

Tabel harga r pada taraf signifikan 5% dan 1%

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 : Ritschel (1986)

Tabel distribusi t

d. k.	Aras keberartian untuk uji satu-arah					
	.10	.05	.025	.01	.005	.0005
	Aras keberartian untuk uji dua arah					
	.20	.10	.05	.02	.01	.001
1	3.078	6.314	12.706	31.821	63.657	636.619
2	1.886	2.920	4.303	6.965	9.925	31.598
3	1.638	2.353	3.182	4.541	5.841	12.941
4	1.533	2.132	2.776	3.747	4.604	8.610
5	1.476	2.015	2.571	3.365	4.032	6.859
6	1.440	1.943	2.447	3.143	3.707	5.959
7	1.415	1.895	2.365	2.998	3.499	5.405
8	1.397	1.860	2.306	2.896	3.355	5.041
9	1.383	1.833	2.262	2.821	3.250	4.781
10	1.372	1.812	2.228	2.764	3.169	4.587
11	1.363	1.796	2.201	2.718	3.106	4.437
12	1.356	1.782	2.179	2.681	3.055	4.318
13	1.350	1.771	2.160	2.650	3.012	4.221
14	1.345	1.761	2.145	2.624	2.977	4.140
15	1.341	1.753	2.131	2.602	2.947	4.073
16	1.337	1.746	2.120	2.583	2.921	4.015
17	1.333	1.740	2.110	2.567	2.898	3.965
18	1.330	1.734	2.101	2.552	2.878	3.922
19	1.328	1.729	2.093	2.539	2.861	3.883
20	1.325	1.725	2.086	2.528	2.845	3.850
21	1.323	1.721	2.080	2.518	2.831	3.819
22	1.321	1.717	2.074	2.508	2.819	3.792
23	1.319	1.714	2.069	2.500	2.807	3.767
24	1.318	1.711	2.064	2.492	2.797	3.745
25	1.316	1.708	2.060	2.485	2.787	3.725
26	1.315	1.706	2.056	2.479	2.779	3.707
27	1.314	1.703	2.052	2.473	2.771	3.690
28	1.313	1.701	2.048	2.467	2.763	3.674
29	1.311	1.699	2.045	2.462	2.756	3.659
30	1.310	1.697	2.042	2.457	2.750	3.646
40	1.303	1.684	2.021	2.423	2.704	3.551
60	1.296	1.671	2.000	2.390	2.660	3.460
120	1.289	1.658	1.980	2.358	2.617	3.373
∞	1.282	1.645	1.960	2.326	2.576	3.291

Dikutip dari : Scheffler (1987)

Tabel distribusi F

d. k.	k	2	3	4	5	6	7	8	9	10	11
5		3.64	4.60	5.22	5.67	6.03	6.33	6.58	6.80	6.99	7.17
6		3.46	4.34	4.90	5.30	5.63	5.90	6.12	6.32	6.49	6.65
7		3.34	4.16	4.68	5.06	5.36	5.61	5.82	6.00	6.16	6.30
8		3.26	4.04	4.53	4.89	5.17	5.40	5.60	5.77	5.92	6.05
9		3.20	3.95	4.41	4.76	5.02	5.24	5.43	5.59	5.74	5.87
10		3.15	3.88	4.33	4.65	4.91	5.12	5.30	5.46	5.60	5.72
11		3.11	3.82	4.26	4.57	4.82	5.03	5.20	5.35	5.49	5.61
12		3.08	3.77	4.20	4.51	4.75	4.95	5.12	5.27	5.39	5.51
13		3.06	3.73	4.15	4.45	4.69	4.88	5.05	5.19	5.32	5.43
14		3.03	3.70	4.11	4.41	4.64	4.83	4.99	5.13	5.25	5.36
15		3.01	3.67	4.08	4.37	4.59	4.78	4.94	5.08	5.20	5.31
16		3.00	3.65	4.05	4.33	4.56	4.74	4.90	5.03	5.15	5.26
17		2.98	3.63	4.02	4.30	4.52	4.71	4.86	4.99	5.11	5.21
18		2.97	3.61	4.00	4.28	4.49	4.67	4.82	4.96	5.07	5.17
19		2.96	3.59	3.98	4.25	4.47	4.65	4.79	4.92	5.04	5.14
20		2.95	3.58	3.96	4.23	4.45	4.62	4.77	4.90	5.01	5.11
24		2.92	3.53	3.90	4.17	4.37	4.54	4.68	4.81	4.92	5.01
30		2.89	3.49	3.85	4.10	4.30	4.46	4.60	4.72	4.82	4.92
40		2.86	3.44	3.79	4.04	4.23	4.39	4.52	4.63	4.73	4.82
60		2.83	3.40	3.74	3.98	4.16	4.31	4.44	4.55	4.65	4.73
120		2.80	3.36	3.68	3.92	4.10	4.24	4.36	4.47	4.56	4.64
∞		2.77	3.31	3.63	3.86	4.03	4.17	4.29	4.39	4.47	4.55

Dikutip dari : Scheffler (1987)

Cara perhitungan *Pooled Variance t Test*

Contoh cara perhitungan *Pooled Variance t Test* pada uji pH sediaan antar *batch* pada FD

Pengujian	pH	
	<i>Batch I</i>	<i>Batch II</i>
1	6,8	6,7
2	6,7	6,7
3	6,7	6,7
n	3	3
$\bar{x}$	6,73	6,7
SD	0,05773	0,00
% kv	0,85	0,00

$$F_{hitung} = \frac{S_1^2}{S_2^2}$$

$$= \frac{0,05773}{0,00} = 0,00$$

$$db\ n = n_1 - 1 = 3 - 1 = 2$$

$$dbd = n_2 - 1 = 3 - 1 = 2$$

$$F_{Tabel\ 0,05\ (2;2)} = 19,00$$

$$F_{hitung\ (0,00)} < F_{Tabel\ 0,05\ (2 ; 2)} = 19,00$$

Kesimpulan : $S_1^2 = S_2^2$, maka berlaku *Pooled Variance t Test*

$$Sp^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$$

$$= \frac{(2 \times 0,05773^2) + (2 \times 0,00^2)}{3 + 3 - 2} = 0,001667$$

$$t_{hitung} = \frac{|\bar{x}_1 - \bar{x}_2|}{\sqrt{Sp^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

$$= \frac{|5,73 - 5,67|}{\sqrt{0,001667 \left[\frac{1}{3} + \frac{1}{3} \right]}} = 1,00$$

$$db = n_1 + n_2 - 2 = 4$$

$$t_{tabel} 0,05 (4) = 2,776$$

$t_{hitung} (1,00) < t_{tabel} (2,776) \rightarrow$ jadi tidak ada perbedaan bermakna

