

Perhitungan Uji t harga r_{hitung} pada Uji Linieritas SulfametoksazolHarga r_{hitung} replikasi 1 = 0,997Harga r_{hitung} replikasi 2 = 0,995Harga r_{hitung} replikasi 3 = 0,993

$$\bar{x} = 0,995$$

$$SD = \sqrt{\frac{(x - \bar{x})^2}{n - 1}} = \sqrt{\frac{(1 - 0,995)^2}{3 - 1}} = 0,002$$

$$t_{hitung} = \frac{(\bar{x} - \mu)}{\frac{SD}{\sqrt{n}}} = \frac{(0,995 - 1,00)}{\frac{0,002}{\sqrt{3}}} = 4,33$$

Contoh Perhitungan Penimbangan Larutan Kerja Sulfametoksazol
dalam Matriks Tablet

Timbang 5 formula :

Sulfametoksazol	2500 mg
Amilum	300 mg
Talk	125 mg
Magnesium Stearat	75 mg

Campur semua bahan sampai homogen, kemudian timbang berat total, misalnya 3000 mg. Untuk membuat larutan kerja sulfametoksazol dalam matriks tablet, timbang campuran bahan diatas di mana mengandung sulfametoksazol 1000 mg:

$$\frac{1000 \text{ mg}}{2500 \text{ mg}} \times 3000 \text{ mg} = 1200 \text{ mg}$$

Hasil Perolehan Kembali Kadar Sulfametoksazol dalam Sediaan Tablet
secara KLT-Densitometri

Tabel L.1.1. Kurva baku Sulfameroksazol

BAKU	Kadar ($\mu\text{g/ml}$)	Kadar ($\mu\text{g}/2 \mu\text{l}$)	area
	7996	3.2	30569.1
	9995	4	32522.9
	11994	4.8	33989.5
	13993	5.6	35760.1
	15992	6.4	37530.7
	17991	7.2	39301.3
	19990	8	41987.5

$$r = 0,997$$

$$y = 0,917 x + 23113.286$$

Tabel L.1.2. Hasil Perolehan Kembali Kadar Sulfametoksazol dalam Sediaan Tablet secara KLT-Densitometri

Replikasi	Kadar diketahui ($\mu\text{g/ml}$)	Kadar diketahui ($\mu\text{g}/2\mu\text{l}$)	Area	Kadar perolehan kembali ($\mu\text{g/ml}$)
I	12172,8	4,87	34140,4	12018,91
	13187,2	5,27	35262,0	13241,39
	14201,6	5,68	36528,9	14622,24
	15216,0	6,09	36886,2	15011,67
	16230,4	6,49	37849,7	16061,83
	17244,8	6,90	38988,6	17303,17
	18259,2	7,30	39609,1	17979,48
	Matriks	0	0	0
II	11839,2	4,74	33675,40	11512,09
	12825,8	5,13	34850,60	12792,99
	13812,4	5,52	35485,79	13485,31
	14799,0	5,92	36589,96	14688,79
	15785,6	6,31	37485,14	15664,48
	16772,2	6,71	38201,31	16445,07
	17758,8	7,10	39106,49	17431,66
	0	0	0	0

Tabel L.1.2. Hasil Perolehan Kembali Kadar Sulfametoksazol dalam Sediaan Tablet secara KLT-Densitometri (lanjutan)

Replikasi	Kadar diketahui (µg/ml)	Kadar diketahui (µg/2µl)	Area	Kadar perolehan kembali (µg/ml)
III	12007,2	4,80	34311,9	12205,84
	13007,8	5,20	35017,1	12974,46
	14008,4	5,60	36047,6	14097,65
	15009,0	6,00	36791,7	14908,67
	16009,6	6,40	37790,7	15997,53
	17010,2	6,80	38528,3	16801,47
	18010,8	7,20	39768,9	18153,65
	0	0	0	0
IV	11874,0	4,75	33987,1	11851,81
	12863,5	5,14	34615,2	12536,43
	13853,0	5,54	35619,04	13630,54
	14842,5	5,94	36529,87	14623,30
	15832,0	6,33	37527,7	15710,88
	16821,5	6,73	38246,54	16494,37
	17811,0	7,12	39254,37	17592,84
	0	0	0	0
V	11964	4,79	33989,94	11854,92
	12961	5,18	34994,65	12949,99
	13958	5,58	35717,6	13738,00
	14955	5,98	36497,93	14588,48
	15962	6,38	37441,95	15617,41
	16949	6,78	38224,63	16470,49
	17946	7,18	39117,7	17443,88
	0	0	0	0

