

LAMPIRAN

Lampiran 1. Perhitungan Uji Kesesuaian Sistem Gliseril Guaiakolat

Pengulangan penyuntikan	RT	Area	TF	K'	N Plates	Rs
1	5782	602988	0,634	3,646	2963,8	7,562
2	5740	606994	0,63	4,44	2955,9	7,536
3	5751	589469	0,634	4,361	2975,9	7,535
4	5728	579478	0,638	4,431	2985,4	7,549
5	5740	588555	0,636	4,607	2968,9	7,576
Rata-rata	5748,2	593496,8	0,6344	4,297	2969,97	7,5516
SD	20,572	11285,263				
Syarat	<% 2	<% 2	< 1.5	2-10	>2000	>2
RSD	0,3579	1,9014867	0,6344	4,297	2974,75	7,5516
Kesimpulan	MS	MS	MS	MS	MS	MS

$$\begin{aligned} \text{Simpangan baku relatif luas area} &= \frac{SD}{x} \times 100\% = \frac{11285,2}{593496,8} \times 100\% \\ &= 1,9\% \end{aligned}$$

Lampiran 2. Perhitungan Uji Kesesuaian Sistem Dekstrometorfan HBr

Pengulangan penyuntikan	RT	Area	TF	K'	N Plates	Rs
1	2684	35731	1,096	2,157	2302,6	8,135
2	2664	35208	1,064	2,524	2285,3	9,664
3	2676	35801	1,077	2,495	2285,1	8,311
4	2660	36035	1,083	2,522	2270,2	9,573
5	2667	35083	1,063	2,606	2320,1	10,235
Rata-rata	2670,2	35571,6	1,0766	2,461	2292,64	9,1836
SD	9,7057	407,34113				
Syarat	<% 2	<% 2	< 1.5	2-10	>2000	>2
RSD	0,3635	1,1451302	1,0766	2,461	2294,31	9,1836
Kesimpulan	MS	MS	MS	MS	MS	MS

$$\begin{aligned}
 \text{Simpangan baku relatif luas area} &= \frac{SD}{x} \times 100\% = \frac{407,3}{35571,6} \times 100\% \\
 &= 1,1\%
 \end{aligned}$$

Lampiran 3. Perhitungan LoD dan LoQ Gliseril Guaiakolat

Gliseril Guaiakolat			
Konsentrasi	Area	Yi	(Yi-Yi)2
5	130796	141316	110672504
10	302831	287131	246486860
15	438726	432946	33407244
20	567611	578761	124324730
25	723406	724576	1369134,01
30	867572	870391	7947324,81
35	1020330	1016206	17006551,2
Jumlah			541214348
S			108242870
SD			10403,9834
LoD			1,070
LoQ			3,568

$$\begin{aligned}
 S &= \frac{\sum (y_i - \bar{y})^2}{N-2} \\
 &= \frac{541214348}{7-2} = 108242870
 \end{aligned}$$

$$\begin{aligned}
 S(y/x) &= \sqrt{S} \\
 &= \sqrt{108242870} \\
 &= 10403,98
 \end{aligned}$$

$$\begin{aligned}
 \text{LoD} &= \frac{3 \times \text{SD}}{b} \\
 &= \frac{3 \times 10403,98}{29163} = 1,07
 \end{aligned}$$

$$\begin{aligned}
 \text{LoQ} &= \frac{10 \times \text{SD}}{b} \\
 &= \frac{10 \times 10403,98}{29163} = 3,56
 \end{aligned}$$

Lampiran 4. Perhitungan LoD dan LoQ Dekstrometorfan HBr

Dekstrometorfan HBr			
Konsentrasi	Area	Yi	(Yi-Yi)2
1	6926	5943,9	964520,41
2	18358	19518	1345368,01
3	33774	33092	465260,41
4	46829	46666	26601,61
5	59402	60240	702076,41
6	72186	73814	2650058,41
7	89190	87388	3247564,41
Jumlah			9401449,67
S			1880289,93
SD			1371,23664
LoD			0,303
LoQ			1,010

$$\begin{aligned}
 S &= \frac{\sum(y_i - \bar{y})^2}{N-2} \\
 &= \frac{9401449,67}{7-2} = 1880289,93
 \end{aligned}$$

$$\begin{aligned}
 S(y/x) &= \sqrt{S} \\
 &= \sqrt{1880289,93} \\
 &= 1371,23
 \end{aligned}$$

$$\begin{aligned}
 \text{LoD} &= \frac{3 \times \text{SD}}{b} \\
 &= \frac{3 \times 1371,23}{13574} = 0,30
 \end{aligned}$$

$$\begin{aligned}
 \text{LoQ} &= \frac{10 \times \text{SD}}{b} \\
 &= \frac{10 \times 1371,23}{13574} = 1,01
 \end{aligned}$$