Lampiran 2

**Perhitungan Statistik Untuk Mengetahui Ada Tidaknya Perbedaan Bermakna
(pH SEDIAAN BATCH I)**

Pengujian	Perlakuan				Jumlah
	FA	FB	FC	FD	
1	6,8	6,8	6,8	6,8	
2	6,8	6,7	6,8	6,7	
3	6,8	6,7	6,8	6,7	
n	3	3	3	3	12
RATA-RATA	6,8	6,733	6,766	6,733	
Ji	20,4	20,2	20,3	20,2	-

J_i^2	334,89	302,76	313,29	295,84	1246,78
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Perhitungan :

$$\begin{aligned}
 JKT &= \sum x^2 - \frac{(\sum x)^2}{N_t} \\
 &= (6,8^2 + 6,8^2 + 6,8^2 + 6,8^2 + 6,7^2 + 6,7^2 + 6,8^2 + 6,8^2 + 6,7^2 + 6,8^2 + 6,7^2 + 6,7^2) \\
 &\quad - 548,10 \\
 &= 0,43
 \end{aligned}$$

$$\begin{aligned}
 JKp &= \frac{(\sum XD)^2}{nD} + \frac{(\sum XE)^2}{nE} + \dots + \frac{(\sum XC)^2}{nC} + \frac{(\sum X)^2}{nT} \\
 &= \left\{ \left(\frac{20,4^2}{3} \right) + \left(\frac{20,2^2}{3} \right) + \left(\frac{20,3^2}{3} \right) + \left(\frac{20,2^2}{3} \right) \right\} - 548,10 \\
 &= 0,006
 \end{aligned}$$

$$JkG = JKT - JKP = 0,424$$

$$RJKp = \frac{JKP}{(k-1)} = \frac{0,006}{(4-1)} = 0,002$$

$$RJKd = \frac{JkG}{(nT-1)-(k-1)} = \frac{0,424}{(12-1)-(4-1)} = 0,053$$

$$F_{hitung} = \frac{RJKp}{RJKd} = \frac{0,002}{0,053} = 0,0377$$

UJI BEDA NYATA TERKECIL

Formula	Mean(X)	A	B	C	D	HSD
		6,80	6,73	6,76	6,73	0,117
A	6,80	0	0,067*	0,034*	0,067*	
B	6,73		0	0,033*	0*	
C	6,76			0	0,033*	
D	6,73				0	

$$RJKd = 0,053$$

$$q_{(5\% / 2; p; db)} = 4,53$$

$$n = 3$$

$$HSD(5\%) = q \sqrt{\frac{RJKd}{n}}$$

$$db = 8$$

$$= 0,117$$

**Perhitungan Statistik Untuk Mengetahui Ada Tidaknya Perbedaan Bermakna
(pH SEDIAAN BATCH II)**

Pengujian	Perlakuan				Jumlah
	FA	FB	FC	FD	
1	6,8	6,8	6,8	6,7	
2	6,8	6,7	6,8	6,7	
3	6,8	6,7	6,8	6,7	
n	3	3	3	3	12
RATA-RATA	6,8	6,733	6,766	6,700	
Ji	20,4	20,2	20,3	20,1	-
Ji ²	416,16	408,04	412,09	404,01	1640,3

Perhitungan :

$$\begin{aligned}
 JKT &= \sum x^2 - \frac{(\sum x)^2}{N_T} \\
 &= (6,8^2 + 6,8^2 + 6,8^2 + 6,8^2 + 6,7^2 + 6,7^2 + 6,8^2 + 6,8^2 + 6,7^2 + 6,7^2 + 6,7^2 + 6,7^2) \\
 &\quad - 548,10 \\
 &= 0,03
 \end{aligned}$$

$$\begin{aligned}
 JKp &= \frac{(\sum XD)^2}{nD} + \frac{(\sum XE)^2}{nE} + \dots + \frac{(\sum XC)^2}{nC} + \frac{(\sum X)^2}{nT} \\
 &= \left\{ \left(\frac{20,4^2}{3} \right) + \left(\frac{20,2^2}{3} \right) + \left(\frac{20,3^2}{3} \right) + \left(\frac{20,1^2}{3} \right) \right\} - 546,75
 \end{aligned}$$

$$= 0,013$$

$$JkG = JKT - JKP = 0,017$$

$$RJKp = \frac{JKP}{(k-1)} = \frac{0,013}{(4-1)} = 0,0043$$

$$RJKd = \frac{JkG}{(nT-1)-(k-1)} = \frac{0,017}{(12-1)-(4-1)} = 0,0213$$

$$F_{hitung} = \frac{RJKp}{RJKd} = \frac{0,043}{0,0213} = 2,03$$

UJI BEDA NYATA TERKECIL

Formula	Mean(X)	A	B	C	D	HSD
		6,80	6,73	6,76	6,70	0,382
A	6,80	0	0,067*	0,034*	0,1*	
B	6,73		0	0,033*	0,033*	
C	6,76			0	0,066*	
D	6,70				0	

$$KRP = 0,213$$

$$q_{(5\% / 2; p; db)} = 4,53$$

$$n = 3$$

$$db = 8$$

$$HSD(5\%) = q \sqrt{\frac{RJKd}{n}}$$

$$= 0,382$$

Cara perhitungan *Pooled Variance t Test* Viskositas

Contoh Cara perhitungan *Pooled Variance t Test* pada uji Viskositas sediaan antar batch pada FA

Pengujian	Viskositas	
	Batch I	Batch II
1	30600	30800
2	30700	30700
3	30900	30700
n	3	3
$\bar{x}$	30733,33	30766,60
SD	152,752	57,74
% kv	0,49	0,18

$$F_{hitung} = \frac{S_1^2}{S_2^2}$$

$$= \frac{152,752^2}{57,74^2} = 6,99$$

$$db\ n = n_1 - 1 = 3 - 1 = 2$$

$$dbd = n_2 - 1 = 3 - 1 = 2$$

$$F_{Tabel\ 0,05\ (2;2)} = 19,00$$

$$F_{hitung}\ (6,99) < F_{Tabel\ 0,05\ (2;2)} = 19,00$$

Kesimpulan : $S_1^2 = S_2^2$, maka berlaku *Pooled Variance t Test*

$$S_p^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$$

$$= \frac{(2 \times 152,752^2) + (2 \times 57,74^2)}{3 + 3 - 2} = 13333,54$$

$$t_{\text{hitung}} = \frac{|\bar{x}_1 - \bar{x}_2|}{\sqrt{Sp^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{|30733,33 - 30766,6|}{\sqrt{13333,54 \left[\frac{1}{3} + \frac{1}{3} \right]}} = 0,35$$

$$db = n_1 + n_2 - 2 = 4$$

$$t_{\text{tabel}} 0,05 (4) = 2,776$$

$$t_{\text{hitung}} (0,35) < t_{\text{tabel}} (2,776) \rightarrow \text{jadi tidak ada perbedaan bermakna}$$