Tabel L.2. Aktivitas Antibakteri terhadap *Staphylococcus aureus* ATCC 25923 dari Sulfametoksazol dengan Metode Sumuran

Replikasi	Kadar perolehan kembali ($\mu\text{g/ml}$)	Diameter Daerah Hambat Pertumbuhan (mm)		Rata-rata DHP (mm)
		I	II	
I	12018,91	20,75	21,85	21,30
	13241,39	23,55	25,45	24,50
	14622,24	27,82	27,90	27,84
	15011,67	28,10	28,64	28,37
	16061,83	28,95	29,65	29,30
	17303,17	30,85	31,45	31,15
	17979,48	31,00	31,00	31,00
	0	0	0	0
II	11512,09	19,25	21,75	20,50
	12792,99	23,95	25,63	24,79
	13485,31	26,85	27,55	27,20
	14688,79	28,30	28,78	28,54
	15664,48	28,35	29,63	28,99
	16445,07	29,75	30,65	30,20
	17431,66	30,50	30,68	30,59
	0	0	0	0
III	12205,84	20,25	20,75	20,50
	12974,46	24,65	26,65	25,65
	14097,65	26,25	27,65	26,95
	14908,67	28,35	29,35	28,85
	15997,53	29,05	56,55	29,30
	16801,47	29,55	30,35	29,95
	18153,65	30,75	30,55	31,15
	0	0	0	0

Tabel L.2. Aktivitas Antibakteri terhadap *Staphylococcus aureus* ATCC 25923 dari Sulfametoksazol dengan Metode Sumuran (lanjutan)

Replikasi	Kadar perolehan kembali ($\mu\text{g/ml}$)	Diameter Daerah Hambat Pertumbuhan (mm)		Rata-rata DHP (mm)
		I	II	
IV	11851,81	18,95	20,35	19,65
	12536,43	22,85	23,85	23,35
	13630,54	26,65	28,05	27,35
	14623,30	27,05	28,45	27,75
	15710,88	28,95	29,95	29,45
	16494,37	29,50	30,44	29,97
	17592,84	30,64	31,8	31,22
	0	0	0	0
V	11854,92	19,26	19,50	19,38
	12949,99	23,44	23,72	23,58
	13738,00	27,26	27,70	27,48
	14588,48	27,65	27,91	27,78
	15617,41	28,57	28,99	28,78
	16470,49	29,52	30,32	29,92
	17443,88	30,45	30,85	30,65
	0	0	0	0

Contoh Perhitungan Uji t pada Uji Akurasi dan Presisi
Penetapan Kadar Sulfametoksazol tanpa Matriks Tablet

Tabel L.3. Hasil Uji Akurasi dan Presisi Penetapan Kadar Sulfametoksazol tanpa Matriks Tablet secara KLT-Densitometri

Kadar sulfametoksazol (µg/ml)	Kadar diketahui (µg)	Area	Kadar perolehan kembali (µg)	% rekoverti
11994	4,80	33856,7	4,76	99,16
14992,5	6,00	36759,2	6,02	100,33
17991	7,20	39642,2	7,36	102,22
\bar{x}				100,57
SD				1,54
KV				1,54
t_{hitung}				0,64
$t_{tabel, (\alpha=5\%, db n-1)}$				4,303

$$SD = \sqrt{\frac{(x - \bar{x})^2}{n - 1}}$$

$$SD = \sqrt{\frac{(100 - 100,57)^2}{3 - 1}} = 1,54$$

$$KV = \frac{SD}{\bar{x}} \times 100\% = \frac{1,54}{100,57} \times 100\% = 1,54$$

$$t_{hitung} = \frac{(\bar{x} - \mu)}{\frac{SD}{\sqrt{n}}} = \frac{(100,57 - 100)}{\frac{1,54}{\sqrt{3}}} = 0,64$$

Contoh Perhitungan Uji t dan Uji F pada Perbandingan Akurasi dan Presisi
Penetapan Kadar Sulfametoksazol Tanpa Matriks Tablet dan Dengan Matriks Tablet

Tabel L.4. Perbandingan Akurasi dan Presisi Sulfametoksazol Tanpa Matriks dan Dengan Matriks Tablet

