Sublingual Propranolol HCl (kp)			
	Formula I	Formula II	Formula III	Formula IV
1	5	4,7	6,1	6,8
2	4,7	4,4	7,5	7,1
3	5,4	4,5	7,7	5,6
4	5	4	6,6	7,5
5	4,7	4,5	7,5	5,3
6	5,7	5,2	7,2	6,1
7	4,6	4,7	6,9	6,3
8	5,4	5	6,5	6,3
9	5	4,2	7,2	5,5
10	4,6	4,5	6,5	5,3
$\bar{X} \pm$				
SD	5,01 ± 0,38	4,57 ± 0,35	6,97 ± 0,53	6,18 ± 0,77
SD rel (%)	7,61	7,72	7,62	12,48

LAMPIRAN C
HASIL UJI KERAPUHAN TABLET SUBLINGUAL
PROPRANOLOL HCL

Formula	Replikasi	Berat awal (gram)	Berat akhir (gram)	Kerapuhan (%)	$\bar{X} \pm SD$	SDrel (%)
I	1	6,22	6,19	0,47	0,53	170,67
	2	6,11	6,08	0,49	±	
	3	6,18	6,14	0,65	0,09	
II	1	6,09	6,04	0,82	0,76	24,74
	2	6,08	6,03	0,82	±	
	3	6,10	6,06	0,66	0,09	
III	1	5,99	5,98	0,17	0,17	15,75
	2	6,04	6,03	0,17	±	
	3	6,03	6,02	0,17	0	
IV	1	6,15	6,12	0,48	0,38	33,33
	2	6,09	6,07	0,33	±	
	3	6,10	6,08	0,33	0,08	

LAMPIRAN D
HASIL UJI WAKTU HANCUR TABLET SUBLINGUAL
PROPRANOLOL HCL

Replikasi	Waktu Hancur (menit)			
	Formula I	Formula II	Formula III	Formula IV
1	2	1	8	6
2	2	2	9	7
3	2	1	9	7
$\bar{X} \pm SD$	2 \pm 0	1,33 \pm 0,57	8,67 \pm 0,57	6,67 \pm 0,57

LAMPIRAN E
HASIL UJI KESERAGAMAN KANDUNGAN TABLET
SUBLINGUAL PROPRANOLOL HCL

Hasil Uji Keseragaman Kandungan Tablet Formula I *Batch* I

Abs	C sampel	W sampel	C teoritis	Kadar (persen)
0,371	15,07	301,8	16,09	93,66
0,372	15,12	301,8	16,09	93,97
0,368	14,91	304,7	16,25	91,75
0,380	15,54	306,7	16,36	94,99
0,370	15,01	302,7	16,14	92,99
0,372	15,12	301,3	16,07	94,09
0,376	15,33	303,5	16,19	94,69
0,374	15,22	303,3	16,17	94,12
0,369	14,96	300,9	16,05	93,21
0,385	15,80	305,5	16,29	96,99
			\bar{X}	94,05
			SD	1,38
			KV	1,47

Hasil Uji Keseragaman Kandungan Tablet Formula I *Batch* II

Abs	C sampel	W sampel	C teoritis	Kadar (persen)
0,372	15,12	301,3	16,07	94,09
0,375	15,28	300,6	16,03	95,32
0,370	15,01	303,6	16,19	92,71
0,380	15,54	308,3	16,44	94,52
0,369	14,96	298,3	15,91	94,03
0,370	15,01	290,5	15,49	96,90
0,366	14,80	295,3	15,75	93,97
0,375	15,28	301,2	16,06	95,14
0,371	15,07	300,5	16,03	94,01
0,371	15,07	297,3	15,86	95,02
			\bar{X}	94,57
			SD	1,11
			KV	1,18

Hasil Uji Keseragaman Kandungan Tablet Formula I *Batch* III

Abs	C sampel	W sampel	C teoritis	Kadar (persen)
0,378	15,44	295,3	15,75	98,03
0,382	15,65	309,6	16,51	94,79
0,364	14,69	290,6	15,49	94,83
0,385	15,80	310,5	16,56	95,41
0,379	15,49	302,8	16,15	95,91
0,375	15,28	303,7	16,19	94,38
0,377	15,38	302,8	16,15	95,23
0,374	15,22	297,3	15,86	95,96
0,381	15,59	301,4	16,07	97,01
0,379	15,49	299,8	15,99	96,87
			\bar{X}	95,84
			SD	1,16
			KV	1,21

Hasil Uji Keseragaman Kandungan Tablet Formula II *Batch* I

Abs	C sampel	W sampel	C teoritis	Kadar (persen)
0,390	16,07	310,1	16,54	97,16
0,381	15,59	307,5	16,4	95,06
0,375	15,28	310,8	16,58	92,16
0,383	15,70	304,9	16,26	96,56
0,389	16,02	310,9	16,58	96,62
0,385	15,80	306,3	16,34	96,69
0,383	15,70	307	16,37	95,91
0,384	15,75	308,3	16,44	95,80
0,384	15,75	303,4	16,18	97,34
0,387	15,91	310,2	16,54	96,19
			\bar{X}	95,95
			SD	1,49
			KV	1,55

