

## LAMPIRAN

## Lampiran 1. Certificate Of Analysis Nifedipin

# calao

CAS NO. 21829-25-4

## CERTIFICATE OF ANALYSIS

<b>Product</b>	NIFEDIPINE MICRONIZED		
<b>Batch No.</b>	SBML/NFD/15001	<b>Mfg. date:</b>	DECEMBER 2014
<b>Quantity</b>	50 KGS	<b>Exp. date:</b>	NOVEMBER 2019

Test	Specifications	Results
Description	Yellow crystalline powder	Complies
Solubility	Practically Insoluble in water, freely soluble in acetone, sparingly soluble in ethanol.	Complies
Identification		
A) Melting point	A. 171°C to 175°C	174.2°C
B) I.R.	B. I.R. spectrum to comply	Complies
C) TLC	C. To comply the test	Complies
D) Colour reaction	D. To comply the test	Complies
Impurity D and other basic Impurities	<b>As per EP</b> Not more than 0.14%	0.09%
Loss on drying	Not more than 0.5% w/w	0.18%
Sulphated ash (w/w)	Not more than 0.1% w/w	0.05%
Related substances	Impurity A: Not more than 0.1% Impurity B: Not more than 0.1% Any other impurity: Not more than 0.1% Total Impurity : Not more than 0.3%	ND ND 0.05% 0.06%
Assay by Titration (on dry basis)	98.0 – 102.0% w/w	99.3 % w/w
The product is conform to <b>EP</b>		

APPROVED



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## Lampiran 2. Hasil serbuk *liquisolid* nifedipine

### 1. Uji sifat alir

Formula	Replikasi 1	Replikasi 2	Replikasi 3	Rata-rata	SD
1	06,41	06,54	06,26	06,40	0,140119
2	05,45	05,17	05,32	05,31	0,140119
3	04,56	04,62	04,11	04,43	0,2787472

### 2. Sudut diam

Formula	Replikasi 1			Replikasi 2			Replikasi 3		
	h (cm)	r (cm)	Sd °	h (cm)	r (cm)	sd°	h (cm)	r (cm)	sd°
1	4	7,45	28,23	4	7,54	27,94	4	7,31	28,68
2	4	7,61	27,72	4	7,54	27,94	4	7,70	27,44
3	4	7,68	27,51	4	7,36	28,51	4	7,40	28,39

Formula	Replikasi 1	Replikasi 2	Replikasi 3	Rata-rata	SD
1	28,23°	27,94°	28,68°	28,28°	0,372871738
2	27,72°	27,94°	27,44°	27,7°	0,250599282
3	27,51°	28,51°	28,39°	28,13°	0,546015873

### Lampiran 3. Hasil uji mutu fisik tablet *liquisolid* nifedipine

#### 1. Kekerasan tablet

No	Formula (kg)		
	1	2	3
1	4,42	5,38	2,15
2	6,34	3,64	3,48
3	5,47	6,57	3,25
4	7,83	3,88	4,38
5	8,81	5,14	4,36
6	5,88	5,35	6,41
7	7,15	3,14	5,38
8	5,0	4,72	3,51
9	4,51	6,66	4,71
10	3,58	5,16	6,29
<b>Rata-rata</b>	5,89	4,96	4,39
<b>SD ±</b>	1,6482	1,1624	1,3619

#### 2. Kerapuhan tablet

Formula	Replikasi 1	Replikasi 2	Replikasi 3	Rata-rata	SD ±
1	0,68%	0,52%	0,62%	0,60%	0,0008
2	0,50%	0,48%	0,49%	0,49%	0,0002
3	0,62%	0,59%	0,54%	0,58%	0,0004

#### 3. Waktu hancur tablet

No	Detik		
	Formula		
	1	2	3
1	51.48	48.43	42.30
2	51.48	53.88	50.00
3	51.48	55.02	49.37
4	54.27	33.42	39.87
5	57.24	51.64	54.31
6	49.78	32.44	27.13
<b>Rata-rata</b>	52.62	45.13	43.83
<b>SD ±</b>	2,6844	10,2281	9,7519

## 4. Keseragaman kandungan

## - Formula 1

No	Serapan	Konsentrasi	Kadar tablet (%)
1	0,673	0,6734	111
2	0,658	0,6581	109
3	0,659	0,6592	109
4	0,593	0,5937	97
5	0,588	0,5879	96
6	0,516	0,5162	82
7	0,495	0,4953	79
8	0,577	0,5771	94
9	0,485	0,4852	77
10	0,541	0,5414	87
Rata-rata			94,1
SD ±			12,7318

## - Formula 2

No	Serapan	Konsentrasi	Kadar tabel (%)
1	0,664	0,6640	110
2	0,595	0,5949	97
3	0,535	0,5349	86
4	0,475	0,4753	75
5	0,488	0,4881	77
6	0,463	0,4632	73
7	0,483	0,4836	76
8	0,518	0,5187	83
9	0,524	0,5241	84
10	0,549	0,5489	89
Rata-rata			85
SD ±			11,4503

