BAB V
KESIMPULAN DAN SARAN

A. Kesimpulan

Berdasarkan dari hasil penelitian yang telah dilakukan dapat diperoleh kesimpulan bahwa:

Pertama, Solid Lipid Nanoparticles (SLN) mirisetin dapat dibuat menggunakan metode emulsifikasi.

Kedua, variasi konsentrasi lipid padat golongan gliserida dapat berpengaruh terhadap ukuran partikel, stabilitas dan efisiensi penjerapan SLN mirisetin.

Ketiga, stabilitas SLN mirisetin setelah penyimpanan menunjukkan kurang stabil dengan nilai zeta potensial yang didapat -14,01 mV.

B. Saran

Penelitian ini masih banyak kekurangan, maka perlu dilakukan penelitian lebih lanjut mengenai :

Pertama, perlu dilakukan analisis *screening surfaktan* dengan menggunakan kombinasi surfaktan.

Kedua, perlu dilakukan analisis analisis morfologi menggunakan SEM maupun TEM.

Ketiga, perlu dilakukan uji kelarutan kinetik dan uji disolusi untuk mengetahui kelarutan SLN zat aktif.

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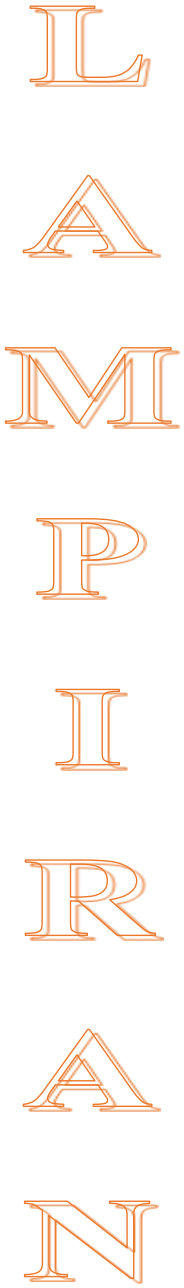
L
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Lampiran 1. Sertifikat analisis mirisetin

TOCRIS
a bio-techne brand

Print Date: Jul 20th 2017

Certificate of Analysis

www.tocris.com

Product Name: **Myricetin** **Catalog No.: 6189** **Batch No.: 1**

CAS Number: 529-44-2

IUPAC Name: 3,5,7-Trihydroxy-2-(3,4,5-trihydroxyphenyl)-4H-1-benzopyran-4-one

1. PHYSICAL AND CHEMICAL PROPERTIES

Batch Molecular Formula: $C_{15}H_{10}O_8 \cdot H_2O$

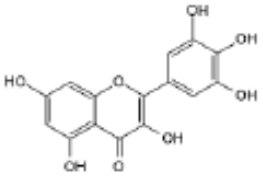
Batch Molecular Weight: 336.26

Physical Appearance: Yellow solid

Solubility: DMSO to 100 mM
ethanol to 50 mM

Storage: Store at -20°C

Batch Molecular Structure:



2. ANALYTICAL DATA

HPLC: Shows 97.7% purity

^{1}H NMR: Consistent with structure

Mass Spectrum: Consistent with structure

Microanalysis:

	Carbon	Hydrogen	Nitrogen
Theoretical	53.58	3.6	
Found	53.6	3.57	

TOCRIS
a biotechne brand

Print Date: Jul 20th 2017

Product Information

www.tocris.com

Product Name: Myricetin
Catalog No.: 6189
Batch No.: 1

CAS Number: 529-44-2

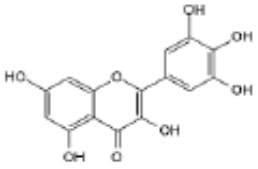
IUPAC Name: 3,5,7-Trihydroxy-2-(3,4,5-trihydroxyphenyl)-4H-1-benzopyran-4-one

Description:
Irreversible TrxR inhibitor (IC_{50} = 0.62 µM). Exhibits concentration-, time- and NADH-dependent TrxR inhibition. Results in the oxidation of Trx and reduced TrxR activity in vitro in addition to the accumulation of cells in sub-G_1 phase. Reduces neoplastic transformation and induces cell death in cancer cell lines. Chemotherapeutic.

Physical and Chemical Properties:
Batch Molecular Formula: $C_{15}H_{10}O_8.H_2O$
Batch Molecular Weight: 336.26
Physical Appearance: Yellow solid

Minimum Purity: >97%

Batch Molecular Structure:



Storage: Store at -20°C
CAUTION - This product is light sensitive and we recommend that the solid material and any solutions obtained are protected from exposure to light.