Lampiran 5. Perhitungan Uji Presisi Gliseril Guaiakolat

Gliseril Guaiakolat		
Konsentrasi (bpj)	Replikasi	Luas Area
20	1	546020
	2	549454
	3	552403
	4	561106
	5	554707
	6	548763
Rata-rata		552075,5
SD		5349,691
RSD		0,969014
Syarat	<2%	
Keterangan	MS	

$$\begin{aligned}
 \text{Simpangan baku relatif luas area} &= \frac{\text{SD}}{x} \times 100\% = \frac{5349,69}{552075,5} \times 100\% \\
 &= 0,96\%
 \end{aligned}$$

Lampiran 6. Perhitungan Uji Presisi Dekstrometorfan HBr

Dekstrometorfan HBr		
Konsentrasi (bpj)	Replikasi	Luas Area
4	1	44696
	2	45687
	3	45628
	4	46492
	5	46829
	6	46414
Rata-rata		45957,67
SD		778,0382
RSD		1,692945
Syarat	< 2%	
Keterangan	MS	

$$\begin{aligned}
 \text{Simpangan baku relatif luas area} &= \frac{SD}{x} \times 100\% = \frac{778,0382}{45957,67} \times 100\% \\
 &= 1,69\%
 \end{aligned}$$

Lampiran 7. Perhitungan Uji Akurasi Gliseril Guaiakolat dan Dekstrometorfan HBr

Rentang Spesifikasi (%)	Zat Aktif	Luas Area	Konsentrasi (bpj)		% Recovery	Rata-rata (%)
			Teoritis	Kadar terukur		
80	Gliseril guaiakolat	464587	16	16,085	100,53	100,82
		467399	16	16,181	101,13	
		465804	16	16,127	100,79	
	Dekstrometorfan HBr	37712	3,2	3,34	104,39	101,76
		33650	3,2	3,041	95,03	
		38358	3,2	3,388	105,87	
100	Gliseril guaiakolat	554707	20	19,175	95,88	98
		565864	20	19,558	97,79	
		580639	20	20,064	100,32	
	Dekstrometorfan HBr	48142	4	4,109	102,72	101,6
		43599	4	3,774	94,35	
		50868	4	4,31	107,74	
120	Gliseril guaiakolat	738900	24	25,491	106,21	100,65
		680491	24	23,488	97,87	
		680477	24	23,488	97,87	
	Dekstrometorfan HBr	58869	4,8	4,899	102,06	99,72
		59248	4,8	4,927	102,64	
		53907	4,8	4,533	94,45	

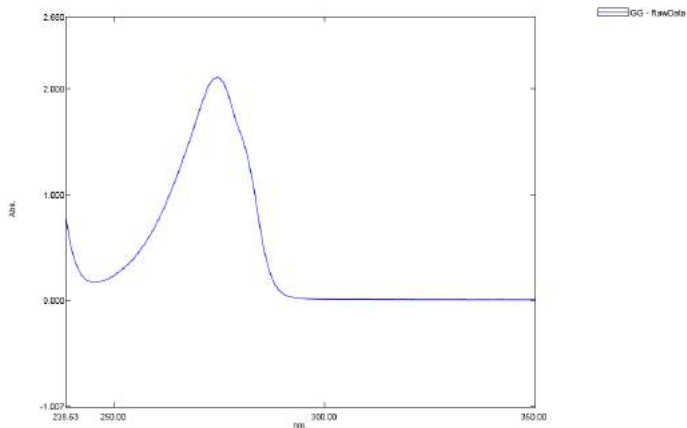
Contoh % recovery :

$$\% \text{ recovery} : \frac{\text{kadar pengukuran}}{\text{kadar teoritis}} \times 100\% = \frac{16,085}{16} \times 100\% = 100,53 \%$$

Lampiran 8. Spektrum Gliseril Guaiakolat

Overlay Spectrum Graph Report

01/05/2002 03:03:54 AM



[Measurement Properties]