Hasil Uji Keseragaman Kandungan Tablet Formula II *Batch* II

Abs	C sampel	W sampel	C teoritis	Kadar (persen)
0,381	15,59	305,2	16,28	95,76
0,395	16,33	310	16,53	98,79
0,388	15,96	309,4	16,50	96,73
0,385	15,80	308,9	16,47	95,93
0,381	15,59	306,2	16,33	95,47
0,394	16,28	310,3	17,12	95,09
0,377	15,38	309,5	16,51	93,15
0,368	14,91	303,7	16,19	92,09
0,393	16,23	310,4	16,55	98,07
0,379	15,49	309,3	16,49	93,94
			\bar{x}	95,50
			SD	2,08
			KV	2,18

Hasil Uji Keseragaman Kandungan Tablet Formula II *Batch* III

Abs	C sampel	W sampel	C teoritis	Kadar (persen)
0,372	15,12	305,8	16,31	92,70
0,374	15,22	307,8	16,42	92,69
0,370	15,01	304,8	16,26	92,31
0,378	15,43	310,5	16,56	93,18
0,380	15,54	310,3	16,55	93,89
0,377	15,38	303,1	16,16	95,17
0,382	15,65	310,6	16,56	94,50
0,369	14,96	303,4	16,18	92,46
0,373	15,17	309	16,48	92,05
0,379	15,49	299,3	15,96	97,05
			\bar{x}	93,6
			SD	1,58
			KV	1,69

Hasil Uji Keseragaman Kandungan Tablet Formula III *Batch I*

Abs	C sampel	W sampel	C teoritis	Kadar (persen)
0,381	15,59	304,7	16,25	95,94
0,388	15,96	300,3	16,02	99,62
0,379	15,49	311	16,59	93,37
0,374	15,22	306,2	16,33	93,20
0,385	15,81	311,3	16,60	95,24
0,383	15,70	302,6	16,14	97,27
0,388	15,96	303,4	16,18	98,64
0,387	15,91	309,5	16,51	96,36
0,381	15,59	307,8	16,42	94,94
0,375	15,28	304,8	16,26	93,97
			\bar{x}	95,85
			SD	2,16
			KV	2,26

Hasil Uji Keseragaman Kandungan Tablet Formula III *Batch II*

Abs	C sampel	W sampel	C teoritis	Kadar (persen)
0,378	15,43	303,6	16,19	95,31
0,374	15,22	301,7	16,09	94,59
0,386	15,86	301,1	16,06	98,75
0,367	14,85	299,5	15,97	92,99
0,372	15,12	302	16,11	93,85
0,365	14,75	295,6	15,76	93,59
0,389	16,02	294,1	15,68	102,17
0,384	15,75	303	16,16	97,46
0,375	15,28	305,7	16,30	93,74
0,381	15,59	301,3	16,07	97,01
			\bar{x}	95,95
			SD	2,90
			KV	3,02

Hasil Uji Keseragaman Kandungan Tablet Formula III *Batch* III

Abs	C sampel	W sampel	C teoritis	Kadar (persen)
0,394	16,28	309,4	16,50	98,67
0,364	14,69	298,1	15,74	93,33
0,366	14,80	299,5	15,97	92,67
0,386	15,86	305,8	16,31	97,24
0,373	15,17	304,4	16,23	93,47
0,384	15,75	307,1	16,38	96,15
0,375	15,28	304,3	16,23	94,15
0,381	15,59	308	16,43	94,89
0,386	15,86	311,3	16,60	95,54
0,391	16,12	312,9	16,69	96,58
			\bar{x}	95,48
			SD	1,90
			KV	1,99

Hasil Uji Keseragaman Kandungan Tablet Formula IV *Batch* I

Abs	C sampel	W sampel	C teoritis	Kadar (persen)
0,385	15,81	309	16,48	95,93
0,398	16,49	317	16,91	97,51
0,390	16,07	307,4	16,39	98,05
0,360	14,48	303,8	16,20	89,38
0,355	14,22	301,6	16,08	88,43
0,382	15,65	313,8	16,74	93,49
0,379	15,49	311,5	16,61	93,26
0,375	15,28	309	16,48	92,72
0,395	16,33	304,6	16,24	100,55
0,390	16,07	303,8	16,20	99,19
			\bar{x}	94,85
			SD	4,08
			KV	4,30

Hasil Uji Keseragaman Kandungan Tablet Formula IV *Batch* II

Abs	C sampel	W sampel	C teoritis	Kadar (persen)
0,372	15,12	305,6	16,29	92,82
0,369	14,96	301,6	16,08	93,03
0,395	16,33	313,7	16,73	97,61
0,378	15,43	306,7	16,36	94,31
0,379	15,49	303,7	16,19	95,68
0,369	14,96	304,1	16,22	92,23
0,372	15,12	303,9	16,21	93,28
0,383	15,70	308,8	16,47	95,32
0,390	16,07	311,3	16,60	96,81
0,374	15,22	305,8	16,31	93,31
			\bar{X}	94,44
			SD	1,83
			KV	1,94

Hasil Uji Keseragaman Kandungan Tablet Formula IV *Batch* III

Abs	C sampel	W sampel	C teoritis	Kadar (persen)
0,377	15,38	304,6	16,24	94,70
0,364	14,69	299,1	15,95	92,10
0,380	15,54	303,8	16,20	95,93
0,372	15,12	305,2	16,28	92,87
0,367	14,85	299,8	15,99	92,87
0,381	15,59	305,7	16,30	95,64
0,376	15,33	303,6	16,19	94,69
0,384	15,75	304	16,21	97,16
0,387	15,91	308,2	16,44	96,77
0,385	15,81	306	16,32	96,87
			\bar{X}	94,99
			SD	1,94
			KV	2,04