## - Formula 3

No	Serapan	Konsentrasi	Kadar tablet (%)
1	0,596	0,5961	98
2	0,541	0,5413	87
3	0,558	0,5581	96
4	0,555	0,5549	90
5	0,562	0,5624	91
6	0,435	0,4350	67
7	0,431	0,4312	67
8	0,449	0,4493	70
9	0,447	0,4474	75
10	0,406	0,4061	62
Rata-rata			79,1
SD±			13,4829

**Lampiran 4. Penetapan kadar tablet *liquisolid***

<b>Formula</b>	<b>Kadar (%)</b>	<b>Kadar (%)</b>	<b>Kadar (%)</b>	<b>Rata-rata kadar %</b>	<b>SD ±</b>
<b>1</b>	96	97	111	101,33	8,3864
<b>2</b>	109	94	97	100	7,9372
<b>3</b>	100,65	91,22	85,85	92,57	7,4922

**Lampiran 5. Hasil uji disolusi tablet****Replikasi 1**

## - Formula 1

Menit	Abs	FP	Kadar (mg)	Factor koreksi	Jumlah obat terkoreksi	Kadar terdisolusi (%)
0	0	0	0	0	0	0
5	0,150	1	2,9682	0,0164	2,9846	58,52
10	0,197	1	5,0019	0,0441	5,0460	98,94
15	0,194	1	4,8721	0,0711	4,9432	95,60
30	0,189	1	4,6557	0,0969	4,7526	93,18
45	0,201	1	5,175	0,1256	5,3006	103,93
60	0,191	1	4,7423	0,1519	4,8942	95,96
Rata – rata						91,02

## - Formula 2

Menit	Abs	FP	Kadar (mg)	Factor koreksi	Jumlah obat terkoreksi	Kadar terdisolusi (%)
0	0	0	0	0	0	0,00
5	0,186	1	4,5259	0,0251	4,551	89,23
10	0,153	1	3,0980	0,0423	3,1403	61,57
15	0,135	1	2,3192	0,0551	2,3743	46,55
30	0,157	1	3,2711	0,0732	3,3443	65,57
45	0,278	1	8,5067	0,1204	8,6271	169,15
60	0,187	1	4,5692	0,1676	4,7368	92,87
Rata-rata						87,49

## - Formula 3

Menit	Abs	FP	Kadar (mg)	Factor koreksi	Jumlah obat terkoreksi	Kadar terdisolusi (%)
0	0	0	0	0	0	0
5	0,187	1	4,5692	0,0253	4,5945	90,08
10	0,175	1	4,05	0,0478	4,0978	80,34
15	0,235	1	6,6461	0,0847	6,7308	131,97
30	0,137	1	2,4057	0,0980	2,5037	49,09
45	0,176	1	4,0932	0,1207	4,2139	82,62
60	0,179	1	4,2230	0,1441	4,3671	85,63
Rata-rata						86,62

**Replikasi 2****Formula 1**

Menit	Abs	FP	Kadar (mg)	Factor koreksi	Jumlah obat terkoreksi	Kadar terdisolusi (%)
0	0	0	0	0	0	0
5	0,145	1	2,7519	0,0152	2,7671	54,25
10	0,167	1	3,7038	0,0357	3,7395	73,32
15	0,161	1	3,4442	0,1063	3,5505	69,61
30	0,144	1	2,7086	0,1618	3,1714	62,18
45	0,172	1	3,9201	0,2421	4,1622	81,61
60	0,203	1	5,2615	0,3499	5,6114	110,02
Rata – rata						75,16

**Formula 2**

Menit	Abs	FP	Kadar (mg)	Factor koreksi	Jumlah obat terkoreksi	Kadar terdisolusi (%)
0	0	0	0	0	0	0
5	0,165	1	3,6173	0,0741	3,6914	72,38
10	0,147	1	2,8384	0,1323	2,9707	58,24
15	0,163	1	3,9230	0,2127	4,1357	81,09
30	0,171	1	3,8769	0,2931	4,1690	81,74
45	0,209	1	5,5211	0,4062	5,9273	116,22
60	0,161	1	3,4442	0,4768	3,921	76,88
Rata – rata						81,09

**Formula 3**

Menit	Abs	FP	Kadar (mg)	Factor koreksi	Jumlah obat terkoreksi	Kadar terdisolusi (%)
0	0	0	0	0	0	0
5	0,163	1	3,5307	0,0723	3,6030	70,64
10	0,176	1	4,0932	0,1562	4,2494	83,32
15	0,201	1	5,175	0,2622	5,4372	106,61
30	0,174	1	4,0067	0,3443	4,351	85,31
45	0,167	1	3,7038	0,4202	4,1240	80,86
60	0,161	1	3,4442	0,4908	3,9350	77,15
Rata – rata						83,98