Replikasi	Kadar sulfametoksazol (µg/ml)	% rekoverti	
		Tanpa Matriks	Dengan Matriks
I	12000	99,16	99,79
	15000	100,33	98,16
	18000	102,22	99,03
II	12000	98,12	97,05
	15000	98,66	98,20
	18000	98,05	99,30
III	12000	97,26	99,38
	15000	98,56	97,04
	18000	100,42	97,94
\bar{x}		99,20	98,43
SD		1,53	1,00
KV		1,54	1,02
F_{hitung}			2,34
$F_{tabel} (\alpha=5\%(8,8))$			3,44
t_{hitung}			1,19
$t_{tabel} (\alpha=5\%(8))$			2,306

$$t_{hitung} = \frac{(\bar{x}_A - \bar{x}_B)}{\sqrt{\frac{(SD_A^2 + SD_B^2)}{n-1}}} = \frac{(99,20 - 98,43)}{\sqrt{\frac{(1,53^2 + 1,00^2)}{9-1}}} = 1,19$$

$$F_{hitung} = \frac{SD_A^2}{SD_B^2} = \frac{1,53^2}{1,00^2} = 2,34$$

Persamaan Regresi dan Uji F antara Kadar Sulfametoksazol dengan Area untuk Aplikasi Metode Penetapan Kadar Larutan Uji Sulfametoksazol dalam Matriks Tablet

Regression

Variables Entered/Removed(b)

Model	Variables Entered	Variables Removed	Method
1	kadar(a)	.	Enter

a All requested variables entered.

b Dependent Variable: area

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.997(a)	.994	.993	339.40084

a Predictors: (Constant), kadar

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	94183969.651	1	94183969.651	817.619	.000(a)
	Residual	575964.657	5	115192.931		
	Total	94759934.309	6			

a Predictors: (Constant), kadar

b Dependent Variable: area

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	23113.286	466.952		49.498	.000
	kadar	.917	.032	.997	28.594	.000

a Dependent Variable: area

Persamaan Regresi dan Uji F antara Kadar Rata-Rata Sulfametoksazol dalam Matriks Tablet dengan Rata-Rata Diameter Daerah Hambatan Pertumbuhan terhadap *Staphylococcus aureus* ATCC 25923

Regression

Variables Entered/Removed(b)

Model	Variables Entered	Variables Removed	Method
1	kadar(a)	.	Enter

a All requested variables entered.

b Dependent Variable: DHP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.940(a)	.884	.861	1.39740

a Predictors: (Constant), kadar

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	74.279	1	74.279	38.039	.002(a)
	Residual	9.764	5	1.953		
	Total	84.043	6			

a Predictors: (Constant), kadar

b Dependent Variable: DHP

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.208	4.091		.540	.613
	kadar	.002	.000	.940	6.168	.002

a Dependent Variable: DHP

Sertifikat Analisis Sulfametoksazol

S.No.	Tests	Observations	Specifications
01	Description	White crystalline powder	A white or almost white crystalline powder.
02	Solubility	Complies	As per BP
03	Identification: a) Melting point b) IR c) TLC d) Chemical test (Azo dye)	171.0°C Positive Complies Complies	169.0°C – 172.0°C The IR absorption spectrum of Sample Should be concordant with the spectrum of Sulfamethoxazole CRS. As per BP Should give positive reaction of primary Aromatic amines.
04	Appearance of Solution	Complies	Not more intensely coloured than reference solutions Y ₅ , BY ₅ or GY ₅
05	Alidity	0.17ml	Not more than 0.3 ml of 0.1M NaOH
06	Related substances by TLC	Complies	Not more than 0.5%
07	Heavy metals	Less than 20 ppm	Not more than 20 ppm
08	Loss on Drying	0.21%w/w	Not more than 0.5% w/w
09	Sulphated ash	0.04%w/w	Not more than 0.1% w/w
10	Assay	100.13%w/w	Not less than 99.0 % and not more than 101.0 %, calculated on dried basis.
11	Additional tests a) Sieve test b) Bulk density	100.00% < 90 microns -----	----- -----

Remarks : The sample Complies as per BP 2004 specification No. FP/SP/009.
 The Certificate of Analysis has been revised on 22.05.2007 to include the commercial Invoice No.