LAMPIRAN F
HASIL PENETAPAN KADAR TABLET SUBLINGUAL
PROPRANOLOL HCL

Batch I

Formula	Replikasi	Absorbansi	Csampel (µg/ml)	Cteoritis (µg/ml)	Kadar (%)	$\bar{X} \pm SD$	SD rel (%)
I	1	0,380	15,54	16,36	94,99	95,56	± 1,31
	2	0,376	15,33	16,19	94,69	±	
	3	0,385	15,80	16,29	96,99	1,25	
II	1	0,390	16,07	16,54	97,16	97,02	± 0,42
	2	0,383	15,70	16,26	96,56	±	
	3	0,384	15,75	16,18	97,34	0,41	
III	1	0,388	15,96	16,02	99,62	98,51	± 1,19
	2	0,383	15,70	16,14	97,27	±	
	3	0,388	15,96	16,18	98,64	1,18	
IV	1	0,385	15,81	16,48	95,93	97,16	± 1,13
	2	0,398	16,49	16,91	97,51	±	
	3	0,390	16,07	16,39	98,05	1,10	

Batch II

Formula	Replikasi	Absorbansi	Csampel (µg/ml)	Cteoritis (µg/ml)	Kadar (%)	$\bar{X} \pm SD$	SD rel (%)
I	1	0,375	15,28	16,03	95,32	95,16	± 0,16
	2	0,375	15,28	16,06	94,14	±	
	3	0,371	15,07	15,86	95,02	0,15	
II	1	0,395	16,33	16,53	98,79	97,15	± 1,52
	2	0,388	15,96	16,50	96,73	±	
	3	0,385	15,80	16,47	95,93	1,48	
III	1	0,386	15,86	16,06	98,75	98,10	± 0,93
	2	0,381	15,59	16,07	97,01	±	
	3	0,384	15,75	16,16	97,46	0,91	
IV	1	0,395	16,33	16,73	97,61	96,7	± 1,00
	2	0,379	15,49	16,19	95,68	±	
	3	0,390	16,07	16,60	96,81	0,97	

Batch III

Formula	Replikasi	Absorbansi	Csampel (µg/ml)	Cteoritis (µg/ml)	Kadar (%)	$\bar{x} \pm SD$	SD rel (%)
I	1	0,364	14,69	15,49	94,83	95,57	0,67
	2	0,379	15,49	16,15	95,91	±	
	3	0,374	15,2	15,86	95,96	0,64	
II	1	0,377	15,38	16,16	95,17	95,57	1,38
	2	0,382	15,65	16,56	94,50	±	
	3	0,379	15,49	15,96	97,05	1,32	
III	1	0,394	16,28	16,50	98,67	97,35	1,29
	2	0,386	15,86	16,31	97,24	±	
	3	0,384	15,75	16,38	96,15	1,26	
IV	1	0,381	15,59	16,30	95,64	96,52	0,82
	2	0,384	15,75	16,21	97,16	±	
	3	0,387	15,91	16,44	96,77	0,79	

LAMPIRAN G
HASIL UJI DISOLUSI TABLET SUBLINGUAL PROPRANOLOL
HCL PADA t = 15 MENIT

Formula	Replikasi	Absorbansi	FP	C sampel	Wt	% obat terlarut
I	I	1,1166	2	75,49	37,75	94,37
	II	1,1251	2	76,34	38,17	95,42
	III	1,1322	2	77,04	38,52	96,3
II	I	1,1022	2	74,08	37,04	92,59
	II	1,1216	2	75,99	37,99	94,99
	III	1,1453	2	78,33	39,17	97,91
III	I	0,8867	2	52,79	26,39	65,99
	II	1,0292	2	66,87	33,43	83,58
	III	0,9983	2	63,81	31,91	79,77
IV	I	1,0396	2	67,89	33,95	84,87
	II	1,0709	2	70,98	35,49	88,73
	III	1,0454	2	68,47	34,23	85,58

LAMPIRAN H CONTOH PERHITUNGAN

Contoh perhitungan sudut diam:

Formula A:

$$W \text{ persegi panjang} = 4,92 \text{ gram}$$

$$W \text{ lingkaran} = 0,93 \text{ gram}$$

$$\text{Luas persegi panjang} = 712,8 \text{ cm}^2$$

$$\text{Luas lingkaran} = \frac{0,93}{4,92} \times 712,8 = 134,74 \text{ cm}^2$$

$$L = \pi \cdot r^2$$

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

$$= \frac{134,74}{3,1}$$

$$r = 6,6 \text{ cm}$$

$$\text{tg } \alpha = \frac{t}{r} = \frac{3,67}{6,6}$$

$$= 29,08^\circ$$

Contoh perhitungan indeks kompresibilitas:

Formula A :

$$\text{Berat gelas} = 135,11 \text{ g } (W_1)$$

$$\text{Berat gelas + granul} = 188,70 \text{ g } (W_2)$$

$$V_1 = 100 \text{ ml}$$

$$V_2 = 85 \text{ ml}$$

$$Bj \text{ nyata} = \frac{(W_2 - W_1)}{V_1} = \frac{(188,70 - 135,11)}{100} = 0,5359$$

$$Bj \text{ mampat} = \frac{(W_2 - W_1)}{V_2} = \frac{(188,70 - 135,11)}{85} = 0,6305$$

$$\% \text{ kompresibilitas} = \left(1 - \frac{Bj.nyata}{Bj.mampat} \right) \times 100\% = 15,0\%$$