**Replikasi 3****Formula 1**

Menit	Abs	FP	Kadar (mg)	Factor koreksi	Jumlah obat terkoreksi	Kadar terdisolusi (%)
0	0	0	0	0	0	0
5	0,138	1	2,4490	0,0502	2,4992	49,00
10	0,174	1	4,0067	0,1323	4,1390	81,15
15	0,177	1	4,5961	0,2265	4,8226	94,56
30	0,164	1	3,5740	0,2997	3,8737	75,95
45	0,185	1	4,4826	0,3915	4,8741	95,00
60	0,179	1	4,2230	0,4780	4,7010	92,17
Rata – rata						81,30

**Formula 2**

Menit	Abs	FP	Kadar (mg)	Factor koreksi	Jumlah obat terkoreksi	Kadar terdisolusi (%)
0	0	0	0	0	0	0
5	0,177	1	4,1365	0,0847	4,2212	82,77
10	0,169	1	3,7903	0,1612	3,9515	77,48
15	0,170	1	3,8336	0,2397	4,0733	79,87
30	0,183	1	4,3961	0,3298	4,7259	92,66
45	0,206	1	5,3913	0,4403	5,8316	114,34
60	0,186	1	4,5259	0,5330	5,0589	99,19
Rata – rata						91,05

**Formula 3**

Menit	Abs	FP	Kadar (mg)	Factor koreksi	Jumlah obat terkoreksi	Kadar terdisolusi (%)
0	0	0	0	0	0	0
5	0,168	1	3,7471	0,0768	3,8239	74,97
10	0,171	1	3,8769	0,1562	4,0331	79,08
15	0,167	1	3,7038	0,2321	3,9359	77,17
30	0,166	1	3,6605	0,3071	3,9676	77,79
45	0,183	1	4,3961	0,3972	4,7933	93,98
60	0,201	1	5,1750	0,5032	5,6782	111,33
Rata – rata						85,72



### Hasil Q-60

Formula	Replikasi 1	Replikasi 2	Replikasi 3	Rata-rata	SD $\pm$
1	95,96	110,02	92,17	99,38	9,4045
2	92,87	76,88	99,19	89,64	11,4989
3	85,63	77,15	111,33	91,37	17,7982

### Kontrol +

#### Formula 1

Menit	Abs	FP	Kadar (mg)	Factor koreksi	Jumlah obat terkoreksi	Kadar terdisolusi (%)
0	0	0	0	0	0	0
5	0,138	1	3,7598	0,0187	3,4025	66,71
10	0,131	1	3,1087	0,0358	3,1445	61,65
15	0,140	1	3,4624	0,0548	3,5172	68,96
30	0,133	1	3,1873	0,0723	3,2596	63,91
45	0,137	1	3,3445	0,0906	3,4351	67,35
60	0,145	1	3,6589	0,1107	3,7696	73,91
Rata - rata						67,08

#### Formula 2

Menit	Abs	FP	Kadar (mg)	Factor koreksi	Jumlah obat terkoreksi	Kadar terdisolusi (%)
0	0	0	0	0	0	0
5	0,140	1	3,4624	0,0190	3,4814	68,26
10	0,146	1	3,6982	0,0393	3,7375	73,28
15	0,130	1	3,0694	0,0561	3,1255	61,28
30	0,153	1	3,9733	0,0779	4,0512	79,43
45	0,141	1	3,5017	0,0971	3,5988	70,56
60	0,143	1	3,5803	0,1167	3,6970	72,56
Rata - rata						70,89

#### Formula 3

Menit	Abs	FP	Kadar (mg)	Factor koreksi	Jumlah obat terkoreksi	Kadar terdisolusi (%)
0	0	0	0	0	0	0
5	0,135	1	3,2659	0,0179	3,2838	64,38
10	0,131	1	3,1087	0,0349	3,1436	61,64
15	0,145	1	3,5803	0,0545	3,6348	71,27
30	0,129	1	3,0301	0,0711	3,1012	60,88
45	0,147	1	3,7375	0,0931	3,8306	75,11
60	0,143	1	3,5803	0,1127	3,6930	72,41
Rata - rata						67,61

## Lampiran 6. Perhitungan keseragaman kandungan

Persamaan regresi linier

$$Y = 0,0675x + 0,0684$$

$$R = 0,9969$$

### Formula 1

No	Serapan	Konsentrasi	Kadar tablet (%)
1	0,673	0,6734	111
2	0,658	0,6581	109
3	0,659	0,6592	109
4	0,593	0,5937	97
5	0,588	0,5879	96
6	0,516	0,5162	82
7	0,495	0,4953	79
8	0,577	0,5771	94
9	0,485	0,4852	77
10	0,541	0,5414	87
Rata-rata			94,1