Solubility & Usage Info:
DMSO to 100 mM
ethanol to 50 mM

Stability and Solubility Advice:
Some solutions can be difficult to obtain and can be encouraged by rapid stirring, sonication or gentle warming (in a 45-60°C water bath).
Information concerning product stability, particularly in solution, has rarely been reported and in most cases we can only offer a general guide. Our standard recommendations are:
SOLIDS: Provided storage is as stated on the product label and the vial is kept tightly sealed, the product can be stored for up to 6 months from date of receipt.
SOLUTIONS: We recommend that stock solutions, once prepared, are stored aliquoted in tightly sealed vials at -20°C or below and used within 1 month. Wherever possible solutions should be made up and used on the same day.

References:
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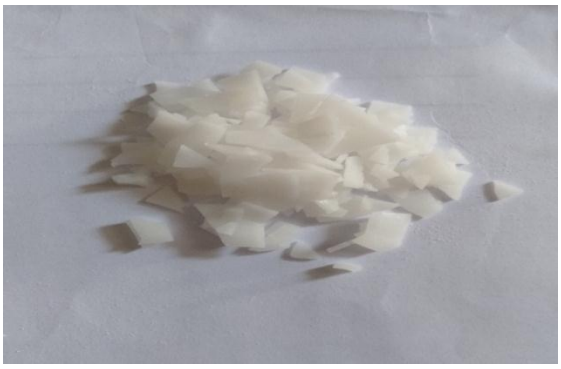
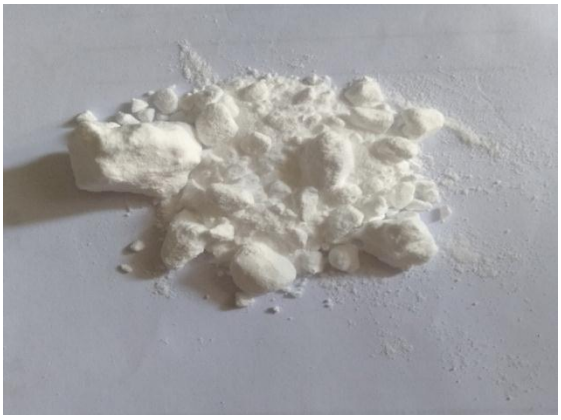
Lampiran 2. Gambar bahan - bahan

a. Foto serbuk mirisetin

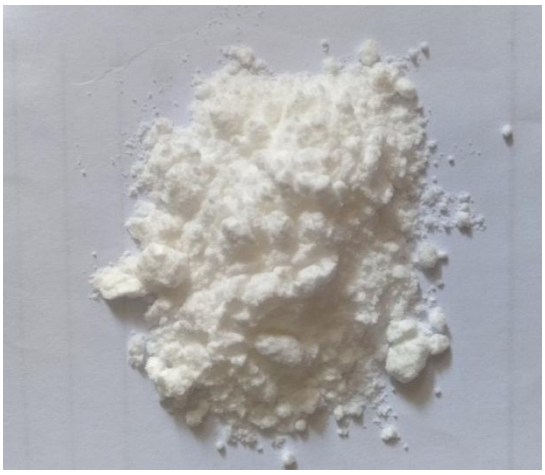
b. Foto GMS



c. Foto presirol



d. Foto compritol



e. Foto tween

Lampiran 3. Screening lipid

Lampiran 4. Lipid terpilih

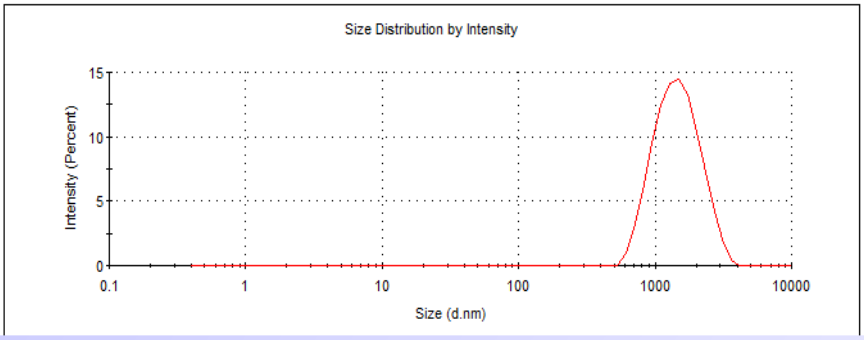
Lampiran 5. Hasil Ukuran partikel

Formula 1

Sample Name:	SLN MIRISETIN RIRIN GMS 2% 3			
SOP Name:	mansettings.nano			
File Name:	NANOFITOSOM.dts	**Dispersant Name:**	Water	
Record Number:	90	**Dispersant RI:**	1,330	
Material RI:	1,52	**Viscosity (cP):**	0,8872	
Material Absorbtion:	0,100	**Measurement Date and Time:**	26 April 2019 15:38:56	
Temperature (°C):	25,0	**Duration Used (s):**	60	
Count Rate (kcps):	428,1	**Measurement Position (mm):**	1,05	
Cell Description:	Disposable sizing cuvette	**Attenuator:**	3	