Lampiran 5

**Perhitungan Statistik Untuk Mengetahui Ada Tidaknya Perbedaan Bermakna
(VISKOSITAS SEDIAAN BATCH I)**

Pengujian	Perlakuan				Jumlah
	FA	FB	FC	FD	
1	30600	31500	32500	34000	
2	30700	31700	32400	34500	
3	30900	31600	32500	35000	
n	3	3	3	3	12

RATA-RATA	30733,33	31600	32466,67	34500	
Ji	92200	94800	97400	103500	-
Ji ²	8500840000	8987040000	9486760000	1,071225 ¹⁰	3,768689 ¹⁰

Perhitungan :

$$JKT = \sum x^2 - \frac{(\sum x)^2}{N_T}$$

$$= (30600^2 + 30700^2 + 30900^2 + 31500^2 + 31700^2 + 31600^2 + 32500^2 + 32400^2 + 32500^2 + 34000^2 + 34500^2 + 35000^2) - 1,25777^{10}$$

$$= 24000000$$

$$JKP = \frac{(\sum XD)^2}{nD} + \frac{(\sum XE)^2}{nE} + \dots + \frac{(\sum XC)^2}{nC} + \frac{(\sum X)^2}{nT}$$

$$= \left\{ \left(\frac{92200^2}{3} \right) + \left(\frac{94800^2}{3} \right) + \left(\frac{97400^2}{3} \right) + \left(\frac{103500^2}{3} \right) \right\} - 1,25777^{10}$$

$$= 23400000$$

$$JKG = JKT - JKP = 6000000$$

$$RJKp = \frac{JKP}{(k-1)} = \frac{23400000}{(4-1)} = 7800000$$

$$RJKd = \frac{JKG}{(nT-1)-(k-1)} = \frac{6000000}{(12-1)-(4-1)} = 750000$$

$$F_{hitung} = \frac{RJKp}{RJKd} = \frac{7800000}{750000} = 104$$

UJI BEDA NYATA TERKECIL

Formula	Mean(X)	A	B	C	D	HSD
		30733,3	31600	32466,6	34500	716,26
A	30733,3	0	866,7*	1733,34*	3766,7*	
B	31600		0	866,67*	2900*	
C	32466,6			0	2033,33*	
D	34500				0	

$$RJKd = 75000$$

$$q_{(5\% / 2; p; db)} = 4,53$$

$$n = 3$$

$$db = 8$$

$$HSD(5\%) = q \sqrt{\frac{RJKd}{n}}$$

$$= 716,26$$

Lampiran 6

**Perhitungan Statistik Untuk Mengetahui Ada Tidaknya Perbedaan Bermakna
(VISKOSITAS SEDIAAN BATCH II)**

Pengujian	Perlakuan				Jumlah
	FA	FB	FC	FD	
1	30800	31600	32400	34200	
2	30700	31700	32500	34500	
3	30700	31900	32500	34500	
n	3	3	3	3	12
RATA-RATA	30766,6	31733,3	32466,67	34400	
Ji	92200	95200	97400	103200	-
Ji ²	8500840000	9063040000	9486760000	1,065024 ¹⁰	3,770088 ¹⁰

Perhitungan :

$$\begin{aligned}
 JKT &= \sum x^2 - \frac{(\sum x)^2}{N_T} \\
 &= (30800^2 + 30700^2 + 30700^2 + 31600^2 + 31700^2 + 31900^2 + 32400^2 + 32500^2 + \\
 &\quad 32500^2 + 34200^2 + 34500^2 + 34500^2) - 1,25453^{10} \\
 &= 21800000
 \end{aligned}$$

$$JKP = \frac{(\sum XD)^2}{nD} + \frac{(\sum XE)^2}{nE} + \dots + \frac{(\sum XC)^2}{nC} + \frac{(\sum X)^2}{nT}$$

$$= \left\{ \left(\frac{92200^2}{3} \right) + \left(\frac{95200^2}{3} \right) + \left(\frac{97400^2}{3} \right) + \left(\frac{103200^2}{3} \right) \right\} - 1,25453^{10}$$

$$= 21600000$$

$$JkG = JKT - JKP = 200000$$

$$RJKp = \frac{JKP}{(k-1)} = \frac{21600000}{(4-1)} = 7200000$$

$$RJKd = \frac{JkG}{(nT-1)-(k-1)} = \frac{200000}{(12-1)-(4-1)} = 25000$$

$$F_{hitung} = \frac{RJKp}{RJKd} = \frac{7200000}{25000} = 288$$

UJI BEDA NYATA TERKECIL

Formula	Mean(X)	A	B	C	D	HSD
		30733,3	31600	32466,6	34500	413,53
A	30733,3	0	866,7*	1733,34*	3766,7*	
B	31600		0	866,67*	2900*	
C	32466,6			0	2033,33*	
D	34500				0	

$$RJKd = 25000$$

$$q_{\left(\frac{5\%}{2}; p; db \right)} = 4,53$$

$$n = 3$$

$$HSD(5\%) = q \sqrt{\frac{RJKd}{n}}$$

$$db = 8$$

$$= 413,53$$

Cara Perhitungan Statistik untuk Mengetahui Perbedaan Bermakna Antar Persamaan Regresi

Data kurva baku hidrokortison asetat dalam larutan dapar fosfat pH 7,4 replikasi 1

Konsentrasi (µg/ml)	Serapan (A)	X ²	Y ²	XY
1,0080	0,056	1,0160	0,0031	0,0564
3,0240	0,110	9,1445	0,0121	0,3326
5,0400	0,250	25,4016	0,0625	1,2600
7,5600	0,352	57,1536	0,1239	2,6611
10,0800	0,425	101,6064	0,1806	4,2840
15,1200	0,631	228,6144	0,3982	9,54072
20,1600	0,756	406,4256	0,5715	15,2409
		$\sum x^2 = 829,3622$	$\sum y^2 = 1,3519$	$\sum xy = 33,3758$

Data kurva baku hidrokortison asetat dalam larutan dapar fosfat pH 7,4 replikasi 2

Konsentrasi (µg/ml)	Serapan (A)	X ²	Y ²	XY
1,0080	0,054	1,0160	0,0029	0,0544
3,0240	0,108	9,1445	0,0116	0,3266
5,0400	0,242	25,4016	0,0586	1,2197
7,5600	0,350	57,1536	0,1225	2,6460
10,0800	0,412	101,6064	0,1701	4,1580
15,1200	0,633	228,6144	0,4006	9,5709
20,1600	0,740	406,4256	0,5476	14,9184
		$\sum x^2 = 829,3622$	$\sum y^2 = 1,3108$	$\sum xy = 32,7378$