**Contoh perhitungan :**

#### 1. Konsentrasi sampel 1

$$Y = 0,0675x + 0,0684$$

$$0,673 - 0,0684 = 0,0675x$$

$$8,9570 \text{ mg/L} = x$$

#### 2. Kadar (mg) = konsentrasi sampel (mg/L) x factor pengenceran x volume labu (ml)

$$= 8,9570 \text{ mg/L} \times 1 \times 0,05 \text{ L}$$

$$= 0,44785 \text{ mg}$$

#### 3. Kadar sampel (%)

$$= \frac{\text{kadar sampel (mg)}}{44 \text{ mg}} \times 100 \%$$

$$= \frac{0,4478 \text{ mg}}{44 \text{ mg}} \times 100 \%$$

$$= 1,01 \%$$

**4. Jumlah zat aktif (mg) dalam 550 mg tablet**

**5. Jumlah zat** = kadar sampel (%) x 550 mg

$$= 1,01 \% \times 550 \text{ mg}$$

$$= \frac{1,01}{100} \times 550 \text{ mg}$$

$$= 5,5974 \text{ mg}$$

**6. Kadar 550 mg tablet %** =  $\frac{\text{jumlah zat aktif}}{\text{zat aktif}} \times 100\%$

$$= \frac{5,5974 \text{ mg}}{5 \text{ mg}} \times 100\%$$

$$= 111,95 \%$$

**Lampiran 7. Perhitungan disolusi tablet****Formula 1**

Diketahui

Menit	Abs	FP	Kadar (mg)	Factor koreksi	Jumlah obat terkoreksi	Kadar terdisolusi (%)
0	0	0	0	0	0	0
5	0,150	1	2,9682	0,0164	2,9846	58,52
10	0,197	1	5,0019	0,0441	5,0460	98,94
15	0,194	1	4,8721	0,0711	4,9432	95,60
30	0,189	1	4,6557	0,0969	4,7526	93,18
45	0,201	1	5,175	0,1256	5,3006	103,93
60	0,191	1	4,7423	0,1519	4,8942	95,96
Rata – rata						91,02

Berat tablet percobaan 550 mg

$$\text{Jumlah zat nifedipine} = \frac{102 \text{ mg}}{100 \text{ mg}} \times 5 = 5,1 \text{ mg}$$

$$\text{Factor pengenceran} = 1$$

$$\text{Volume media disolusi} = 900 \text{ ml} = 0,9 \text{ L}$$

Perhitungan =

1. Kadar (mg) menit ke 5

$$Y = 0,0208x + 0,0814$$

$$0,150 - 0,0814 = 0,0208x$$

$$3,2980 \text{ mg/L} = x$$

2. Kadar (mg) = 3,2980 mg/L x fp x 0,9 L

$$= 3,2980 \text{ mg/L} \times 1 \times 0,9 \text{ L}$$

$$= 2,9682 \text{ mg}$$

3. Factor koreksi menit ke-5

$$= \left( \frac{5 \text{ ml}}{900 \text{ ml}} \times \text{kadar menit ke-5} \right) + \text{faktor koreksi}$$

$$= \left( \frac{5 \text{ ml}}{900 \text{ ml}} \times 2,9682 \text{ mg} \right) + 0$$

$$= 0,0164$$

4. Jumlah obat terkoreksi

$$= \text{kadar (mg)} + \text{factor koreksi}$$

$$= 2,9682 \text{ mg} + 0,0164$$

$$= 2,9846$$

5. Kadar obat terdisolusi =  $\frac{2,9846 \text{ mg}}{5,1 \text{ mg}} \times 100\%$

$$= 59,69 \%$$

## Lampiran 8. Data kurva baku nifedipine dengan metanol

1. Tabel data konsentrasi dan absorbansi nifedipine dengan pelarut metanol

Konsentrasi (ppm)	Absorbansi
3,14	0,275
4,14	0,358
5,14	0,416
6,14	0,478
7,14	0,543
8,14	0,624

Persamaan regresi linier :  $y = 0,0675x + 0,0684$

$$R = 0,9969$$

2. Hasil OT nifedipine dengan pelarut metanol

Time (Minute)	RawData ...
0.000	0.476
1.000	0.476
2.000	0.476
3.000	0.475
4.000	0.475
5.000	0.475
6.000	0.474
7.000	0.475
8.000	0.474
9.000	0.474
10.000	0.475
11.000	0.474
12.000	0.475
13.000	0.474
14.000	0.475
15.000	0.474
16.000	0.475
17.000	0.474
18.000	0.476
19.000	0.475
20.000	0.476
21.000	0.474
22.000	0.475
23.000	0.474
24.000	0.474
25.000	0.476
26.000	0.475
27.000	0.476
28.000	0.477
29.000	0.475
30.000	0.475