Wavelength Range (nm.): 200.00 to 400.00
 Scan Speed: Medium
 Sampling Interval: 0.2
 Auto Sampling Interval: Enabled
 Scan Mode: Single

[Instrument Properties]

Instrument Type: UV-1700 Series
 Measuring Mode: Absorbance
 Slit Width: 1.0 nm
 Light Source Change Wavelength: 340.8 nm
 S/R Exchange: Normal

[Attachment Properties]

Attachment: None

[Operation]

Threshold: 0.0010000
 Points: 4
 InterPolate: Disabled
 Average: Disabled

[Sample Preparation Properties]

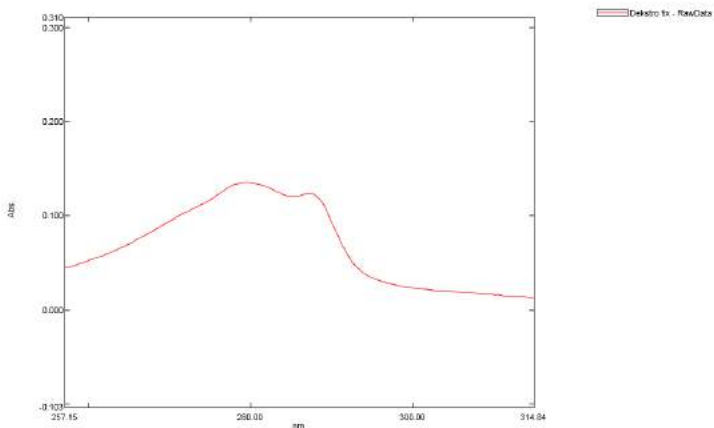
Weight:
 Volume:
 Dilution:
 Path Length:
 Additional Information:

No.	P/V	Wavelength	Abs.	Description
1	●	364.00	0.006	
2	●	359.20	0.007	
3	●	332.60	0.008	
4	●	274.80	2.117	
5	●	218.40	4.000	
6	●	356.20	0.005	
7	●	245.40	0.171	

Lampiran 9. Spektrum Dekstrometorfan HBr

Overlay Spectrum Graph Report

01/05/2002 02:43:16 AM



[Measurement Properties]

Wavelength Range (nm.): 200.00 to 400.00
 Scan Speed: Medium
 Sampling Interval: 0.2
 Auto Sampling Interval: Enabled
 Scan Mode: Single

[Instrument Properties]

Instrument Type: UV-1700 Series
 Measuring Mode: Absorbance
 Slit Width: 1.0 nm
 Light Source Change Wavelength: 340.8nm
 S/R Exchange: Normal

[Attachment Properties]

Attachment: None

[Operation]

Threshold: 0.0010000
 Points: 4
 Interpolate: Disabled
 Average: Disabled

[Sample Preparation Properties]

Weight:
 Volume:
 Dilution:
 Path Length:
 Additional Information:

No.	P/V	Wavelength	Abs.	Description
1	●	356.00	0.007	
2	●	341.20	0.008	
3	●	327.80	0.011	
4	●	323.60	0.011	
5	●	287.20	0.123	
6	●	279.40	0.335	
7	●	225.80	0.464	
8	●	204.60	4.000	
9	●	285.20	0.120	
10	●	247.80	0.036	
11	●	223.80	0.461	
12	●	202.40	-0.549	

Lampiran 10. Kromatogram UKS, LoD dan LoQ

a. Replikasi 1

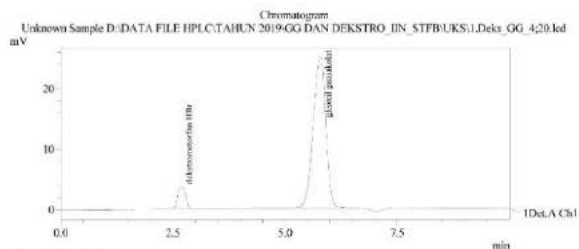
4/5/2019 04:32:15 1 / 1

==== POLITEKNIK KESEHATAN BANDUNG ====

UNIT LABORATORIUM - LABORATORIUM TERPADU

Acquired by : Iin
 Sample Name : Standar Campuran
 Sample ID : Standar dekstro 4 ppm & gg 20 ppm
 Injection Volume : 20
 Data File Name : 1 Deks_GG_4:20.lcd
 Method File Name : OKA_20190124.lcm
 Batch File Name : 20190215.lcb
 Report File Name : Default.rpt
 Data Acquired : 2 Maret 2019