		Size (d.nm):	**% Intensity:**	**St Dev (d.nm):**
Z-Average (d.nm): 1278	**Peak 1:**	1530	100,0	571,5
PdI: 0,173	**Peak 2:**	0,000	0,0	0,000
Intercept: 0,899	**Peak 3:**	0,000	0,0	0,000

Result quality : Good

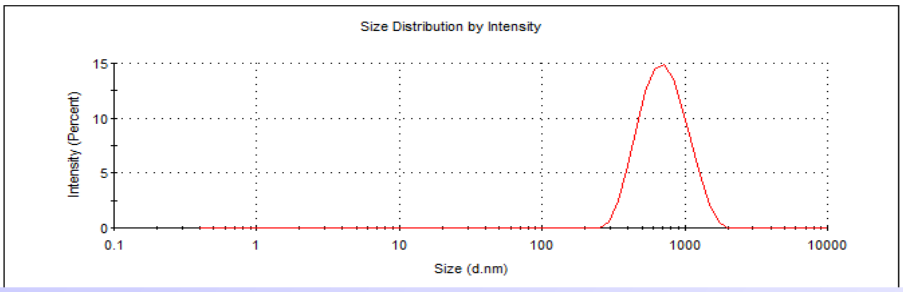


Formula 7

Sample Name:	SLN MIRISETIN RIRIN PRESIROL 2% 1		
SOP Name:	mansettings.nano		
File Name:	NANOFITOSOM.dts	**Dispersant Name:**	Water
Record Number:	94	**Dispersant RI:**	1,330
Material RI:	1,52	**Viscosity (cP):**	0,8872
Material Absorbtion:	0,100	**Measurement Date and Time:**	26 April 2019 15:57:06
Temperature (°C):	25,0	**Duration Used (s):**	60
Count Rate (kcps):	486,0	**Measurement Position (mm):**	1,05
Cell Description:	Disposable sizing cuvette	**Attenuator:**	3

			Size (d.nm):	**% Intensity:**	**St Dev (d.nm):**
Z-Average (d.nm):	634,2	**Peak 1:**	746,7	100,0	273,8
PdI:	0,163	**Peak 2:**	0,000	0,0	0,000
Intercept:	0,886	**Peak 3:**	0,000	0,0	0,000

Result quality : Good

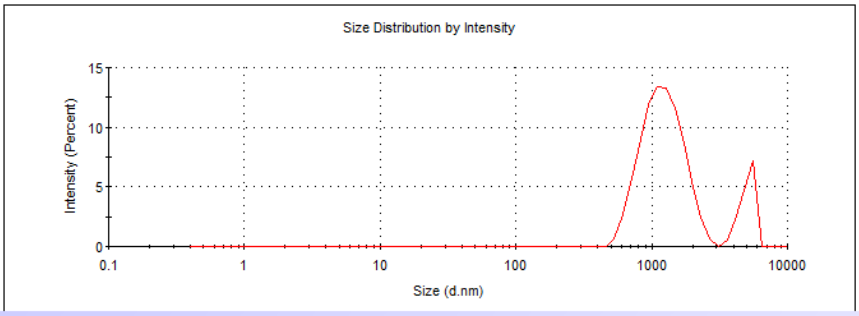


Formula 8

Sample Name:	SLN MIRISETIN RIRIN PRESIROL 4% 2		
SOP Name:	mansettings.nano		
File Name:	NANOFITOSOM.dts	**Dispersant Name:**	Water
Record Number:	92	**Dispersant RI:**	1,330
Material RI:	1,52	**Viscosity (cP):**	0,8872
Material Absorbtion:	0,100	**Measurement Date and Time:**	26 April 2019 15:48:40
Temperature (°C):	25,0	**Duration Used (s):**	70
Count Rate (kcps):	214,8	**Measurement Position (mm):**	0,85
Cell Description:	Disposable sizing cuvette	**Attenuator:**	2

			Size (d.nm):	**% Intensity:**	**St Dev (d.nm):**
Z-Average (d.nm):	1480	**Peak 1:**	1253	85,4	426,6
PdI:	0,392	**Peak 2:**	5034	14,6	588,7
Intercept:	0,920	**Peak 3:**	0,000	0,0	0,000