3. Pembuatan kurva baku :

- a. Pembuatan larutan induk dengan cara mengambil 100 mg nifedipine dan ditambahkan dengan metanol 100 ml
- b. Dibuat 6 seri konsentrasi dari larutan induk
- c. Perhitungan pengenceran kurva baku
  - Konsentrasi 3,14 ppm

$$V1.C1 = V2.C2$$

- V1. 1000 ppm = 25 ml. 3,14 ppm  
 V1 = 0,0785 ml/ 78,5 mikrogram/ml
- Konsentrasi 4,14 ppm  
 V1.C1 = V2.C2  
 V1. 1000 ppm = 25ml. 4,14 ppm  
 V1 = 0,1035 ml/ 103,5 mikrogram/ml
  - Konsentrasi 5,14 ppm  
 V1.C1 = V2.C2  
 V1.1000 ppm = 25 ml. 5,14 ppm  
 V1 = 0,1285 ml/ 128,5 mikrogram/ml
  - Konsentrasi 6,14 ppm  
 V1.C1 = V2.C2  
 V1. 1000 ppm = 25 ml. 6,14 ppm  
 V1 = 0,1535 ml/ 153,5 mikrogram/ml
  - Konsentrasi 7,14 ppm  
 V1.C1 = V2.C2  
 V1. 1000 ppm = 25 ml. 7,14 ppm  
 V1 = 0,1785 ml/ 178,5 mikrogram/ml
  - Konsentrasi 8,14 ppm  
 V1.C1 = V2.C2  
 V1. 1000 ppm = 25 ml. 8,14 ppm  
 V1 = 0,2035 ml/203,5 mikrogram/ml

## 4. Hasil data validasi

## a. Presisi

	Column1	Column2	Column3	Column4	Column5
kon	abs	X	x rata-rata	sd	Rsd
5,14	0,417	5,11130981	5,087911353	3%	1%
5,14	0,413	5,05281366			
5,14	0,416	5,09668578			
5,14	0,416	5,09668578			
5,14	0,417	5,11130981			
5,14	0,413	5,05281366			
5,14	0,417	5,11130981			
5,14	0,417	5,11130981			
5,14	0,415	5,08206174			
5,14	0,413	5,05281366			

## b. Akurasi

kon	abs	y-a/b	konsentrasi dalam %	kon rata^	rata^ seluruh
3,14	0,279	3,09319272	104%	103%	104%
3,14	0,277	3,06394465	103%		
3,14	0,277	3,06394465	103%		
5,14	0,417	5,11130981	107%	107%	
5,14	0,419	5,14055789	108%		
5,14	0,419	5,14055789	108%		
7,14	0,545	6,98318654	103%	102%	
7,14	0,541	6,92469039	102%		
7,14	0,541	6,92469039	102%		



## c. LOD dan LOQ

kon	abs	y=a+bx	y-y'	(y-y')^2	x rata-rata
3,14	0,275	0,282201	-0,0072	5,185E-05	5,64
4,14	0,358	0,350581	0,007419	5,504E-05	
5,14	0,416	0,418962	-0,00296	8,773E-06	
6,14	0,478	0,487342	-0,00934	8,728E-05	
7,14	0,543	0,555723	-0,01272	0,0001619	
8,14	0,624	0,624104	-0,0001	1,073E-08	
a	0,067486		sigma	0,0003648	
b	0,068381			9,121E-05	
R	0,998452		sy/x	0,0095502	
			LOD	0,4608868	
			LOQ	1,3966268	
			vx0	2%	

## 5. Tabel data konsentrasi dan absorbansi nifedipine dengan pelarut buffer fosfat pH 8,5

Konsentrasi (ppm)	Absorbansi
12	0,326
14	0,373
16	0,421
18	0,454
20	0,493

Persamaan regresi linier :  $y = 0,0208x + 0,0819$

$$R = 0,9948$$

## 6. Pembuatan kurva baku :

- a. Pembuatan larutan induk dengan cara mengambil 100 mg nifedipine dan ditambahkan dengan buffer fosfat pH 8,5 500 ml
- b. Dibuat 5 seri konsentrasi dari larutan induk
- c. Perhitungan pengenceran kurva baku :
  - Konsentrasi 12 ppm
 
