LAMPIRAN A

Percobaan Validasi Metode Analisa Propranolol HCl

1. Penentuan Kurva Baku

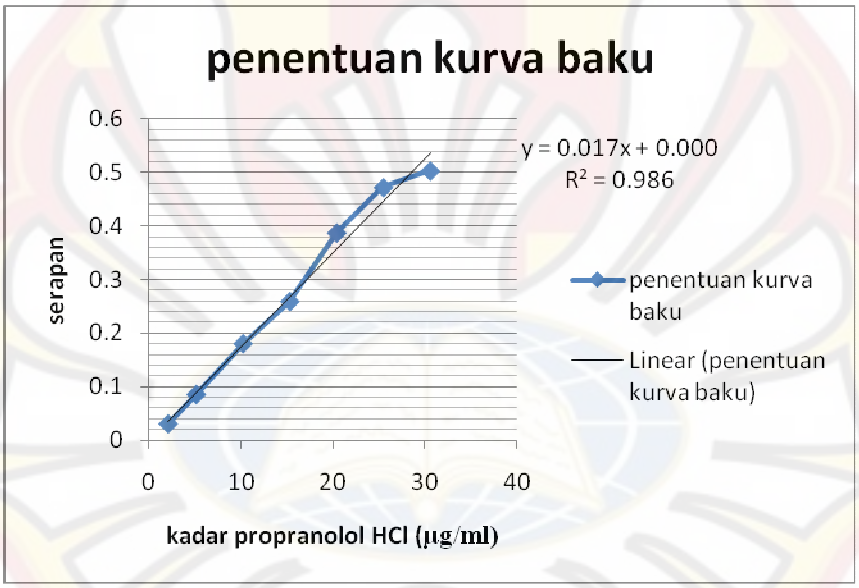
Berikut ini adalah data dari kurva baku selama tiga hari

C_1 (µg/ml)	A_1	C_2 (µg/ml)	A_2	C_3 (µg/ml)	A_3
2,04	0,03	2	0,03	2	0,03
5,1	0,085	5	0,086	5	0,084
10,2	0,180	10	0,183	10	0,182
15,3	0,259	15	0,257	15	0,261
20,4	0.387	20	0.389	20	0.387
25,5	0,472	25	0,468	25	0,470
30,6	0,503	30	0,501	30	0,504
a =	0,000214	a =	0,001934	a =	0,0006
b =	0,0175	b =	0,0177	b =	0,0179
r =	0,9934	r =	0,9930	r =	0,9938

Dari data tersebut, diketahui bahwa data – data tersebut setelah diuji anava tidak berbeda bermakna sehingga dipilih salah satu dari data tersebut yaitu data yang pertama sebagai kurva baku terpilih.

Tabel Kurva Baku

Konsentrasi (µg/ml)	Serapan
2,04	0,03
5,1	0,085
10,2	0,18
15,3	0,259
20,4	0.387
25,5	0,472
30,6	0,503



2. Perhitungan LOD dan LOQ

LOD diperoleh dari rumus Q = 3 $S_{y/x}$ / b, sedangkan LOQ diperoleh dari rumus Q = 10 $S_{y/x}$ / b.

C	A	Y_i	$Y_i - Y_t$	$(Y_i - Y_t)^2$
2,04	0,03	0,03599	0,00599	3,588E-05
5,1	0,085	0,08968	0,00468	2,19E-05
10,2	0,18	0,1791	-0,0009	8,1E-07
15,3	0,259	0,2686	0,0096	9,216E-05
20,4	0.387	0,3581	-0,0289	8,3521E-04
25,5	0,472	0,4475	-0,0245	6,0025E-04
30,6	0,503	0,5369	0,0339	1,1492E-03
			Jumlah	2,73535E-03

Sy/x $= \sqrt{\frac{(Yi-Yt)2}{n-2}}$

= 0,023389527

Nilai b diperoleh dari kurva baku = 0,0175

LOD = 3 $S_{y/x}$ / b

= 4,0096 µg/ml

LOQ = 10 $S_{y/x}$ / b

= 13,3654 µg/ml

3. Uji Akurasi

Penimbangan	C teoritis (µg/ml)	Serapan	C pengamatan (µg/ml)	% recovery
50 mg/ml	30	0,518	29,52	98,4
50 mg/ml	30	0,527	30,03	100,1
50 mg/ml	30	0,523	29,80	99,3
50 mg/ml	30	0,528	30,09	100,3
49 mg/ml	30	0,517	29,46	98,2
51 mg/ml	30	0,531	30,26	100,9