Contoh perhitungan akurasi & presisi:

%	Bahan Aktif (mg)	Matriks (mg)	Aquadest	Pipet	Aquadest	Konsentrasi (µg/ml)
100	40	260	50	0,2	10	16

Absorbansi = 0,390 → y = 0,078x + 0,0197

Konsentrasi sebenarnya = 16,07 ppm

Konsentrasi teoritis = 16,04 ppm

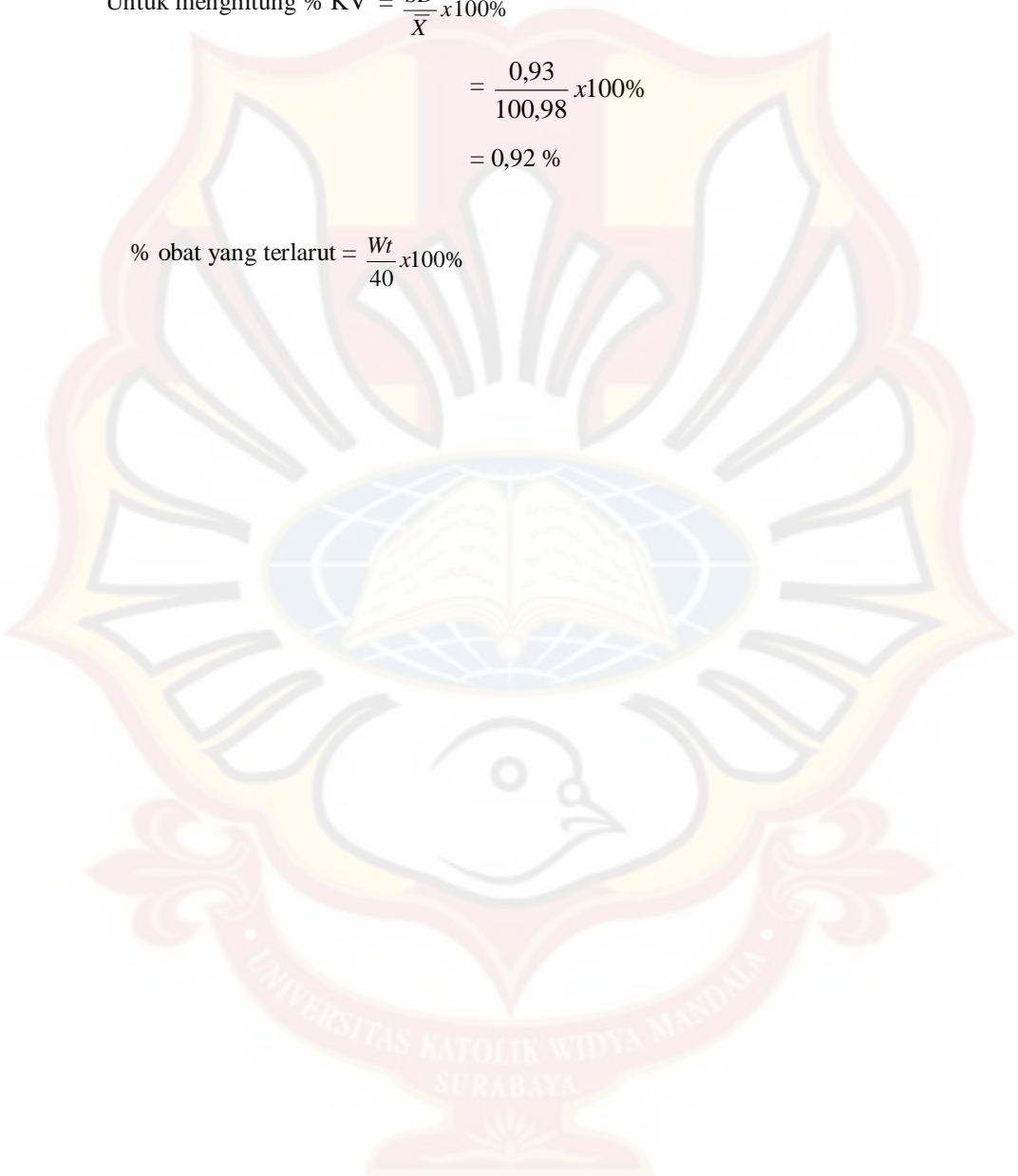
$$\begin{aligned} \% \text{ perolehan kembali} &= (\text{konsentrasi sebenarnya} / \text{konsentrasi teoritis}) \times 100\% \\ &= (16,07 / 16,04) \times 100\% \\ &= 100,2\% \end{aligned}$$

Untuk menghitung % KV = $\frac{SD}{\bar{X}} \times 100\%$

$$= \frac{0,93}{100,98} \times 100\%$$

$$= 0,92 \%$$

% obat yang terlarut = $\frac{Wt}{40} \times 100\%$



LAMPIRAN I

SERTIFIKAT ANALISIS PROPRANOLOL HCL



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No.Pemeriksaan : 80977/BB/08/02
 Tgl.Permohonan : 14 Mei 2010
 Tgl.Pemeriksaan : 03 Juni 2010
 C.A : Ada

