LAMPIRAN A

Percobaan Validasi Metode Analisa Propranolol HCl

1. Penentuan Kurva Baku

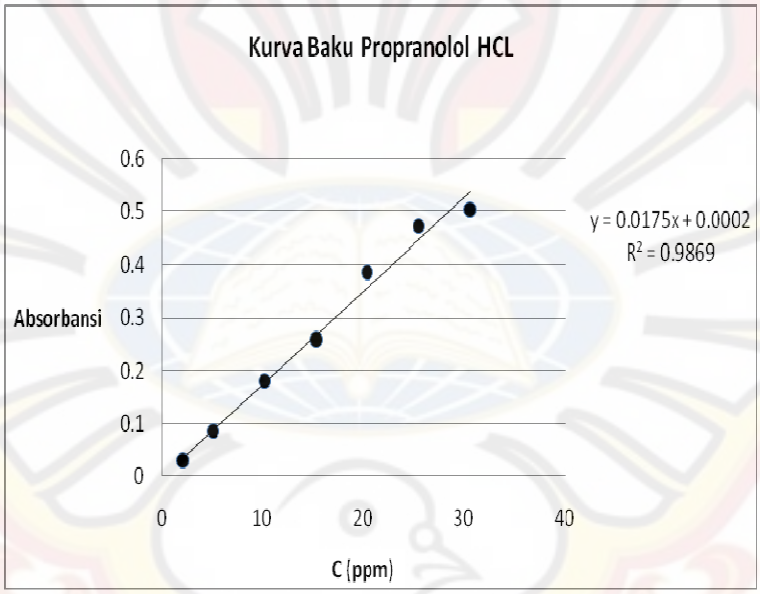
C_1 (µg/ml)	A_1	C_2 (µg/ml)	A_2	C_3 (µg/ml)	A_3
2,04	0,03	2	0,03	2	0,03
5,1	0,085	5	0,086	5	0,084
10,2	0,180	10	0,183	10	0,182
15,3	0,259	15	0,257	15	0,261
20,4	0.387	20	0.389	20	0.387
25,5	0,472	25	0,468	25	0,470
30,6	0,503	30	0,501	30	0,504
a =	0,000214	a =	0,001934	a =	0,0006
b =	0,0175	b =	0,0177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

Data ini adalah data dari kurva baku selama tiga hari berturut – turut

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

$$S_B = S_{y/x} = \Sigma\sqrt{\frac{(Yi - Yt)^2}{n-2}} == 0{,}023389527$$

Nilai b diperoleh dari kurva baku = 0,0175

$$LOD = 3\left(\frac{S_{y/x}}{b}\right)$$

= 4,0096 µg/ml

$$LOQ = 10\left(\frac{S_{y/x}}{b}\right)$$

= 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	0,518	29,52	98,4
30	0,527	30,03	100,1
30	0,523	29,80	99,3
30	0,528	30,09	100,3
30	0,517	29,46	98,2
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

SD = 1,0857

$$KV = \frac{\text{SD}}{\text{Rata - rata \% recovery}} x100\%$$

LAMPIRAN B

DATA – DATA dan PERHITUNGAN *MOISTURE CONTENT*

Formula (-1)

W1 (gram)	**W2 (gram)**	**(W1 – W2)**	***% moisture content***
0,3473	0,3346	0,0127	3,85 %
0,3726	0,3586	0,0139	3,9 %
0,3549	0,3415	0,0135	3,95 %
		Rata – rata	3,9 ± 0,05 %

Formula (a)

W1 (gram)	**W2 (gram)**	**(W1 – W2)**	***% moisture content***
0,3027	0,2920	0,0106	3,66 %
0,3088	0,2980	0,0108	3,7 %
0,2868	0,2765	0,0103	3,74 %
		Rata – rata	3,7 ± 0,04 %

Formula (ab)

W1 (gram)	W2 (gram)	(W1 – W2)	*% moisture content*
0,4658	0,4500	0,0158	3,52 %
0,4961	0,4789	0,0172	3,6 %
0,5013	0,4835	0,0178	3,68 %
		Rata – rata	3,6 ± 0,08 %

Formula (b)

W1 (gram)	W2 (gram)	(W1 – W2)	*% moisture content*
0,4497	0,4333	0,0165	3,8 %
0,4294	0,4135	0,0159	3,85 %
0,4666	0,4491	0,0175	3,9 %
		Rata – rata	3,85 ± 0,05 %

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Row 1	4	14.83	3.7075	0.02209
Row 2	4	15.05	3.7625	0.01896
Row 3	4	15.27	3.8175	0.01643