Result quality : Good

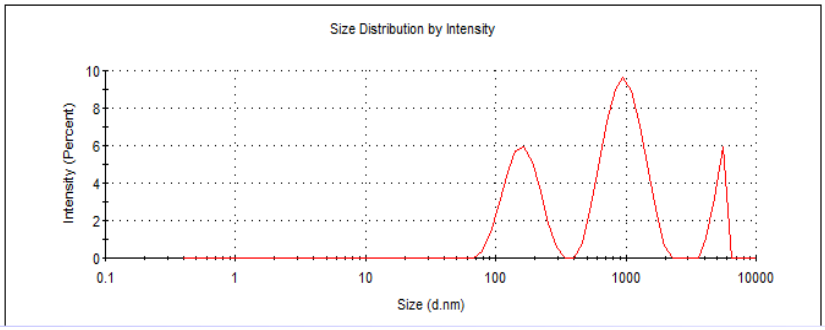


Formula 9

Sample Name:	SLN MIRISETIN RIRIN PRESIROL 6% 1			
SOP Name:	mansettings.nano			
File Name:	NANOFITOSOM.dts	**Dispersant Name:**	Water	
Record Number:	85	**Dispersant RI:**	1,330	
Material RI:	1,52	**Viscosity (cP):**	0,8872	
Material Absorbtion:	0,100	**Measurement Date and Time:**	26 April 2019 15:23:18	
Temperature (°C):	25,0	**Duration Used (s):**	80	
Count Rate (kcps):	158,0	**Measurement Position (mm):**	1,05	
Cell Description:	Disposable sizing cuvette	**Attenuator:**	2	

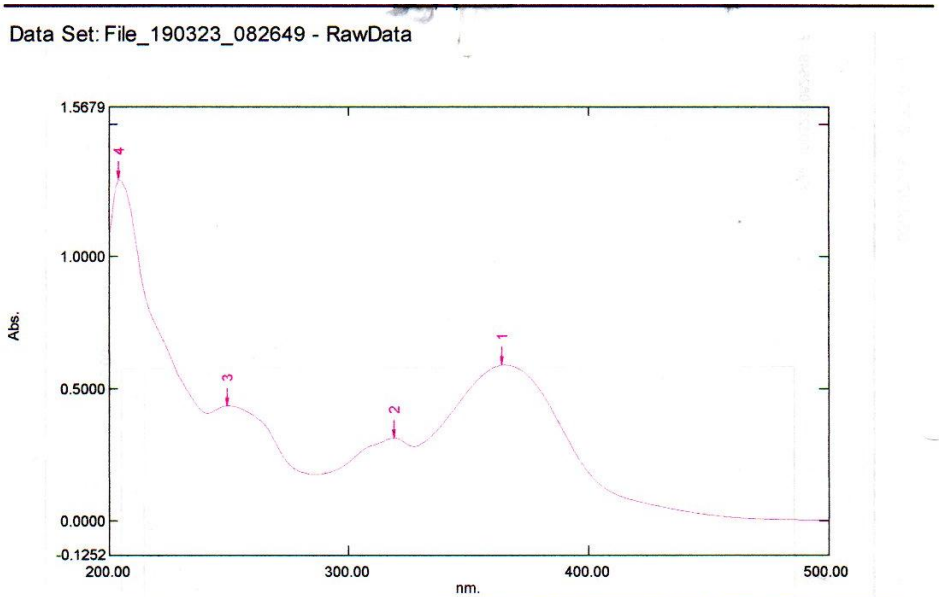
			Size (d.nm):	**% Intensity:**	**St Dev (d.nm):**
Z-Average (d.nm):	489,8	**Peak 1:**	999,2	57,7	322,5
PdI:	0,885	**Peak 2:**	163,0	32,0	46,83
Intercept:	0,913	**Peak 3:**	5172	10,2	492,5

Result quality : Refer to quality report



Lampiran 6. Pembuatan kurva kalibrasi dan validasi metode

1. Penentuan panjang gelombang



[Measurement Properties]
Wavelength Range (nm.): 200.00 to 500.00
Scan Speed: Medium
Sampling Interval: 1.0
Auto Sampling Interval: Disabled
Scan Mode: Single

[Instrument Properties]
Instrument Type: UV-1800 Series
Measuring Mode: Absorbance
Slit Width: 1.0 nm
Light Source Change Wavelength: 340.0 nm
S/R Exchange: Normal