07 JUN 2010

Periksa laporan HPL No : 80977/BB/08 - 01

HASIL PEMERIKSAAN BAHAN BAKU

NAMA BAHAN BAKU	: PROPRANOLOL HCL (1000302)	TGL.PEMBUATAN	: Mei 2008
	: PROPRANOLOL HCL	DALUARSAS	: Mei 2013
MERKEK/PRODUSEN	: Societa Italiana Medicine Scaudicel Italy	PEMASOK	: PT.Menjangan Sakti
JUM. / KEMASAN	: 7 drum @ 25 kg = 175 kg		
JUM. / CONTOH	: 4 x 10 g (1 - 4)	No.BATCH	: 28.051

Pemeriksaan	Hasil	Syarat	Metode
Pemerian	1 - 4 = Serbuk kristal halus berwarna putih	Serbuk berwarna putih atau hampir putih	BP. 2003
Identifikasi	1 - 4 = Benar		BP. 2003
Kejernihan dan warna larutan (2 gram dalam 20 ml Methanol)	Memenuhi Pengujian		MPK0007
Susut pengeringan (10 ^o konstan)	0,01%	Max.0,5 %	BP. 2003
Kadar	99,74%		BP. 2003
Kadar terhadap zat kering	99,75%	99,0 % - 101,0 %	BP. 2003

Kesimpulan : **DILULUSKAN/DIOLAK** Putri
 Catatan : **Bagian Pergudangan**
 Tgl. : 03/06/2010

Apoteker Penanggung Jawab PM

Jakarta
 Asisten Pengawasan Mutu

Drs. Tia Mutiarsingih

Dr. Heil Kardoko

TIDAK BOLEH DIJUAL KE MANA SAHA JUGA TANPA SURAT KETERANGAN BAHAN

Jl. Rawagelam V No. 1
 Kawasan Industri Pulogadung
 Jakarta Timur 13950
 Telp. 4609354 (Pusat), 4603144
 Fax. 4603143



SERTIFIKAT ANALISIS PVP K-30

PVP K-30:

杭州南航化工有限公司
 NANHANG INDUSTRIAL CO.,LTD
 地址:中国杭州市西湖区周浦乡姚家坞

CERTIFICATE OF ANALYSIS

Product	PVP K-30 USP/BP		
Batch No.	20051213	Quantity	7625KGS
Manufacture Date	DEC.2010	Expiry Date	DEC.2013
ITEMS	SPECIFICATIONS	TEST RESULTS	
Characteristics	A white, fine powder	Complies	
Identification	Positive	Positive	
Water	5% max	2.8%	
Residue on Ignition	0.1% max	0.02%	
K-Value	27-32	30.7	
Heavy metals(Lead)	10ppm max	Complies	
Nitrogen	11.5%-12.8%	12.2%	
Vinylpyrrolidone	0.2% max	0.032%	
Aldehydes	0.05% max	Complies	
Ph Value	5.0-7.0	3.62	
Hydrazine	1ppm max	Complies	
Peroxides	400ppm max	Complies	
	Salmenella	Negative	
	Coli	Negative	
	Coliforms <1CFU/gm	Conform	
	Standard Plate Count <10,000CFU/gm	Conform	
	Mold & Yeast <1,000 CFU/gm	Conform	
Conclusion: IT CONFORMS USP/BP			

Analyst: Wang liang

Checker: li ling

Head of QC Dept: Wang xiao fang



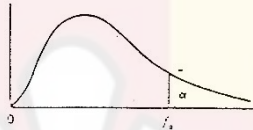
EFFICIENT SERVICE
 YOUR SURE CHOICE

UNIVERSITAS KATOLIK WIDYA MANDALIA
 SURABAYA

LAMPIRAN J

TABEL F

Tabel 7 Nilai kritis distribusi F



$$f_{\alpha, \beta_1, \beta_2}$$

ν_2	ν_1								
	1	2	3	4	5	6	7	8	9
1	161,4	199,5	215,7	224,6	230,2	234,0	236,8	238,9	240,5
2	18,51	19,00	19,16	19,25	19,30	19,33	19,35	19,37	19,38
3	10,13	9,55	9,28	9,12	9,01	8,94	8,89	8,85	8,81
4	7,71	6,94	6,59	6,39	6,26	6,16	6,09	6,04	6,00
5	6,61	5,79	5,41	5,19	5,05	4,95	4,88	4,82	4,77
6	5,99	5,14	4,75	4,53	4,39	4,28	4,21	4,15	4,10
7	5,59	4,74	4,35	4,12	3,97	3,87	3,79	3,73	3,68
8	5,32	4,46	4,07	3,84	3,69	3,58	3,50	3,44	3,39
9	5,12	4,26	3,86	3,63	3,48	3,37	3,29	3,23	3,18
10	4,96	4,10	3,71	3,48	3,33	3,22	3,14	3,07	3,02
11	4,84	3,98	3,59	3,36	3,20	3,09	3,01	2,95	2,90
12	4,75	3,89	3,49	3,26	3,11	3,00	2,91	2,85	2,80
13	4,67	3,81	3,41	3,18	3,03	2,92	2,83	2,77	2,71
14	4,60	3,74	3,34	3,11	2,96	2,85	2,76	2,70	2,65
15	4,54	3,68	3,29	3,06	2,90	2,79	2,71	2,64	2,59
16	4,49	3,63	3,24	3,01	2,85	2,74	2,66	2,59	2,54
17	4,45	3,59	3,20	2,96	2,81	2,70	2,61	2,55	2,49
18	4,41	3,55	3,16	2,93	2,77	2,66	2,58	2,51	2,46
19	4,38	3,52	3,13	2,90	2,74	2,63	2,54	2,48	2,42
20	4,35	3,49	3,10	2,87	2,71	2,60	2,51	2,45	2,39
21	4,32	3,47	3,07	2,84	2,68	2,57	2,49	2,42	2,37
22	4,30	3,44	3,05	2,82	2,66	2,55	2,46	2,40	2,34
23	4,28	3,42	3,03	2,80	2,64	2,53	2,44	2,37	2,32
24	4,26	3,40	3,01	2,78	2,62	2,51	2,42	2,36	2,30
25	4,24	3,39	2,99	2,76	2,60	2,49	2,40	2,34	2,28
26	4,22	3,37	2,98	2,74	2,59	2,47	2,39	2,32	2,27
27	4,21	3,35	2,96	2,73	2,57	2,46	2,37	2,31	2,25
28	4,20	3,34	2,95	2,71	2,56	2,45	2,36	2,29	2,24
29	4,18	3,33	2,93	2,70	2,55	2,43	2,35	2,28	2,22
30	4,17	3,32	2,92	2,69	2,53	2,42	2,33	2,27	2,21
40	4,08	3,23	2,84	2,61	2,45	2,34	2,25	2,18	2,12
50	4,00	3,15	2,76	2,53	2,37	2,25	2,17	2,10	2,04
100	3,92	3,07	2,68	2,45	2,29	2,17	2,09	2,02	1,96
∞	3,84	3,00	2,60	2,37	2,21	2,10	2,01	1,94	1,88