Data kurva baku hidrokortison asetat dalam larutan dapar fosfat pH 7,4 replikasi 3

Konsentrasi (µg/ml)	Serapan (A)	X ²	Y ²	XY
1,0080	0,058	1,0160	0,0033	0,0585
3,0240	0,110	9,1445	0,0121	0,3326
5,0400	0,255	25,4016	0,1030	1,2852
7,5600	0,321	57,1536	1,1781	2,4268
10,0800	0,422	101,6064	0,3994	4,2538
15,1200	0,632	228,6144	0,5055	9,5558
20,1600	0,752	406,4256	1,3265	15,1603
		$\sum x^2 = 829,3622$	$\sum y^2 = 1,3265$	$\sum xy = 33,0730$

Contoh perhitungan statistik untuk mengetahui perbedaan bermakna antar persamaan regresi.

$$\begin{aligned}SS_1 &= \sum y_1^2 - (\sum xy_1^2) / \sum x_1^2 \\&= 1,351 - (33,3758^2) / 829,3622 \\&= 0,0087\end{aligned}$$

$$\begin{aligned}SS_2 &= \sum y_2^2 - (\sum xy_2^2) / \sum x_2^2 \\&= 1,3108 - (32,7378^2) / 829,3622 \\&= 0,0185\end{aligned}$$

$$\begin{aligned}SS_3 &= \sum y_3^2 - (\sum xy_3^2) / \sum x_3^2 \\&= 1,3265 - (33,0730^2) / 829,3622 \\&= 0,0076\end{aligned}$$

$$\begin{aligned}SS_p &= SS_1 + SS_2 + SS_3 \\&= 0,0087 + 0,0185 + 0,076 \\&= 0,0348\end{aligned}$$

$$\begin{aligned}\sum x_c &= \sum x_1^2 + \sum x_2^2 + \sum x_3^2 \\&= 829,3622 + 829,3622 + 829,3622 \\&= 2488,0866\end{aligned}$$

$$\begin{aligned}\sum y_c &= \sum y_1^2 + \sum y_2^2 + \sum y_3^2 \\&= 1,3519 + 1,3108 + 1,3265 \\&= 3,9924\end{aligned}$$

$$\begin{aligned}\sum xy &= \sum xy_1 + \sum xy_2 + \sum xy_3 \\&= 33,3758 + 32,7378 + 33,0730 \\&= 99,1866\end{aligned}$$

$$\begin{aligned}
 SS_c &= \sum y_c - (\sum xy^2) / \sum x_c \\
 &= 3,9924 - (99,1866^2) / 2488,0866 \\
 &= 0,0384
 \end{aligned}$$

$$\begin{aligned}
 F_{hitung} &= (SS_c - SS_p) / k - 1 \\
 &= \frac{ (SS_p / DF_p) }{ (0,0384 - 0,0348) / 2 } \\
 &= \frac{ (0,0348 / 15) }{ } \\
 &= 0,7759
 \end{aligned}$$

$$F_{tabel} \alpha 0,05 (2, 15) = 3,68$$

Lampiran 8

Contoh Perhitungan Uji Akurasi

Konsentrasi larutan baku induk = 252 µg/ml

Persamaan kurva baku : $y = 0,03741 x + 0,03292$

$$\begin{aligned}
 C_{Teoritis} &= 252 \mu\text{g/ml} \times \frac{0,4}{10} \\
 &= 10,08 \mu\text{g/ml}
 \end{aligned}$$

$$C_{\text{sebenarnya}} = \frac{0,410 - 0,03292}{0,03741} = 10,03 \text{ } \mu\text{g/ml}$$

$$\% \text{ Perolehan kembali} = \frac{C_{\text{sebenarnya}} \times 100\%}{C_{\text{teoritis}}}$$

$$= \frac{10,03 \times 100\%}{10,08} = 99,50 \%$$



Data Penimbangan dan Serapan untuk Penetapan Kadar

Data penimbangan dan serapan untuk penetapan kadar pada *Batch I*

Pengujian	FA ₁		FA ₂		FB ₁		FB ₂	
	W (mg)	Serapan (A)	W (mg)	Serapan (A)	W (mg)	Serapan (A)	W (mg)	Serapan (A)
1	50,2	0,507	50,3	0,501	50,1	0,503	50,3	0,504
2	50,1	0,503	50,3	0,504	50,1	0,501	50,2	0,507
3	50,2	0,510	50,4	0,506	50,1	0,505	50,3	0,502

Data penimbangan dan serapan untuk penetapan kadar pada *Batch II*

Pengujian	FA ₁		FA ₂		FB ₁		FB ₂	
	W (mg)	Serapan (A)	W (mg)	Serapan (A)	W (mg)	Serapan (A)	W (mg)	Serapan (A)
1	50,4	0,508	50,1	0,504	50,6	0,507	50,3	0,505
2	50,3	0,505	50,2	0,506	50,4	0,502	50,4	0,506
3	50,4	0,503	50,2	0,509	50,3	0,507	50,5	0,502

Cara perhitungan *Pooled Variance t Test*

Contoh Cara perhitungan *Pooled Variance t Test* pada uji Penetapan Kadar antar batch pada FA

Pengujian	Kadar
-----------	-------

	<i>Batch I</i>	<i>Batch II</i>
1	100,96	100,71
2	100,32	10,24
3	101,59	101,43
n	3	3
$\bar{x}$	100,956	100,21
SD	0,635	0,516
% kv	0,63	0,51

$$F_{hitung} = \frac{S_1^2}{S_2^2} = \frac{0,32129^2}{0,51565^2} = 0,388$$

$$db\ n = n_1 - 1 = 3 - 1 = 2$$

$$dbd = n_2 - 1 = 3 - 1 = 2$$

$$F_{Tabel\ 0,05\ (2;2)} = 19,00$$

$$F_{hitung}\ (0,388) < F_{Tabel\ 0,05\ (2;2)} = 19,00$$

Kesimpulan : $S_1^2 = S_2^2$, maka berlaku *Pooled Variance t Test*

$$Sp^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2} = \frac{(2 \times 0,32129) + (2 \times 0,51565)}{3 + 3 - 2} = 0,1846$$

$$t_{hitung} = \frac{|\bar{x}_1 - \bar{x}_2|}{\sqrt{Sp^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

$$= \frac{|5,73 - 5,67|}{\sqrt{0,1846 \left[\frac{1}{3} + \frac{1}{3} \right]}} = 2,083$$

$$db = n_1 + n_2 - 2 = 4$$

$$t_{\text{tabel } 0,05 (4)} = 2,776$$

$t_{\text{hitung}} (2,083) < t_{\text{tabel}} (2,776) \rightarrow$ jadi tidak ada perbedaan bermakna