Rata – rata % recovery = (98,4 + 100,1 + 99,3 + 100,3 + 98,2 + 100,9) / 6
= 99,53 ± 1,37

4. Uji Presisi

C teoritis (µg/ml)	Serapan	C pengamatan (µg/ml)	% recovery
30	0,670	38,1825	127,275
30	0,644	36,7	122,333
30	0,671	38,2395	127,465
30	0,664	37,8404	126,1347
30	0,641	36,5292	124,2493
30	0,687	39,1516	127,946

Rata – rata % recovery = (127,275 + 122,333 + 127,465 + 126,1347
124,2493 + 127,946) / 6
= 125,9005

SD = 2,1922

$$KV = \frac{SD}{rata-rata\ \%recovery} \times 100\%$$

= 1,74%

LAMPIRAN B

DATA – DATA dan PERHITUNGAN *MOISTURE CONTENT*

Formula (-1)

W1 (gram)	**W2 (gram)**	**(W1 – W2)**	***% moisture content***
0,3451	0,3346	0,0105	3,04 %
0,3372	0,3286	0,0086	2,55 %
0,3623	0,3495	0,0128	3,53 %
		Rata – rata	3,041 ± 0,492 %

Formula (a)

W1 (gram)	**W2 (gram)**	**(W1 – W2)**	***% moisture content***
0,1930	0,1920	0,0010	0,518 %
0,1987	0,1980	0,0007	0,35 %
0,2463	0,2405	0,0058	2,355 %
		Rata – rata	1,074 ± 1,281 %

Formula (b)

W1 (gram)	**W2 (gram)**	**(W1 – W2)**	***% moisture content***
0,4429	0,4333	0,0096	2,168 %
0,2324	0,2301	0,0023	0,989 %
0,2578	0,2491	0,0087	3,374 %
		Rata – rata	2,177 ± 1,197 %

Formula (ab)

W1 (gram)	**W2 (gram)**	**(W1 – W2)**	***% moisture content***
0,4531	0,4500	0,0031	0,684 %
0,4602	0,4489	0,0113	2,455 %
0,4820	0,4759	0,0061	1,261%
		Rata – rata	1,468 ± 0,987 %

Anova: *Single Factor*

SUMMARY

Groups	***Count***	***Sum***	***Average***	***Variance***
Column 1	3	9,15	3,05	0,2404
Column 2	3	3,22	1,073333	1,229633
Column 3	3	6,51	2,17	1,4281
Column 4	3	4,4	1,466667	0,824133

ANOVA

Source of Variation	***SS***	***df***	***MS***	***F***	***P-value***	***F crit***
Between Groups	6,780467	3	2,260156	2,428795	0,140392	4,066181
Within Groups	7,444533	8	0,930567			
Total	14,225	11				

LAMPIRAN C

Jumlah Propranolol HCl yang Melintasi Membran sebagai Fungsi Akar Waktu

Waktu (menit)	Jumlah proranolol HCl yang melintasi membran (µg/ml)			
	(-1)	(a)	(b)	(ab)
15	3.454438	1.39199	23.81634	2.367238
30	3.7592	2.463962	30.23539	3.472
45	3.68301	3.606819	39.58777	8.291048
60	5.149676	4.616343	48.78777	12.86248
90	13.24951	9.949676	53.09253	16.3101
120	15.87349	11.74015	62.5211	24.53867
150	22.67349	14.5211	70.23539	33.472
180	36.2544	15.18777	86.63539	37.472
210	66.00682	20.94015	104.1782	44.0435
240	89.62587	31.11158	122.083	49.0434
270	103.6259	41.3211	137.7592	54.15771
300	124.3878	42.5211	126.9021	65.16724
330	125.7680	91.7592	123.6068	62.13456
360	109.4163	98.06396	117.9878	61.3967