$$V1.C1 = V2.C2$$

$$V1. 1000 \text{ ppm} = 10 \text{ ml. } 12 \text{ ppm}$$

$$V1 = 0,12 \text{ ml/ } 120 \text{ mikrogram/ml}$$
  - Konsentrasi 14 ppm

$$V1.C1 = V2.C2$$

$$V1. 1000 \text{ ppm} = 10 \text{ ml. } 14 \text{ ppm}$$

$$V1 = 0,14 \text{ ml/ } 140 \text{ mikrogram/ml}$$

- Konsentrasi 16 ppm

$$V1.C1 = V2.C2$$

$$V1.1000 \text{ ppm} = 10 \text{ ml. } 16 \text{ ppm}$$

$$V1 = 0,16 \text{ ml/ } 160 \text{ mikrogram/ml}$$

- Konsentrasi 18 ppm

$$V1.C1 = V2.C2$$

$$V1. 1000 \text{ ppm} = 10 \text{ ml. } 18 \text{ ppm}$$

$$V1 = 0,18 \text{ ml/ } 180 \text{ mikrogram/ml}$$

- Konsentrasi 20 ppm

$$V1.C1 = V2.C2$$

$$V1. 1000 \text{ ppm} = 10 \text{ ml. } 20 \text{ ppm}$$

$$V1 = 0,2 \text{ ml/ } 200 \text{ mikrogram/ml}$$

## 7. Hasil OT nifedipine dengan pelarut buffer fosfat

Time ( Minute )	RawData ...
0.000	0.566
1.000	0.566
2.000	0.560
3.000	0.557
4.000	0.553
5.000	0.564
6.000	0.540
7.000	0.545
8.000	0.545
9.000	0.543
10.000	0.537
11.000	0.539
12.000	0.539
13.000	0.535
14.000	0.536
15.000	0.532
16.000	0.533
17.000	0.530
18.000	0.528
19.000	0.526
20.000	0.525
21.000	0.526
22.000	0.524
23.000	0.522
24.000	0.519
25.000	0.521
26.000	0.520
27.000	0.517
28.000	0.513
29.000	0.518
30.000	0.516
31.000	

**Lampiran 9. Data kurva baku uji disolusi kontrol + tanpa penambahan propilen glikol**

1. Tabel data konsentrasi dan absorbansi nifedipine dengan buffer fosfat pH 8,5

konsentrasi (ppm)	Absorbansi
12	0,326
14	0,373
16	0,421
18	0,454
20	0,493

Persamaan regresi linier :  $= 0,0229x + 0,0519$

$$R^2 = 0,9916$$

2. Pembuatan kurva baku :

- a. Pembuatan larutan induk dengan cara mengambil 100 mg nifedipine dan ditambahkan dengan buffer fosfat pH 8,5 500 ml.
- b. Dibuat 5 seri konsentrasi dari larutan induk.
- c. Perhitungan pengenceran kurva baku :