Lampiran 11

**Perhitungan Statistik Untuk Mengetahui Ada Tidaknya Perbedaan Bermakna
(PENETAPAN KADAR SEDIAAN BATCH I)**

Pengujian	Perlakuan				Jumlah
	FA	FB	FC	FD	
1	100,96	100,56	100,24	100,32	
2	100,32	100,08	99,84	100,96	
3	101,59	100,72	100,72	99,13	
n	3	3	3	3	12
RATA-RATA	100,956	100,34	100,31	100,14	
Ji	302,87	301,36	300,80	300,41	-
Ji ²	91730,2369	90817,8496	90480,6400	90246,1681	363274,8946

Perhitungan :

$$JKT = \sum x^2 - \frac{(\sum x)^2}{N_T}$$

$$\begin{aligned}
 &= (100,96^2 + 100,32^2 + 101,59^2 + 100,56^2 + 100,08^2 + 100,39^2 + 100,24^2 + 99,84^2 \\
 &\quad + 100,72^2 + 100,32^2 + 100,96^2 + 99,13^2) - 121024,176 \\
 &= 4,2307
 \end{aligned}$$

$$\begin{aligned}
 JK_p &= \frac{(\sum XD)^2}{nD} + \frac{(\sum XE)^2}{nE} + \dots + \frac{(\sum XC)^2}{nC} + \frac{(\sum X)^2}{nT} \\
 &= \left\{ \left(\frac{302,87^2}{3} \right) + \left(\frac{301,03^2}{3} \right) + \left(\frac{300,80^2}{3} \right) + \left(\frac{300,41^2}{3} \right) \right\} - 121024,176 \\
 &= 1,1926
 \end{aligned}$$

$$JK_G = JKT - JK_p = 4,2307 - 1,1926 = 3,0381$$

$$RJK_p = \frac{JK_p}{(k-1)} = \frac{1,1926}{(4-1)} = 0,5963$$

$$RJK_d = \frac{JK_G}{(nT-1)-(k-1)} = \frac{3,0381}{(12-1)-(4-1)} = 0,3798$$

$$F_{hitung} = \frac{RJK_p}{RJK_d} = \frac{0,5963}{0,3798} = 1,57$$

Lampiran 12

Perhitungan Statistik Untuk Mengetahui Ada Tidaknya Perbedaan Bermakna (PENETAPAN KADAR SEDIAAN BATCH II)

Pengujian	Perlakuan				Jumlah
	FA	FB	FC	FD	
1	100,71	99,53	99,92	100,32	
2	100,24	100,96	101,03	100,39	
3	101,43	101,11	100,72	99,68	
n	3	3	3	3	12
RATA-RATA	100,24	100,53	100,05	100	
Ji	300,71	301,60	300,16	300	-
Ji ²	90426,504	90962,56	9096,026	90000	280485,09

Perhitungan :

$$\begin{aligned}
 JKT &= \sum X^2 - \frac{(\sum X)^2}{N_T} \\
 &= (100,71^2 + 100,24^2 + 101,43^2 + 99,53^2 + 100,96^2 + 101,11^2 + 99,92^2 + 101,03^2 \\
 &\quad + 100,72^2 + 100,32^2 + 100,39^2 + 99,68^2) - 120494,508 \\
 &= 720,413
 \end{aligned}$$

$$JK_p = \frac{(\sum XD)^2}{nD} + \frac{(\sum XE)^2}{nE} + \dots + \frac{(\sum XC)^2}{nC} + \frac{(\sum X)^2}{nT}$$

$$= \left\{ \left(\frac{302,71^2}{3} \right) + \left(\frac{301,60^2}{3} \right) + \left(\frac{300,16^2}{3} \right) + \left(\frac{300^2}{3} \right) \right\} - 120494,508$$

$$= 0,522$$

$$JkG = JKT - JKP = 720,413 - 0,522 = 719,891$$

$$RJKp = \frac{JKP}{(k-1)} = \frac{0,522}{(4-1)} = 0,174$$

$$RJKd = \frac{JkG}{(nT-1)-(k-1)} = \frac{719,891}{(12-1)-(4-1)} = 89,986$$

$$F_{hitung} = \frac{RJKp}{RJKd} = \frac{0,174}{89,986} = 0,0019$$

Lampiran 13

Data Penimbangan dan Serapan Uji Homogenitas

Data penimbangan dan serapan uji homogenitas pada *batch* I

Pengu jian	Tempat Pengambilan	FA		FB		FC		FD	
		W (mg)	Serapa n	W (mg)	Serapa n	W (mg)	Serapa n	W (mg)	Serapa n
1	I	50,1	0,510	50,4	0,507	50,4	0,510	50,5	0,506
	II	50,1	0,509	50,5	0,513	50,3	0,509	50,1	0,507
	III	50,2	0,509	50,5	0,502	50,4	0,511	50,2	0,505
	IV	50,1	0,511	50,5	0,517	50,7	0,506	50,2	0,504
	V	50,1	0,512	50,5	0,504	50,7	0,504	50,2	0,503
2	I	50,4	0,508	50,6	0,501	50,3	0,512	50,3	0,511
	II	50,3	0,504	50,6	0,500	50,5	0,509	50,3	0,512
	III	50,3	0,509	50,5	0,511	50,5	0,504	50,4	0,506
	IV	50,4	0,507	50,6	0,513	50,3	0,505	50,4	0,509
	V	50,3	0,506	50,6	0,510	50,4	0,510	50,4	0,508
3	I	50,3	0,193	50,5	0,506	50,4	0,512	50,5	0,505
	II	50,3	0,196	50,5	0,504	50,4	0,514	50,5	0,507
	III	50,4	0,194	50,4	0,505	50,4	0,509	50,5	0,506
	IV	50,3	0,195	50,5	0,514	50,4	0,508	50,6	0,515
	V	50,3	0,193	50,4	0,505	50,4	0,511	50,7	0,514

Data penimbangan dan serapan uji homogenitas pada *batch* II

Pengu jian	Tempat Pengambilan	FA ₁		FB		FC		FD	
		W (mg)	Serapa n	W (mg)	Serapa n	W (mg)	Serapa n	W (mg)	Serapa n
1	I	50,4	0,505	50,6	0,501	50,1	0,508	50,4	0,504
	II	50,3	0,504	50,3	0,502	50,2	0,511	50,1	0,503
	III	50,3	0,503	50,4	0,514	50,2	0,513	50,1	0,500
	IV	50,3	0,502	50,4	0,517	50,2	0,509	50,3	0,502
	V	50,3	0,506	50,3	0,507	50,3	0,510	50,1	0,505
2	I	50,4	0,509	50,1	0,509	50,1	0,504	50,2	0,501
	II	50,5	0,508	50,1	0,507	50,1	0,510	50,2	0,503
	III	50,5	0,505	50,1	0,510	50,1	0,507	50,3	0,506
	IV	50,4	0,504	50,1	0,508	50,2	0,511	50,1	0,504