<Chromatogram>



D:\DATA FILE HPLC\TAHUN 2019\GG DAN DEKSTRO_IIN_STFB\UKS\1.Deks_GG_4:20.lcd

Name	Ret. Time	Area	Theoretical Plate#	Resolution	Tailing Factor	HETP	K'
dekstrometorfa	2.684	35731	2302.624	8.135	1.096	115.152	2.157
gliseril guaiakol	5.792	602588	2893.807	7.592	0.634	76.382	3.640

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b. Replikasi 2

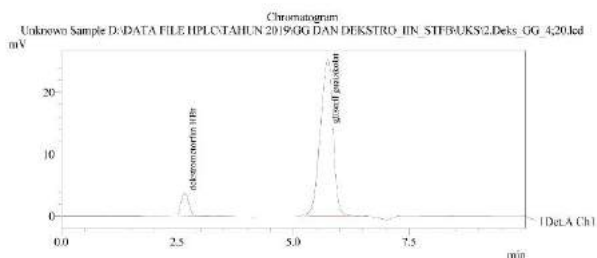
4/5/2019 04:33:54 1 / 1

==== POLITEKNIK KESEHATAN BANDUNG ====

UNIT LABORATORIUM - LABORATORIUM TERPADU

Acquired by : Iin
 Sample Name : Standar Campuran
 Sample ID : Standar dekstro 4 ppm & gg 20 ppm
 Injection Volume : 20
 Data File Name : 2.Deks_GG_4.20.lcd
 Method File Name : OKA_20190124.lcm
 Batch File Name : 20190215.lcb
 Report File Name : Default.rpt
 Data Acquired : 2 Maret 2019

<Chromatogram>



D:\DATA FILE HPLC\TAHUN 2019\GG DAN DEKSTRO_IIN_STFB\UKS\2.Deks_GG_4.20.lcd

Detector A	Name	Ret. Time	Area	Theoretical Plate#	Resolution	Tailing Factor	HETP	k'
	deksrometorfora	2.664	35208	2285.250	9.664	1.064	118.709	2.524
	giseril guaiakol	5.740	606994	2955.871	7.538	0.830	76.692	4.440

D:\DATA FILE HPLC\TAHUN 2019\GG DAN DEKSTRO_IIN_STFB\UKS\2.Deks_GG_4.20.lcd

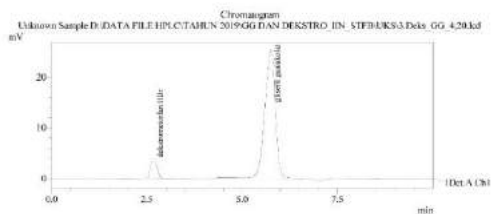
c. Replikasi 3

4/5/2019 04:34:22 1 / 1

===== POLITEKNIK KESEHATAN BANDUNG =====
 UNIT LABORATORIUM - LABORATORIUM TERPADU

Acquired by : Iin
 Sample Name : Standar Campuran
 Sample ID : Standar dekstro 4 ppm & gg 20 ppm
 Injection Volume : 20
 Data File Name : 3 Deks_GG_4.20.lcd
 Method File Name : OKA_20190124.lcm
 Batch File Name : 20190215.lcb
 Report File Name : Default.lor
 Data Acquired : 2 Maret 2019

<Chromatogram>



D:\DATA FILE HPLC\TAHUN 2019\GG DAN DEKSTRO_IIN_STFBUKS\3.Deks_GG_4.20.lcd

Detector A

Name	Ret. Time	Area	Theoretical Plate	Resolution	Tailing Factor	HETP	k'
dekstros(4ppm)	2.676	35801	2285.061	8.311	1.077	116.749	2.499
glikseril gualekol	5.751	559480	2975.903	7.538	0.634	75.915	4.361