- Konsentrasi 12 ppm

$$V1.C1 = V2.C2$$

$$V1. 1000 \text{ ppm} = 10 \text{ ml. } 12 \text{ ppm}$$

$$V1 = 0,12 \text{ ml/ } 120 \text{ mikrogram/ml}$$

- Konsentrasi 14 ppm

$$V1.C1 = V2.C2$$

$$V1. 1000 \text{ ppm} = 10 \text{ ml. } 14 \text{ ppm}$$

$$V1 = 0,14 \text{ ml/ } 140 \text{ mikrogram/ml}$$

- Konsentrasi 16 ppm

$$V1.C1 = V2.C2$$

$$V1.1000 \text{ ppm} = 10 \text{ ml. } 16 \text{ ppm}$$

$$V1 = 0,16 \text{ ml/ } 160 \text{ mikrogram/ml}$$

- Konsentrasi 18 ppm

$$V1.C1 = V2.C2$$

$$V1. 1000 \text{ ppm} = 10 \text{ ml. } 18 \text{ ppm}$$

$$V1 = 0,18 \text{ ml/ } 180 \text{ mikrogram/ml}$$

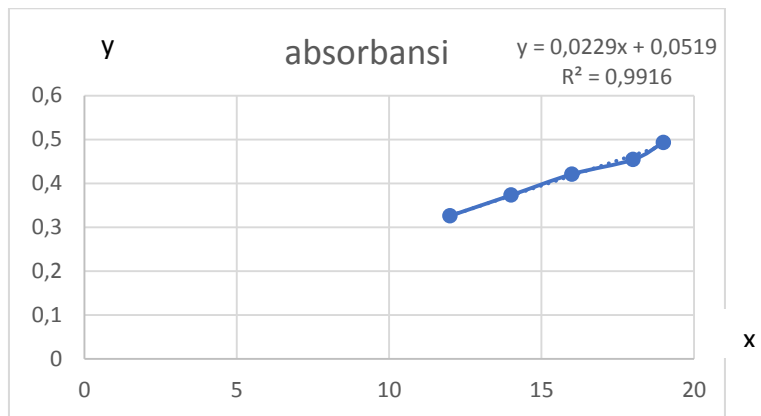
- Konsentrasi 20 ppm

$$V1.C1 = V2.C2$$

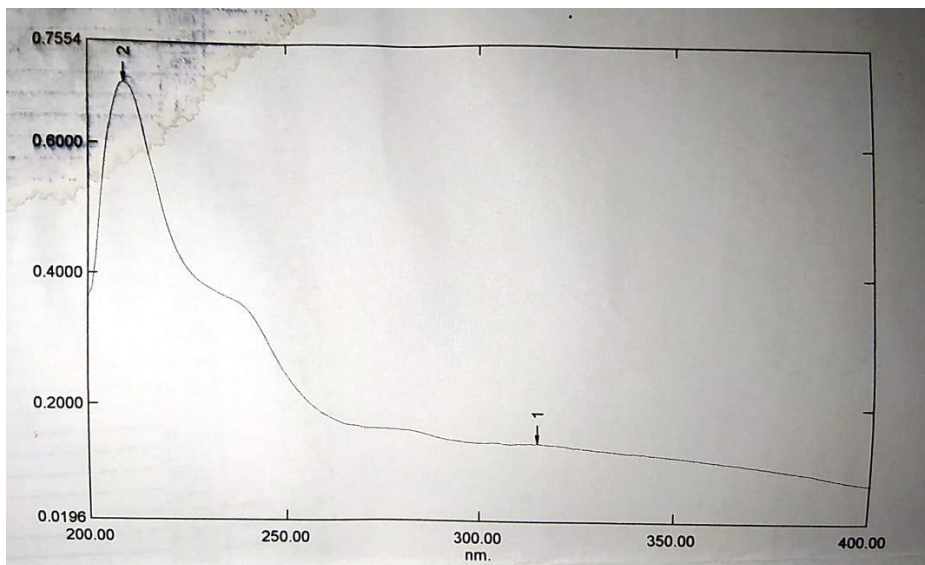
$$V1. 1000 \text{ ppm} = 10 \text{ ml. } 20 \text{ ppm}$$

$$V1 = 0,2 \text{ ml/ } 200 \text{ mikrogram/ml}$$

### 3. Gambar kurva baku control +



### 4. Hasil panjang gelombang nifedipine control +



## 5. Hasil OT control + tanpa propilen glikol

Time ( Minute )	RawData ...
0.000	0.503
1.000	0.503
2.000	0.500
3.000	0.500
4.000	0.499
5.000	0.497
6.000	0.498
7.000	0.498
8.000	0.495
9.000	0.490
10.000	0.493
11.000	0.492
12.000	0.489
13.000	0.488
14.000	0.488
15.000	0.486
16.000	0.482
17.000	0.483
18.000	0.483
19.000	0.483
20.000	0.481
21.000	0.480
22.000	0.480
23.000	0.479
24.000	0.479
25.000	0.477
26.000	0.476
27.000	0.475
28.000	0.474
29.000	0.473
30.000	0.472

## Lampiran 10. Hasil Uji Statistik

### 1. Sifat alir

#### a. Waktu alir

#### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
FORMULA	.176	9	.200	.931	9	.488

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

#### Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
FORMULA	Based on Mean	1.953	2	6	.222
	Based on Median	.242	2	6	.793
	Based on Median and with adjusted df	.242	2	2.916	.800
	Based on trimmed mean	1.741	2	6	.253

#### ANOVA

FORMULA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.862	2	2.931	75.181	.000
Within Groups	.234	6	.039		
Total	6.096	8			

#### Multiple Comparisons

Dependent Variable: FORMULA

Tukey HSD

(I) UJI SIFAT ALIR	(J) UJI SIFAT ALIR	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
FORMULA 1	FORMULA 2	1.09000*	.16122	.001	.5953	1.5847
	FORMULA 3	1.97333*	.16122	.000	1.4787	2.4680
FORMULA 2	FORMULA 1	-1.09000*	.16122	.001	-1.5847	-.5953
	FORMULA 3	.88333*	.16122	.004	.3887	1.3780
FORMULA 3	FORMULA 1	-1.97333*	.16122	.000	-2.4680	-1.4787
	FORMULA 2	-.88333*	.16122	.004	-1.3780	-.3887

\*. The mean difference is significant at the 0.05 level.

## b. Sudut diam

### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
FORMULA	.145	9	.200 <sup>*</sup>	.950	9	.693

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

### Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
FORMULA	Based on Mean	1.557	2	6	.285
	Based on Median	.207	2	6	.818
	Based on Median and with adjusted df	.207	2	3.303	.823
	Based on trimmed mean	1.388	2	6	.319

### ANOVA

FORMULA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.552	2	.276	1.658	.267
Within Groups	1.000	6	.167		
Total	1.552	8			

## 2. Sifat mutu fisik tablet

### a. Keseragaman kandungan

#### Test of Homogeneity of Variances (oneway)

		Levene Statistic	df1	df2	Sig.
FORMULA	Based on Mean	.885	2	27	.424
	Based on Median	.924	2	27	.409
	Based on Median and with adjusted df	.924	2	23.367	.411
	Based on trimmed mean	.930	2	27	.407

**ANOVA**

FORMULA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	984.467	2	492.233	3.109	.061
Within Groups	4275.000	27	158.333		
Total	5259.467	29			

**b. Kekerasan tablet****Tests of Normality**

FORMULA	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
	.179	18	.134	.900	18	.057

a. Lilliefors Significance Correction

**Test of Homogeneity of Variances**

Formula	Levene Statistic	df1	df2	Sig.
Based on Mean	1.357	2	27	.274
Based on Median	1.344	2	27	.278
Based on Median and with adjusted df	1.344	2	22.602	.281
Based on trimmed mean	1.347	2	27	.277