† Disalin dari Tabel 18 Biometrika Tables for Statisticians, Jilid 1 seizin E. S. Pearson dan Biometrika Trustees.

LAMPIRAN K

TABEL UJI R

DEGREES OF FREEDOM (DF)	5 PERCENT	1 PERCENT	DEGREES OF FREEDOM (DF)	5 PERCENT	1 PERCENT
1	.997	1.000	24	.388	.496
2	.950	.990	25	.381	.487
3	.878	.959	26	.374	.478
4	.811	.917	27	.367	.470
5	.754	.874	28	.361	.463
6	.707	.834	29	.355	.456
7	.666	.798	30	.349	.449
8	.632	.765	35	.325	.418
9	.602	.735	40	.304	.393
10	.576	.708	48	.288	.372
11	.553	.684	50	.273	.354
12	.532	.661	60	.250	.325
13	.514	.641	70	.232	.302
14	.497	.623	80	.217	.283
15	.482	.606	90	.205	.267
16	.468	.590	100	.195	.254
17	.456	.575	125	.174	.228
18	.444	.561	150	.159	.208
19	.433	.549	200	.138	.181
20	.423	.537	300	.113	.148
21	.413	.526	400	.098	.128
22	.404	.515	500	.088	.115
23	.396	.505	1000	.062	.081

Dikutip dari: Soedigdo & Soedigdo (1977)

LAMPIRAN L

HASIL UJI ANAVA KEKERASAN TABLET DENGAN *DESIGN* *EXPERT*

Response 1 Kekerasan

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	10.69	3	3.5657	75.94	< 0.0001	significant
A-Ac-di-sol	1.26	1	1.26	2044.88	< 0.0001	
B-PVP K-30	9.31	1	9.31	15097.96	< 0.0001	
AB	0.11	1	0.11	184.99	< 0.0001	
Pure Error	4.933E-003	8	6.167E-004			
Cor Total	10.69	11				

The Model F-value of 5775.94 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.

Std. Dev.	0.025	R-Squared	0.9995
Mean	5.67	Adj R-Squared	0.9994
C.V. %	0.44	Pred R-Squared	0.9990
PRESS	0.011	Adeq Precision	168.094

The "Pred R-Squared" of 0.9990 is in reasonable agreement with the "Adj R-Squared" of 0.9994.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 168.094 indicates an adequate signal. This model can be used to navigate the design space.

Factor	Coefficient		Standard Error	95% CI		VIF
	Estimate	df		Low	High	
Intercept	5.67	1	7.169E-003	5.65	5.68	
A-Ac-di-sol	-0.32	1	7.169E-003	-0.34	-0.31	1.00
B-PVP K-30	0.88	1	7.169E-003	0.86	0.90	1.00
AB	-0.097	1	7.169E-003	-0.11	-0.081	1.00

Final Equation in Terms of Coded Factors:

$$\begin{aligned} \text{Kekerasan} &= \\ &+5.67 \\ &-0.32 \quad * A \\ &+0.88 \quad * B \\ &-0.097 \quad * A * B \end{aligned}$$

Final Equation in Terms of Actual Factors:

$$\begin{aligned} \text{Kekerasan} &= \\ &+4.61313 \\ &-0.088958 \quad * \text{Ac-di-sol} \\ &+0.51354 \quad * \text{PVP K-30} \\ &-0.024375 \quad * \text{Ac-di-sol} * \text{PVP K-30} \end{aligned}$$

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node.

In the Diagnostics Node, Select Case Statistics from the View Menu.

Proceed to Diagnostic Plots (the next icon in progression). Be sure to look at the:

- 1) Normal probability plot of the studentized residuals to check for normality of residuals.
- 2) Studentized residuals versus predicted values to check for constant error.
- 3) Externally Studentized Residuals to look for outliers, i.e., influential values.
- 4) Box-Cox plot for power transformations.

If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.