D:\DATA FILE HPLC\TAHUN 2019\GG DAN DEKSTRO_IIN_STFBUKS\3.Deks_GG_4.20.lcd

d. Replikasi 4

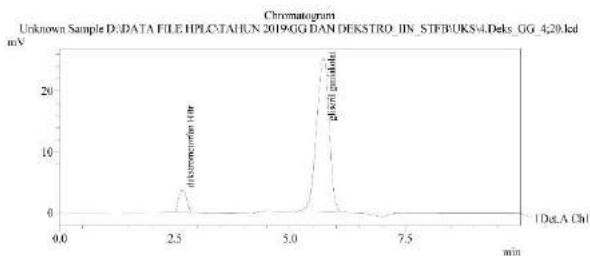
4/5/2019 04:34:42 1/1

==== POLITEKNIK KESEHATAN BANDUNG ====

UNIT LABORATORIUM - LABORATORIUM TERPADU

Acquired by : Iin
 Sample Name : Standar Campuran
 Sample ID :
 Injection Volume : 20
 Data File Name : 4.Deks_GG_4.20.lcd
 Method File Name : OKA_20190124.lcm
 Batch File Name : 20190215.icb
 Report File Name : Default.lor
 Data Acquired : 2 Maret 2019

<Chromatogram>



D:\DATA FILE HPLC\TAHUN 2019\GG DAN DEKSTRO_IIN_STFB\UKS\4.Deks_GG_4.20.lcd

Detector A	Name	Ret. Time	Area	Theoretical Plate#	Resolution	Tailing Factor	HETP	k'
d-glukosa	d-glukosa	2.660	36035	2270.214	9.573	1.063	118.090	2.522
d-kestro	d-kestro	5.728	579478	2965.391	7.549	0.638	75.552	4.431

D:\DATA FILE HPLC\TAHUN 2019\GG DAN DEKSTRO_IIN_STFB\UKS\4.Deks_GG_4.20.lcd

e. Replikasi 5

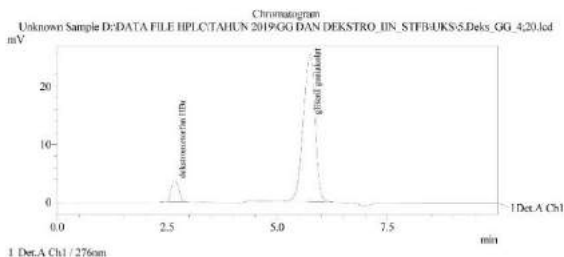
4/5/2019 04:35:03 1 / 1

==== POLITEKNIK KESEHATAN BANDUNG ====

UNIT LABORATORIUM - LABORATORIUM TERPADU

Acquired by : Iin
 Sample Name : Standar Campuran
 Sample ID : Standar dekstro 4 ppm & gg 20 ppm
 Injection Volume : 20
 Data File Name : 5 Dekst. GG_4:20.lcd
 Method File Name : CKA_20190124.lcm
 Batch File Name : 20190215.lcb
 Report File Name : Default.lcr
 Data Acquired : 2 Maret 2019

<Chromatogram>



D:\DATA FILE HPLC\TAHUN 2019\GG DAN DEKSTRO_IIN_STFB\UKS\5.Dekst. GG_4:20.lcd

Detector A	Name	Ret. Time	Area	Theoretical Plate#	Resolution	Tailing Factor	HETP	k'
	deksatrometorol	2.667	35083	2320.073	10.236	1.063	113.630	2.606
	gliseril guaiakol	5.140	58955	2958.992	7.576	0.639	76.195	4.007

D:\DATA FILE HPLC\TAHUN 2019\GG DAN DEKSTRO_IIN_STFB\UKS\5.Dekst. GG_4:20.lcd

Lampiran 11. Alat-alat yang digunakan

 A photograph of a Shimadzu Prominence LC-20AT chromatography system. The system consists of a stack of three main units: a solvent delivery module (pump) at the bottom, a column compartment in the middle, and a detector at the top. A large, dark, cylindrical solvent bottle is mounted on top of the detector unit. The system is placed on a laboratory bench, and various glassware and containers are visible in the background.	KCKT : <i>Shimadzu Prominance</i> <i>LC-20AT</i> Kolom : ODS-3 C₁₈ (150 × 4,6 mm) Detektor : UV Sistem pompa : <i>Low pressure gradient</i> Sistem elusi : Fase terbalik
 A photograph of a UV-Vis Double Beam spectrophotometer. The instrument is a yellow and white benchtop device. It features a large, flat, rectangular sample compartment on the left side and a control panel on the right side. The control panel includes a small digital display screen and several buttons. The instrument is placed on a laboratory bench, and a small poster is visible on the wall behind it.	Spektrofotometer UV-Vis <i>Double Beam</i>



Sonikator



Neraca Analitik