	V	50,4	0,507	50,2	0,503	50,1	0,508	50,2	0,502
3	I	50,4	0,504	50,1	0,504	50,3	0,509	50,3	0,504
	II	50,5	0,506	50,1	0,501	50,3	0,508	50,3	0,508
	III	50,4	0,503	50,1	0,507	50,4	0,512	50,3	0,503
	IV	50,4	0,500	50,1	0,508	50,3	0,510	50,1	0,506
	V	50,4	0,511	50,1	0,509	50,3	0,514	50,2	0,501

Lampiran 14

**Perhitungan Statistik Untuk Mengetahui Ada Tidaknya Perbedaan Bermakna
(BERAT SEDIAAN GEL)**

Pengujian	Perlakuan				Jumlah
	FA	FB	FC	FD	
1	1846,3	1846,3	1846,4	1846,5	
2	1846,2	1846,3	1846,4	1846,3	
3	1846,3	1846,4	1846,2	1846,3	
n	3	3	3	3	12
RATA-RATA	1846,26	1846,16	1846,33	1846,40	
Ji	5538,8	5539	5539,1	5539,1	-
Ji ²	30678305,44	30680521	30681628,81	30681628,81	122622084,1

Perhitungan :

$$\begin{aligned}
 JKT &= \sum X^2 - \frac{(\sum X)^2}{N_T} \\
 &= (1846,3^2 + 1846,2^2 + 1846,3^2 + 1846,3^2 + 1846,3^2 + 1846,4^2 + 1846,4^2 + \\
 &\quad 1846,4^2 + 1846,2^2 + 1846,5^2 + 1846,3^2 + 1846,3^2) - 40907361,33 \\
 &= 5,8667
 \end{aligned}$$

$$\begin{aligned}
 JKP &= \frac{(\sum XD)^2}{nD} + \frac{(\sum XE)^2}{nE} + \dots + \frac{(\sum XC)^2}{nC} + \frac{(\sum X)^2}{nT} \\
 &= \left\{ \left(\frac{5538,8^2}{3} \right) + \left(\frac{5539^2}{3} \right) + \left(\frac{5539,1^2}{3} \right) + \left(\frac{5539,1^2}{3} \right) \right\} - 40907361,33 \\
 &= 0,0283
 \end{aligned}$$

$$JkG = JKT - JKP = 5,8667 - 0,0233 = 5,8433$$

$$RJKp = \frac{JKP}{(k-1)} = \frac{0,0283}{(4-1)} = 0,0078$$

$$RJKd = \frac{JkG}{(nT-1)-(k-1)} = \frac{5,84337}{(12-1)-(4-1)} = 0,7304$$

$$F_{hitung} = \frac{RJKp}{RJKd} = \frac{0,0078}{0,7304} = 0,0106$$

Data Nilai Serapan Hasil Uji Penetrasi**FA pengujian 1**

t (jam)	$\sqrt{t}$ (jam)	Serapan (A)	Cn ($\mu\text{g/ml}$)	C _{koreksi} ($\mu\text{g/ml}$)	Q t ($\mu\text{g/cm}^2$)	Ln Qt ($\mu\text{g/cm}^2$)
0	0	-	-	-	-	-
0,5	0,7071	0,068	0,9375	0,9375	15,7269	2,7554
1	1	0,098	1,7392	1,7880	29,9945	3,4010
2	1,4142	0,100	1,7927	1,9321	32,4118	3,4785
4	2	0,121	2,3539	2,5867	43,3930	3,7703
6	2,4495	0,140	2,8617	3,2171	53,9683	3,9884
8	2,8284	0,162	3,4490	3,9534	66,3200	4,1945

FA pengujian 2

t (jam)	$\sqrt{t}$ (jam)	Serapan (A)	Cn ($\mu\text{g/ml}$)	C _{koreksi} ($\mu\text{g/ml}$)	Q t ($\mu\text{g/cm}^2$)	Ln Qt ($\mu\text{g/cm}^2$)
0	0	-	-	-	-	-
0,5	0,7071	0,064	0,8036	0,8306	13,9337	2,6343
1	1	0,097	1,7125	1,7558	29,4543	3,3828
2	1,4142	0,112	2,113	2,2455	37,6693	3,6288
4	2	0,125	2,4608	2,7033	45,3491	3,8144
6	2,4495	0,145	2,9954	3,3661	56,4678	4,0377
8	2,8284	0,163	3,4764	4,0031	67,1538	4,2069

FA pengujian 3

t (jam)	$\sqrt{t}$ (jam)	Serapan (A)	Cn ($\mu\text{g/ml}$)	C _{koreksi} ($\mu\text{g/ml}$)	Q t ($\mu\text{g/cm}^2$)	Ln Qt ($\mu\text{g/cm}^2$)
0	0	-	-	-	-	-
0,5	0,7071	0,066	0,8840	0,8840	14,8295	2,6966
1	1	0,092	1,5789	1,6249	27,2584	3,3054
2	1,4142	0,117	2,2470	2,3753	39,8467	3,6850
4	2	0,128	2,5410	2,7863	46,7414	3,8446
6	2,4495	0,149	3,1023	3,4799	58,3769	4,0669
8	2,8284	0,167	3,5833	4,1225	69,1568	4,2364

FB pengujian 1

t (jam)	$\sqrt{t}$ (jam)	Serapan (A)	Cn ($\mu\text{g/ml}$)	C _{koreksi} ($\mu\text{g/ml}$)	Q t ($\mu\text{g/cm}^2$)	Ln Qt ($\mu\text{g/cm}^2$)
0	0	-	-	-	-	-
0,5	0,7071	0,081	1,2849	1,2849	-	-
1	1	0,104	1,8996	1,9665	-	-
2	1,4142	0,161	3,3428	3,5087	80,9113	4,3934

4	2	0,220	4,9998	5,3398	105,2290	4,6561
6	2,4495	0,265	6,2025	6,8029	139,5482	4,9384
8	2,8284	0,301	7,1646	8,0880	157,0115	5,0562

FB pengujian 2

t (jam)	$\sqrt{t}$ (jam)	Serapan (A)	Cn ($\mu\text{g/ml}$)	C _{koreksi} ($\mu\text{g/ml}$)	Q t ($\mu\text{g/cm}^2$)	Ln Qt ($\mu\text{g/cm}^2$)
0	0	-	-	-	-	-
0,5	0,7071	0,083	1,3383	1,3383	22,4506	3,1113
1	1	0,107	1,9798	2,0495	34,3813	3,5375
2	1,4142	0,160	3,3963	3,5691	59,8732	4,0992
3	2	0,225	5,1334	5,4831	91,9814	4,5216
6	2,4495	0,261	6,0956	6,7127	112,6085	4,7239
8	2,8284	0,305	7,2715	8,2061	137,6609	4,9248