Data merupakan rata – rata tiga kali replikasi

LAMPIRAN D

Jumlah Propranolol HCl yang Melintasi Membran sebagai Fungsi Waktu

Waktu (menit)	Jumlah proranolol HCl yang melintasi membran (µg/ml)			
	(-1)	(a)	(b)	(ab)
15	0.921104	0.787771	0.978248	1.054438
30	1.340152	1.130629	1.416343	1.397295
45	1.473486	1.244914	1.778248	1.740152
60	1.892533	1.43539	2.025876	1.930629
90	2.387771	1.68301	2.102057	2.102057
120	2.616343	1.854438	2,349676	2.387771
150	2.787771	2.616343	2.597259	2.692533
180	2.921105	2.825867	3.03539	3.244914
210	3.073480	3.149676	3.130628	3.68301
240	3.378248	3.416343	3.416343	3.892533
270	3.511581	3.683013	3.568724	4.273486
300	3.702057	3.7592	4.025867	4.692533
330	4.197295	3.854438	4.23539	5.130623
360	4.044914	3.968724	4.55920	5.378248

Lampiran E

Perhitungan Anava Untuk Model Pelepasan

Response 1 PELEPASAN

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	35.63	3	11.88	173.61	< 0.0001
A-HPMC	*33.49*	*1*	*33.49*	*489.60*	*< 0.0001*
B-PEG 400	*2.03*	*1*	2.03	*29.62*	*0.0006*
AB	*1.00*	*0.11*	1.62	*0.2389*	
Pure Error	0.55	8	0.068		
Cor Total	36.17	11			1

The Model F-value of 173.61 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 supporhierarchy), model reduction may improve your model.

Std. Dev.	0.26	R-Squared	0.9849
Mean	6.42	Adj R-Squared	0.9792
C.V. %	4.07	Pred R-Squared	0.9660
PRESS	1.23	Adeq Precision	27.569

The "Pred R-Squared" of 0.9660 is in reasonable agreement with the "Adj R Squared" of 0.9792
"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable.Your ratio of 27.569 indicates an adequate signal. This model can be used to navigate the design space.

Final Equation in Terms of Coded Factors:

PELEPASAN	=
+6.42	
-1.67	* A
-0.41	* B
-0.096	* A * B

Lampiran F

Perhitungan Anava Untuk Model Penetrasi

Response 2 penetrasi

ANOVA for selected factorial model

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

Source	Sum of Squares	df	Mean Square
Model	2.243E-005	3	7.478E-006
A-HPMC	*1.200E-005*	1	*1.200E-005*
B-PEG 400	*8.003E-006*	1	*8.003E-006*
AB2.430E-006	*1*	*2.430E-006*	*5.73*
Pure Error	3.393E-006	8	4.242E-007
Cor Total	2.583E-005	11	

The Model F-value of 17.63 implies the model is significant. There is only a 0.07% 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, model reduction may improve your model.

Std. Dev.	6.513E-004		R-Squared
Mean	9.867E-003	Adj R-Squared	0.8193
C.V. %	6.60		Pred R-Squared
PRESS	7.635E-006	Adeq Precision	9.663

The "Pred R-Squared" of 0.7044 is in reasonable agreement with the "Adj R-Squared" of 0.8193.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable.Your ratio of 9.663 indicates an adequate signal. This model can used the design

Coefficient Factor	Estimate	df	Standard Error	95% CI Low	95% CI High	VIF
Intercept	9.867E-003	1	1.880E-004	9.433E-003		0.010
A-HPMC	1.000E-003	1	1.880E-004	5.665E-004	1.434E-003	
B-PEG 400	8.167E-004	1	1.880E-004	3.831E-004	1.250E-003	
AB	4.500E-004	1	1.880E-004	1.645E-005	8.835E-004	1.00

Final Equation in Terms of Coded Factors:

penetrasi =
+9.867E-003
+1.000E-003 * A
+8.167E-004 * B
+4.500E-004 * A * B

Lampiran G

Kondisi Uji Optimal

Name	Goal	Lower Limit	Upper Limit	Lower Weight	Upper
A:HPMC	**maximize**	**-1**	**1**	**1**	
B:PEG 400	**is in range**	**-1**	**1**	**1**	
pelepasan	**maximize**	**4.159**	**8.758**	**1**	
penetrasi	**maximize**	**0.0079**	**0.0123**	**1**	

Solutions Number	HPMC	PEG 400	pelepasan	penetrasi	Desirability
1	0.28	0.86	5.57715	0.01095	0.515