LAMPIRAN M
HASIL UJI ANAVA KERAPUHAN TABLET DENGAN *DESIGN*
EXPERT

Response 2 Kerapuhan

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
Model	0.57	3	0.19	29.55	0.0001 significant
<i>A-Ac-di-sol</i>	0.15	1	0.15	22.54	0.0014
<i>B-PVP K-30</i>	0.43	1	0.43	66.08	< 0.0001
<i>AB</i>	3.000E-004	1	3.000E-004	0.047	0.8345
Pure Error	0.052	8	6.442E-003		
Cor Total	0.62	11			

The Model F-value of 29.55 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 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.

Std. Dev.	0.080	R-Squared	0.9172
Mean	0.46	Adj R-Squared	0.8862
C.V. %	17.32	Pred R-Squared	0.8138
PRESS	0.12	Adeq Precision	12.876

The "Pred R-Squared" of 0.8138 is in reasonable agreement with the "Adj R-Squared" of 0.8862.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 12.876 indicates an adequate signal. This model can be used to navigate the design space.

Factor	Coefficient		Standard Error	95% CI		VIF
	Estimate	df		Low	High	
Intercept	0.46	1	0.023	0.41	0.52	
A-Ac-di-sol	0.11	1	0.023	0.057	0.16	1.00
B-PVP K-30	-0.19	1	0.023	-0.24	-0.13	1.00
AB	-5.000E-003	1	0.023	-0.058	0.048	1.00

Final Equation in Terms of Coded Factors:

$$\begin{aligned} \text{Kerapuhan} &= \\ &+0.46 \\ &+0.11 && * A \\ &-0.19 && * B \\ &-5.000E-003 && * A * B \end{aligned}$$

Final Equation in Terms of Actual Factors:

$$\begin{aligned} \text{Kerapuhan} &= \\ &+0.56958 \\ &+0.058750 && * \text{Ac-di-sol} \\ &-0.090417 && * \text{PVP K-30} \\ &-1.25000E-003 && * \text{Ac-di-sol} * \text{PVP K-30} \end{aligned}$$

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node.

In the Diagnostics Node, Select Case Statistics from the View Menu.

Proceed to Diagnostic Plots (the next icon in progression). Be sure to look at the:

- 1) Normal probability plot of the studentized residuals to check for normality of residuals.
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- 3) Externally Studentized Residuals to look for outliers, i.e., influential values.
- 4) Box-Cox plot for power transformations.

If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.

LAMPIRAN N
HASIL UJI ANAVA WAKTU HANCUR TABLET DENGAN *DESIGN*
EXPERT

Response 3 Waktu hancur

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	114.67	3	38.22	152.89	< 0.0001	significant
<i>A-Ac-di-sol</i>	5.33	1	5.33	21.33	0.0017	
<i>B-PVP K-30</i>	108.00	1	108.00	432.00	< 0.0001	
<i>AB</i>	1.33	1	1.33	5.33	0.0497	
Pure Error	2.00	8	0.25			
Cor Total	116.67	11				

The Model F-value of 152.89 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.

Std. Dev.	0.50	R-Squared	0.9829
Mean	4.67	Adj R-Squared	0.9764
C.V.%	10.71	red R-Squared	0.9614
PRESS	4.50	Adeq Precision	25.403

The "Pred R-Squared" of 0.9614 is in reasonable agreement with the "Adj R-Squared" of 0.9764.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 25.403 indicates an adequate signal. This model can be used to navigate the design space.

Factor	Coefficient		Standard Error	95% CI		VIF
	Estimate	df		Low	High	
Intercept	4.67	1	0.14	4.33	5.00	
A-Ac-di-sol	-0.67	1	0.14	-1.00	-0.33	1.00
B-PVP K-30	3.00	1	0.14	2.67	3.33	1.00
AB	-0.33	1	0.14	-0.67	-4.903E-004	1.00

Final Equation in Terms of Coded Factors:

$$\begin{aligned} \text{Waktu hancur} &= \\ &+4.67 \\ &-0.67 \quad * A \\ &+3.00 \quad * B \\ &-0.33 \quad * A * B \end{aligned}$$

Final Equation in Terms of Actual Factors:

$$\begin{aligned} \text{Waktu hancur} &= \\ &+0.41667 \\ &-0.083333 \quad * \text{Ac-di-sol} \\ &+1.75000 \quad * \text{PVP K-30} \\ &-0.083333 \quad * \text{Ac-di-sol} * \text{PVP K-30} \end{aligned}$$

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node. In the Diagnostics Node, Select Case Statistics from the View Menu.

Proceed to Diagnostic Plots (the next icon in progression). Be sure to look at the:

- 1) Normal probability plot of the studentized residuals to check for normality of residuals.
- 2) Studentized residuals versus predicted values to check for constant error.
- 3) Externally Studentized Residuals to look for outliers, i.e., influential values.
- 4) Box-Cox plot for power transformations.

If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.

LAMPIRAN O

HASIL UJI ANAVA PERSEN OBAT TERLARUT DALAM T = 15 MENIT DENGAN *DESIGN EXPERT*

Response 4 Disolusi

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	723.38	3	241.13	9.85	0.0046	significant
A-Ac-di-sol	71.25	1	71.25	2.91	0.1263	
B-PVP K-30	574.91	1	574.91	23.49	0.0013	
AB	77.22	1	77.22	3.16	0.1136	
Pure Error	195.78	8	24.47			
Cor Total	919.15	11				

The Model F-value of 9.85 implies the model is significant. There is only a 0.46% 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 B 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.