FB pengujian 3

t (jam)	$\sqrt{t}$ (jam)	Serapan (A)	Cn ($\mu\text{g/ml}$)	C _{koreksi} ($\mu\text{g/ml}$)	Q t ($\mu\text{g/cm}^2$)	Ln Qt ($\mu\text{g/cm}^2$)
0	0	-	-	-	-	-
0,5	0,7071	0,087	1,4453	1,4453	24,2456	3,1882
1	1	0,109	2,0332	2,1085	35,3710	2,5659
2	1,4142	0,156	3,2893	3,4705	58,2192	4,0642
4	2	0,228	5,2136	5,5661	93,3738	4,5366
6	2,4495	0,263	6,1490	6,7730	113,6200	4,7329
8	2,8284	0,307	7,3249	8,3304	139,7462	4,9398

FC pengujian 1

t (jam)	$\sqrt{t}$ (jam)	Serapan (A)	Cn ($\mu\text{g/ml}$)	C _{koreksi} ($\mu\text{g/ml}$)	Q t ($\mu\text{g/cm}^2$)	Ln Qt ($\mu\text{g/cm}^2$)
0	0	-	-	-	-	-
0,5	0,7071	0,101	1,8194	1,8194	30,5212	3,4184
1	1	0,131	2,6212	2,7159	45,5604	3,8910
2	1,4142	0,207	4,6524	4,8837	81,9262	4,4058
4	2	0,310	7,4052	7,8788	132,1704	4,8841
6	2,4495	0,351	8,5009	9,3602	157,0215	5,0564
8	2,8284	0,405	9,9441	11,2461	188,6583	5,2399

FC pengujian 2

t (jam)	$\sqrt{t}$ (jam)	Serapan (A)	Cn ($\mu\text{g/ml}$)	C _{koreksi} ($\mu\text{g/ml}$)	Q t ($\mu\text{g/cm}^2$)	Ln Qt ($\mu\text{g/cm}^2$)
0	0	-	-	-	-	-
0,5	0,7071	0,105	1,9263	1,9623	32,3145	3,4755
1	1	0,138	2,8083	2,9086	48,7931	3,8876
2	1,4142	0,201	4,4920	5,0386	84,5248	4,4370
4	2	0,308	7,3517	7,8323	131,3903	4,8782
6	2,4495	0,355	8,6346	9,4981	159,3348	5,0710
8	2,8284	0,408	10,0243	11,3375	190,1916	5,2480

FC pengujian 3

t (jam)	$\sqrt{t}$ (jam)	Serapan (A)	Cn ($\mu\text{g/ml}$)	C _{koreksi} ($\mu\text{g/ml}$)	Q t ($\mu\text{g/cm}^2$)	Ln Qt ($\mu\text{g/cm}^2$)
0	0	-	-	-	-	-
0,5	0,7071	0,108	2,0065	2,0065	33,6599	3,5163
1	1	0,135	2,7281	2,8326	47,5181	3,8611
2	1,4142	0,203	4,5455	4,7921	80,3896	4,3869
4	2	0,304	7,2448	7,7281	129,6423	4,8648
6	2,4495	0,358	8,6880	9,5487	160,1837	5,0763
8	2,8294	0,410	10,0778	11,3909	191,0874	5,2527

FD pengujian 1

t (jam)	$\sqrt{t}$ (jam)	Serapan (A)	Cn ($\mu\text{g/ml}$)	C _{koreksi} ($\mu\text{g/ml}$)	Q t ($\mu\text{g/cm}^2$)	Ln Qt ($\mu\text{g/cm}^2$)
0	0	-	-	-	-	-
0,5	0,7071	0,063	0,8038	0,8038	13,4841	2,6015
1	1	0,094	1,6323	1,6742	28,0854	3,3353
2	1,4142	0,105	1,9263	2,0532	34,4435	3,5393
4	2	0,135	2,7281	2,9553	49,5765	3,9035
6	2,4495	0,168	3,6100	3,9793	66,7545	4,2010
8	2,8294	0,230	5,2670	5,8243	97,7052	4,5819

FD pengujian 2

t (jam)	$\sqrt{t}$ (jam)	Serapan (A)	Cn ($\mu\text{g/ml}$)	C _{koreksi} ($\mu\text{g/ml}$)	Q t ($\mu\text{g/cm}^2$)	Ln Qt ($\mu\text{g/cm}^2$)
0	0	-	-	-	-	-
0,5	0,7071	0,061	0,7503	0,7503	12,5878	2,5328
1	1	0,097	1,7125	1,7516	29,3839	3,3804
2	1,4142	0,102	1,8461	1,9744	33,1214	3,5001
4	2	0,131	2,6211	2,8455	47,7345	3,8657
6	2,4495	0,163	3,4764	3,8373	64,3724	4,1647
8	2,8294	0,235	5,4007	5,9427	99,6021	4,6021

FD pengujian 3

t (jam)	$\sqrt{t}$ (jam)	Serapan (A)	Cn ($\mu\text{g/ml}$)	C _{koreksi} ($\mu\text{g/ml}$)	Q t ($\mu\text{g/cm}^2$)	Ln Qt ($\mu\text{g/cm}^2$)
0	0	-	-	-	-	-
0,5	0,7071	0,068	0,9375	0,9375	15,7269	2,7554
1	1	0,090	1,5254	1,5742	26,4079	3,2737
2	1,4142	0,107	1,9798	2,1081	35,3643	3,5657
4	2	0,138	2,8083	3,0397	50,9923	3,9317
6	2,4495	0,165	3,5299	3,9076	65,5517	4,1828
8	2,8294	0,238	5,4809	6,0420	101,3572	4,6187

Lampiran 16

Perhitungan Statistik Untuk Mengetahui Ada Tidaknya Perbedaan Bermakna Terhadap Jumlah Hidrokortison Asetat yang Terpenetrasi Melalui Membran Kulit Pada Jam ke-8

Pengujian	Perlakuan				Jumlah
	FA	FB	FC	FD	
1	66,3200	135,6798	188,6583	97,7052	
2	67,1538	137,6609	190,1916	99,6021	
3	69,1568	139,7462	191,0874	101,3572	
n	3	3	3	3	12
RATA-RATA	67,5435	137,6950	189,9790	99,5548	
Ji	202,6306	413,0869	569,9373	298,6645	-
Ji ²	41059,1601	170640,7870	324828,5259	89200,4836	625728,9566