**ANOVA**

Formula

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15.021	2	7.510	4.200	.026
Within Groups	48.282	27	1.788		
Total	63.302	29			

**POST HOCK TEST****Multiple Comparisons**

Dependent Variable: Formula

	(I) UJI KEKERASAN	(J) UJI KEKERASAN	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Tukey HSD	Formula 1	Formula 2	1.495000	.598032	.048	.01223	2.97777
		Formula 3	1.507000	.598032	.046	.02423	2.98977
	Formula 2	Formula 1	-.598032	.598032	.048	-2.97777	-.01223
		Formula 3	.012000	.598032	1.000	-1.47077	1.49477
	Formula 3	Formula 1	-.598032	.598032	.046	-2.98977	-.02423
		Formula 2	-.012000	.598032	1.000	-1.49477	1.47077
Dunnett T3	Formula 1	Formula 2	1.495000	.592435	.069	-.10151	3.09151
		Formula 3	1.507000	.676123	.110	-.26957	3.28357
	Formula 2	Formula 1	-1.495000	.592435	.069	-3.09151	.10151
		Formula 3	.012000	.514592	1.000	-1.35633	1.38033
	Formula 3	Formula 1	-1.507000	.676123	.110	-3.28357	.26957
		Formula 2	-.012000	.514592	1.000	-1.38033	1.35633

\*. The mean difference is significant at the 0.05 level.



### c. Kerapuhan tablet

#### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
FORMULA	.182	9	.200 <sup>*</sup>	.924	9	.423

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

#### Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
FORMULA Based on Mean	4.118	2	6	.075
Based on Median	2.048	2	6	.210
Based on Median and with adjusted df	2.048	2	2.422	.302
Based on trimmed mean	3.963	2	6	.080

#### ANOVA

FORMULA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.025	2	.013	5.325	.047
Within Groups	.014	6	.002		
Total	.039	8			

#### Multiple Comparisons

Dependent Variable: FORMULA

Tukey HSD

(I) KERAPUHAN TABLET	(J) KERAPUHAN TABLET	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
FORMULA 1	FORMULA 2	.11667	.03963	.058	-.0049	.2383
	FORMULA 3	.01000	.03963	.966	-.1116	.1316
FORMULA 2	FORMULA 1	-.11667	.03963	.058	-.2383	.0049
	FORMULA 3	-.10667	.03963	.080	-.2283	.0149
FORMULA 3	FORMULA 1	-.01000	.03963	.966	-.1316	.1116
	FORMULA 2	.10667	.03963	.080	-.0149	.2283

#### d. Waktu hancur tablet

##### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
FORMULA	.111	18	.200	.952	18	.462

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

##### Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
FORMULA	Based on Mean	.584	2	15	.570
	Based on Median	.486	2	15	.624
	Based on Median and with adjusted df	.486	2	13.798	.625
	Based on trimmed mean	.583	2	15	.570

##### ANOVA

FORMULA	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	267.236	2	133.618	17.247	.000
Within Groups	116.207	15	7.747		
Total	383.443	17			

##### Multiple Comparisons

Dependent Variable: FORMULA

Tukey HSD

(I) UJI_WAKTU HANCUR	(J) UJI_WAKTU HANCUR	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
FORMULA 1	FORMULA 2	8.53000	1.60697	.000	4.3559	12.7041
	FORMULA 3	7.76333	1.60697	.001	3.5893	11.9374
FORMULA 2	FORMULA 1	-8.53000	1.60697	.000	-12.7041	-4.3559
	FORMULA 3	-.76667	1.60697	.883	-4.9407	3.4074
FORMULA 3	FORMULA 1	-7.76333	1.60697	.001	-11.9374	-3.5893
	FORMULA 2	.76667	1.60697	.883	-3.4074	4.9407

\*. The mean difference is significant at the 0.05 level.

### 3. Kadar tablet *liquisolid* nifedipine

#### a. Kadar nifedipine menggunakan pelarut methanol

##### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
FORMULA	.215	9	.200	.943	9	.612

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

### Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
FORMULA	Based on Mean	.086	2	6	.919
	Based on Median	.000	2	6	1.000
	Based on Median and with adjusted df	.000	2	5.216	1.000
	Based on trimmed mean	.070	2	6	.933

### ANOVA

FORMULA	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	133.671	2	66.835	1.058	.404
Within Groups	378.934	6	63.156		
Total	512.605	8			

### b. Uji disolusi tablet

#### Tests of Normality

FORMULA	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
FORMULA	.161	9	.200	.946	9	.649

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

### Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
FORMULA	Based on Mean	1.664	2	6	.266
	Based on Median	.166	2	6	.851
	Based on Median and with adjusted df	.166	2	3.759	.853
	Based on trimmed mean	1.417	2	6	.313

### ANOVA

FORMULA	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	279.910	2	139.955	.711	.528
Within Groups	1181.136	6	196.856		
Total	1461.046	8			