Date of Release : 21.05.2007 Analysed by : *[Signature]* Q.C. Manager : *[Signature]*
 21.05.07 22.05.07

Factory, Regd. Off. : Plot No. 4 to 10, S.V. Co-op. Industrial Estate, IDA, Jeedimetla, Hyderabad-500 055, India.
 Phones : 23096688, 23098208, Grams : 'VIRCO' Fax : 91-(040) 23096677, 23098205.
 E-mail : hyd1_virchow@sancharnet.in, http://www.virchows.com
 Drug Licence No. 57/HQ/AP/96/B/R, A.P.G.S.T. No. HYR/03/1/1298, C.S.T. No. HYR/03/1/1143, Dt. 1-11-82

Setifikat *Staphylococcus aureus* ATCC 25923

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BALAI BESAR LABORATORIUM KESEHATAN SURABAYA
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 Telp. Tata Usaha : 031-5021451, Kabag. TU / Fax.: 031-5021452 pes. 104, 031-5020388
 E-mail : blksub@idola.net.id



Surabaya, 13 Juli 2007

Hasil Uji Biokimia terhadap bakteri :

- *Staphylococcus aureus* ATCC (25923)

No	Macam-macam Uji	<i>Staph aureus</i> ATCC (25923)
1.	Coagulase	+
2.	Katalase	+
3.	Hemolise	B
6.	Dnase	+
7.	Pengecatan gram	Gram pos coccus Bergerombol

BALAI BESAR LABORATORIUM KESEHATAN
 SURABAYA
 KEPALA SEKSI LABORATORIUM KLINIK

dr. Evelyn Irawan
 Nip.140 206 418

Harga F Tabel*

Harga Distribusi F Tabel pada Derajat Kepercayaan 95 %

V_2	V_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	4,76	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	2,79	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

* Richel, W.A., 1988

Harga r Tabel*

DB	P	
	0,05	0,01
1	0,997	1,00
2	0,950	0,990
3	0,878	0,959
4	0,811	0,917
5	0,754	0,874
6	0,707	0,834
7	0,666	0,798
8	0,632	0,765
9	0,602	0,735
10	0,576	0,708
11	0,553	0,684
12	0,532	0,661
13	0,514	0,641
14	0,497	0,623
15	0,482	0,606
16	0,468	0,590
17	0,456	0,575
18	0,444	0,561
19	0,433	0,549
20	0,432	0,537

* Soedigdo S., Soedigdo P., 1977

TABEL
NILAI t

d.f.	$t_{0,100}$	$t_{0,050}$	$t_{0,025}$	$t_{0,010}$	$t_{0,005}$	d.f.
1.	3,078	6,314	12,706	31,821	63,657	1.
2.	1,886	2,920	4,303	6,965	9,925	2.
3.	1,638	2,353	3,182	4,541	5,841	3.
4.	1,533	2,132	2,776	3,747	4,604	4.
5.	1,476	2,015	2,571	3,365	4,032	5.
6.	1,440	1,943	2,447	3,143	3,707	6.
7.	1,415	1,895	2,365	2,898	3,499	7.
8.	1,397	1,860	2,306	2,896	3,355	8.
9.	1,383	1,833	2,262	2,821	3,250	9.
10.	1,372	1,812	2,282	2,764	3,169	10.
11.	1,363	1,796	2,201	2,718	3,106	11.
12.	1,356	1,782	2,179	2,681	2,055	12.
13.	1,350	1,771	2,160	2,650	3,012	13.
14.	1,345	1,761	2,145	2,624	2,977	14.
15.	1,341	1,753	2,131	2,602	2,947	15.
16.	1,337	1,746	2,120	2,583	2,921	16.
17.	1,333	1,740	2,110	2,567	2,898	17.
18.	1,330	1,734	2,101	2,552	2,878	18.
19.	1,328	1,729	2,093	2,539	2,861	19.
20.	1,325	1,725	2,086	2,528	2,845	20.
21.	1,323	1,721	2,080	2,518	2,831	21.
22.	1,321	1,717	2,074	2,508	2,819	22.
23.	1,319	1,714	2,069	2,500	2,807	23.
24.	1,318	1,711	2,064	2,492	2,797	24.
25.	1,316	1,708	2,060	2,485	2,787	25.
26.	1,315	1,706	2,056	2,479	2,779	26.
27.	1,314	1,703	2,052	2,473	2,771	27.
28.	1,313	1,701	2,048	2,467	2,763	28.
29.	1,311	1,699	2,045	2,462	2,756	29.
30.	1,282	1,645	1,960	2,326	2,576	30.

*Dajan, A., 1994