Std. Dev.	4.95	R-Squared	0.7870
Mean	88.34	Adj R-Squared	0.7071
C.V. %	5.60	Pred R-Squared	0.5208
PRESS	440.50	Adeq Precision	6.623

The "Pred R-Squared" of 0.5208 is in reasonable agreement with the "Adj R-Squared" of 0.7071.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 6.623 indicates an adequate signal. This model can be used to navigate the design space.

Factor	Coefficient		Standard Error	95% CI		VIF
	Estimate	df		Low	High	
Intercept	88.34	1	1.43	85.05	91.63	
A-Ac-di-sol	2.44	1	1.43	-0.86	5.73	1.00
B-PVP K-30	6.92	1	1.43	-10.21	-3.63	1.00
AB	2.54	1	1.43	-0.76	5.83	1.00

Final Equation in Terms of Coded Factors:

$$\begin{aligned} \text{Disolusi} &= \\ +88.34 & \\ +2.44 & * A \\ -6.92 & * B \\ +2.54 & * A * B \end{aligned}$$

Final Equation in Terms of Actual Factors:

$$\begin{aligned} \text{Disolusi} &= \\ +100.77667 & \\ -0.68417 & * \text{Ac-di-sol} \\ -5.36333 & * \text{PVP K-30} \\ +0.63417 & * \text{Ac-di-sol} * \text{PVP K-30} \end{aligned}$$

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node.

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- 3) Externally Studentized Residuals to look for outliers, i.e., influential values.
- 4) Box-Cox plot for power transformations.

If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.

LAMPIRAN P
UJI F KURVA BAKU PENETAPAN KADAR

Uji Kesamaan Regresi (Aquadest)

REPLIKASI I

KONSENTRASI	ABSORBANSI	X²	Y²	XY
2,004	0,150	4,016	0,023	0,301
8,016	0,259	64,256	0,067	2,076
14,028	0,374	196,785	0,139	5,246
20,04	0,486	401,602	0,236	9,739
26,054	0,599	678,811	0,359	15,606
32,064	0,710	1028,100	0,504	22,765
38,076	0,823	1449,782	0,677	31,337
		3823,351	2,006	87,071

REPLIKASI II

KONSENTRASI	ABSORBANSI	X²	Y²	XY
2,004	0,117	4,016	0,014	0,235
8,016	0,239	64,256	0,057	1,916
14,028	0,363	196,785	0,132	5,092
20,04	0,459	401,602	0,211	9,198
26,054	0,579	678,811	0,335	15,085
32,064	0,698	1028,100	0,487	22,381
38,076	0,801	1449,782	0,642	30,499
		3823,351	1,877	84,406

REPLIKASI III

KONSENTRASI	ABSORBANSI	X²	Y²	XY
2,008	0,132	4,032	0,017	0,265
8,032	0,239	64,513	0,057	1,919
14,056	0,360	197,571	0,129	5,060
20,08	0,465	403,206	0,216	9,337
26,104	0,585	681,419	0,342	15,271
32,128	0,715	1032,208	0,511	22,971
38,152	0,825	1455,575	0,681	31,475
		3838,525	1,955	86,299

	$S X^2$	SXY	$S Y^2$	N	SSi	RDF
Regresi I	3823,351	87,071	2,006	7	0,023	6
Regresi II	3823,351	84,406	1,877	7	0,014	6
Regresi III	3838,525	86,299	1,955	7	0,014	6
	11485,23	257,776	5,838		0,051	

$S_{sc} = 0,052$

$F = 0,08 < F_{0.05}(4,18) 2,93$

LAMPIRAN Q

UJI F KURVA BAKU DISOLUSI

Uji Kesamaan Regresi (Dapar fosfat pH 6,8)

REPLIKASI I

KONSENTRASI	ABSORBANSI	X ²	Y ²	XY
10,04	0,400	100,802	0,16	4,016
25,10	0,969	630,01	0,939	24,322
40,16	1,251	1612,83	1,565	50,240
55,22	1,487	3049,25	2,211	82,112
60,28	1,772	4939,28	3,139	124,536
85,34	2,085	7282,92	4,347	177,934
100,40	2,329	10080,2	5,424	233,832
		27695,2	17,787	696,992

REPLIKASI II

KONSENTRASI	ABSORBANSI	X ²	Y ²	XY
10,02	0,410	100,40	0,168	4,108
25,05	1,024	627,503	1,049	25,651
40,08	1,310	1606,41	1,716	52,505
55,11	1,580	3037,11	2,496	87,074
70,14	1,871	4919,62	3,501	131,232
85,17	2,193	7253,93	4,809	186,778
100,20	2,469	10040,04	6,096	247,394
		27585,01	19,835	734,742

REPLIKASI III

KONSENTRASI	ABSORBANSI	X ²	Y ²	XY
10,02	0,421	100,40	0,177	4,218
25,05	1,002	627,503	1,004	25,100
40,08	1,298	1606,41	1,685	52,024
55,11	1,586	3037,11	2,515	87,405
70,14	1,873	4919,62	3,508	131,372
85,17	2,197	7253,93	4,827	187,119
100,20	2,459	10040,04	6,047	246,392
		27585,01	19,763	733,629

	$S X^2$	SXY	$S Y^2$	N	SSi	RDF
Regresi I	27695,24	696,992	17,787	7	0,246	6
Regresi II	27585,01	734,742	19,835	7	0,265	6
Regresi III	27585,01	733,629	19,763	7	0,252	6
	82865,26	2165,363	57,385		0,763	

Ssc = 0,801

F = 0,23 < F0.05(4,18) 2,93