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.0242	2	0.0121	0.63158	0.55377	4.2565
Within Groups	0.172425	9	0.019158			
Total	0.196625	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	11.89253	5.530629	13.91158	8.254438
30	15.68301	11.98777	32.63539	9.206819
45	25.7973	22.44491	41.51158	14.50206
60	36.94015	29.93063	55.47349	15.51158
90	42.10206	38.02587	77.51158	18.73063
120	45.94968	42.31158	110.1402	25.53063
150	48.90206	45.94968	113.7402	34.42587
180	51.26396	51.13063	114.2354	35.98777
210	76.84491	53.58777	116.7687	38.63539
240	105.4354	67.94968	118.5402	48.5211
270	112.1973	76.5592	122.1021	51.14968
300	93.54968	72.31158	125.3592	53.85444
330	79.47349	70.80682	68.02587	51.94968
360	72.10206	55.07349	66.90206	32.57825

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	3.031	1.37464	2.37474	1.00289
30	4.334	3.73836	5.89674	3.00893
45	7.643	4.86432	9.374849	5.45361
60	12.132	5.00356	12.57383	6.13448
90	14.006	5.45673	17.45675	7.45634
120	16.435	6.223	19.40009	8.8734
150	24.425	7.98	21.7383	9.00324
180	24.543	8.457	23.65743	9.28293
210	25.934	9.345	24.12339	12.00216
240	27.521	10.278	26.94001	14.78392
270	28.674	10.98	28.253	16.8732
300	29.317	12.703	29.298	17.43092
330	34.405	14.238	31.687	20.10045
360	37.45	15.658	36.046	21.465

Data merupakan rata – rata tiga kali replikasi

Lampiran E

Perhitungan Anava Untuk Model Pelepasan

Source	Sum of square	df	Mean square	F value	P value Prob > F
Model significant	12.95	3	4.32	255.08	< 0.0001
A-HPMC	*10.03*	*1*	*10.03*	*592.70*	*< 0.0001*
B-GLISEROL	*2.50*	*1*	*2.50*	*147.88*	*< 0.0001*
AB	*0.42*	*1*	*0.42*	*24.65*	0.0011
Pure Error	0.14	8	0.017		
Cor Total	13.08	11			

The Model F-value of 255.08 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.	Mean	C.V. %	PRESS
0.13	4.57	2.84	0.30

R-Squared	Adj R-Squared	Pred R-Squared	Adeq Precision
0.9897	0.9858	0.9767	36.506

The "Pred R-Squared" of 0.9767 is in reasonable agreement with the "Adj R-Squared" of 0.9858.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable.
Your ratio of 36.506 indicates an adequate signal. This model can be used to navigate the design space.

Final Equation in Terms of Coded Factors:
PELEPASAN =

+4.57	
-0.91	* A
-0.46	*B
-0.19	* A * B

Final Equation in Terms of Actual Factors:
PELEPASAN =

+4.57275	
-0.91408	* HPMC
-0.45658	* GLISEROL
-0.18642	* HPMC * GLISEROL

Lampiran F

Perhitungan Anava Untuk Model Penetrasi

Source	Sum of square	df	Mean square	F value	P value Prob > F
Model significant	7.887E-003	3	2.629E-003	885.94	< 0.0001
A-HPMC	*7.247E-003*	*1*	*7.247E-003*	*2442.18*	*< 0.0001*
B-GLISEROL	*3.640E-005*	*1*	*3.640E-005*	*12.27*	*0.0081*
AB	*6.035E-004*	*1*	*6..035E-004*	*203.37*	*< 0.0001*
Pure Error	2.374E-005	8	2.968E-006		
Cor Total	13.08	11			

The Model F-value of 885.94 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.	Mean	C.V. %	PRESS
1.723E-003	0.063	2.75	5.342E-005

R-Squared	Adj R-Squared	Pred R-Squared	Adeq Precision
0.9970	0.9959	0.9932	63.679

The "Pred R-Squared" of 0.9932 is in reasonable agreement with the "Adj R-Squared" of 0.9959. "Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 63.679 indicates an adequate signal.

Final Equation in Terms of Coded Factors:

PENETRASI =

+0.063	
-0.025	* A
-1.742E-003	*B
+7.092E-003	* A * B

Final Equation in Terms of Actual Factors:

PENETRASI =

+0.062592	
-0.024575	* HPMC
-1.74167E-003	* GLISEROL
+7.09167E-003	* HPMC * GLISEROL

Lampiran G

Kondisi Uji Optimal

Constraints

Name	Goal	Lower Limit	Upper Limit	Lower Weight	Upper Weight	Importance
A:HPMC	is in range	-1	1	1	1	3
B:GLISEROL	is in range	-1	1	1	1	3
PELEPASAN	maximize	2.941	5.991	1	1	3
PENETRASI	maximize	0.032	0.098	1	1	3

Solutions Number	HPMC	GLISEROL	PELEPASAN	PENETRASI	Desirability	
1	-1.00	-1.00	5.757	0.096	0.946	Selected
2	-1.00	-0.93	5.73783	0.0953732	0.938	
3	-1.00	-0.71	5.67856	0.0934354	0.914	
4	-1.00	-0.54	5.63305	0.0919474	0.895	

4 Solutions found