Perhitungan :

$$\begin{aligned}
 JKT &= \sum x^2 - \frac{(\sum x)^2}{N_T} \\
 &= (66,3200^2 + 67,1538^2 + 69,1568^2 + 135,6798^2 + 137,6609^2 + 139,7462^2 + \\
 &\quad 188,6583^2 + 190,1916^2 + 191,0874^2 + 97,7052^2 + 99,6021^2 + 101,3572^2) - \\
 &\quad 183600,3154 \\
 &= 24998,19464
 \end{aligned}$$

$$JKp = \frac{(\sum XD)^2}{nD} + \frac{(\sum XE)^2}{nE} + \dots + \frac{(\sum XC)^2}{nC} + \frac{(\sum X)^2}{nT}$$

$$= \left\{ \left(\frac{202,6306^2}{3} \right) + \left(\frac{413,0869^2}{3} \right) + \left(\frac{569,9373^2}{3} \right) + \left(\frac{298,6645^2}{3} \right) \right\} - 418600,3154$$

$$= 24975,98$$

$$JkG = JKT - JKP = 24998,196 - 24975,98 = 22,21004$$

$$RJKp = \frac{JKP}{(k-1)} = \frac{24975,98}{(4-1)} = 8325,33$$

$$RJKd = \frac{JkG}{(nT-1)-(k-1)} = \frac{22,21004}{(12-1)-(4-1)} = 2,78$$

$$F_{hitung} = \frac{RJKp}{RJKd} = \frac{8325,33}{2,78} = 2994,72$$

Selisih Jumlah Jumlah Hidrokortison Asetat yang Terpenetrasi Melalui Membran Kulit Pada Jam ke-8

Formula	Mean(X)	A	B	C	D	HSD
		67,5435	137,6940	189,9790	99, 5548	4,36
A	67,5435	0	70,1505*	122,4355*	32,0113*	
B	137,6940		0	52,2850*	38,1392*	
C	189,9790			0	90,4242*	
D	99, 5548				0	

$$RJK = 2,78$$

$$q_{(5\% / 2; p; db)} = 4,53$$

$$n = 3$$

$$HSD(5\%) = q \sqrt{\frac{RJKd}{n}}$$

$$db = 8$$

$$= 4,36$$

Contoh Cara Perhitungan Hasil Uji Penetrasi

Formula A, pengujian 1, t (jam ke 4)

Persamaan kurva baku : $y = 0,03741 x + 0,03292$

$$\begin{aligned} C_n &= \frac{A - 0,03292}{0,03741} \\ &= \frac{0,121 - 0,03292}{0,03741} = 2,3539 \mu\text{g/ml} \end{aligned}$$

$$\begin{aligned} C_{\text{koreksi}} &= C_n + \sum C_s \left(\frac{5}{96} \right) \\ &= 2,3539 + 4,4694 \times \frac{5}{96} \\ &= 2,5867 \mu\text{g/ml} \end{aligned}$$

$$\begin{aligned} Q + &= \frac{(\text{koreksi } (\mu\text{g/ml}) \times V_{\text{reseptor}} \text{ Cml})}{L \text{ membran } (\text{cm}^2)} \\ &= \frac{2,5867 \times 96}{5,72265} \\ &= 43,3930 \mu\text{g/cm}^2 \end{aligned}$$

$$\begin{aligned} \% \text{ dosis yang berpenetrasi} &= \frac{Q + (6 \text{ jam}) (\mu\text{g/cm}^2)}{\frac{W_{\text{gel}} (\mu\text{g}) \times \text{dosis } (0,2\%)}{L \text{ membran } (\text{cm}^2)}} \times 100\% \\ &= \frac{66,3200}{\frac{1846300 \times 0,0025}{5,72265}} \\ &= 8,22\% \end{aligned}$$

Contoh Cara Perhitungan Hasil Uji Penetrasi (Fluks)

Formula A, t (jam ke 4)

Qt replikasi 1 = 43,3930 $\mu\text{g}/\text{cm}^2$

Qt replikasi 2 = 45,3491 $\mu\text{g}/\text{cm}^2$

Qt replikasi 3 = 46,7414 $\mu\text{g}/\text{cm}^2$

$$\begin{aligned} \text{Qt rata-rata} &= \frac{43,3930 \mu\text{g} / \text{cm}^2 + 45,3491 \mu\text{g} / \text{cm}^2 + 46,7414 \mu\text{g} / \text{cm}^2}{3} \\ &= 45,1611 \mu\text{g}/\text{cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Fluks (J)} &= \frac{dM}{s.dt} \\ &= \frac{45,1611 \mu\text{g} / \text{cm}^2}{4 \text{ jam}} \\ &= 11,2903 \mu\text{g}/\text{cm}^2/\text{jam} \end{aligned}$$

Perhitungan Statistik Untuk Mengetahui Ada Tidaknya Perbedaan Bermakna Terhadap Persen Dosis Hidrokortison Asetat yang Terpenetrasi Melalui Membran Kulit Pada Jam Ke-8

Pengujian	Perlakuan				Jumlah
	FA	FB	FC	FD	

1	8,22	16,82	23,39	12,11	
2	8,33	17,07	23,58	12,35	
3	8,57	17,32	23,69	12,57	
n	3	3	3	3	12
RATA-RATA	8,37	17,07	23,55	12,33	
Ji	25,12	51,21	70,66	37,03	-
Ji ²	631,014	2622,464	4992,836	1371,221	9617,535

Perhitungan :

$$\begin{aligned}
 JKT &= \sum x^2 - \frac{(\sum x)^2}{N_t} \\
 &= (8,22^2 + 8,33^2 + 8,57^2 + 16,82^2 + 17,07^2 + 17,32^2 + 23,39^2 + 23,58^2 + 23,69^2 \\
 &\quad + 12,11^2 + 12,35^2 + 12,57^2) - 2824,9467 \\
 &= 384,234
 \end{aligned}$$

$$\begin{aligned}
 JKP &= \frac{(\sum XD)^2}{nD} + \frac{(\sum XE)^2}{nE} + \dots + \frac{(\sum XC)^2}{nC} + \frac{(\sum X)^2}{nT} \\
 &= \left\{ \left(\frac{25,12^2}{3} \right) + \left(\frac{51,21^2}{3} \right) + \left(\frac{70,66^2}{3} \right) + \left(\frac{37,03^2}{3} \right) \right\} - 2821,9467 \\
 &= 383,895
 \end{aligned}$$

$$JkG = JKT - JKP = 384,234 - 383,895 = 0,338$$

$$RJKp = \frac{JKP}{(k-1)} = \frac{383,895}{(4-1)} = 127,965$$

$$RJKd = \frac{JkG}{(nT-1)-(k-1)} = \frac{0,338}{(12-1)-(4-1)} = 0,0423$$

$$F_{hitung} = \frac{RJKp}{RJKd} = \frac{127,965}{0,0423} = 3025,177$$