[Attachment Properties]
Attachment: None

[Operation]
Threshold: 0.0010000
Points: 4
InterPolate: Disabled
Average: Disabled

[Sample Preparation Properties]
Weight: 359
Volume:
Dilution:
Path Length:
Additional Information:

No.	P/V	Wavelength	Abs.	Description
1	↑	364.00	0.5917	
2	↑	319.00	0.3150	
3	↑	249.00	0.4369	
4	↑	204.00	1.2942	
5	↓	327.00	0.2818	
6	↓	286.00	0.1763	
7	↓	241.00	0.4067	

Panjang gelombang maksimum yang diperoleh dari larutan mirisetin dengan etanol p.a diperoleh panjang gelombang maksimum sebesar 364 nm dengan serapan 0,5917.

2. OT Mirisetin

Time (Minute)	RawData ...
0.000	0.557
1.000	0.558
2.000	0.557
3.000	0.558
4.000	0.557
5.000	0.557
6.000	0.557
7.000	0.557
8.000	0.557
9.000	0.557
10.000	0.557
11.000	0.557
12.000	0.556
13.000	0.556
14.000	0.556
15.000	0.557
16.000	0.556
17.000	0.556
18.000	0.556
19.000	0.556
20.000	0.555
21.000	0.555
22.000	0.556
23.000	0.556
24.000	0.555
25.000	0.556
26.000	0.556
27.000	0.556
28.000	0.556
29.000	0.555
30.000	0.555

3. Linieritas

Penimbangan mirisetin :

Kertas kosong : 0,2815 g

Kertas kosong + isi : 0,2866 g

Kertas sisa : 0,2847 g

Zat aktif : 0,0047 g

Membuat larutan induk sebesar 47 ppm dengan menimbang 4,7 mg mirisetin ditambahkan etanol p.a sampai 100 ml, selanjutnya dibuat seri konsentrasi :

1. 2,35 ppm

   C1 x V1 = C2 x V2

   47 ppm x V1 = 2,35 ppm x 10 ml

   V1 = 1 ml

2. 4,7 ppm

   C1 x V1 = C2 x V2

   47 ppm x V1 = 4,7 ppm x 10 ml

   V1 = 1,5 ml

3. 9,4 ppm

   C1 x V1 = C2 x V2

   47 ppm x V1 = 9,4 ppm x 10 ml

   V1 = 2 ml

4. 11,75 ppm

   C1 x V1 = C2 x V2

   47 ppm x V1 = 14,75 ppm x 10 ml

   V1 = 2,5 ml

5. 14,1 ppm

   C1 x V1 = C2 x V2

   47 ppm x V1 = 14,1 ppm x 10 ml

   V1 = 3 ml

6. 16,45 ppm

   C1 x V1 = C2 x V2

   47 ppm x V1 = 16,45 ppm x 10 ml

   V1 = 3,5 ml

7. 18,8 ppm

   C1 x V1 = C2 x V2

   47 ppm x V1 = 18,8 ppm x 10 ml

   V1 = 4 ml

Kadar (ppm)	Absorbansi
2,35	0,145
4,7	0,285
9,4	0,541
11,75	0,72
14,1	0,843
16,45	0,981
18,8	1,143

Persamaan regresi linier antara konsentrasi (ppm) dan serapan diperoleh:

a = -0,00280

b = 0,06032

r = 0,99935

y = -0,00280 + 0,06032x

keterangan:

x = konsentrasi (ppm)

y = serapan

4. Akurasi

KONSENTRASI (PPM)	ABS	KONSENTRASI	% RECOVERY	RATA-RATA
4,7	0,276	4,622271	98%	97,67%
4,7	0,272	4,555956	97%	
4,7	0,274	4,589114	98%	
9,4	0,561	9,34726	99%	
9,4	0,562	9,363839	100%	99,67%
9,4	0,564	9,396997	100%	
11,75	0,725	12,0662	103%	
11,75	0,729	12,13252	103%	103%
11,75	0,730	12,1491	103%	

Hasil dari akurasi didapatkan rata-rata % recovery yaitu 97,67%, 99,67% dan 103%. Rata-rata % yaitu 100,3%.

5. Presisi

KONSENTRASI (PPM)	ABS	KONSENTRASI
9,4	0,585	9,74515
9,4	0,582	9,69542
9,4	0,582	9,69542
9,4	0,582	9,69542
9,4	0,585	9,74515
9,4	0,586	9,76173
9,4	0,587	9,77831
9,4	0,588	9,79489
9,4	0,580	9,66226
9,4	0,579	9,64568
	RATA-RATA	9,72194
	SD	0,05016
	CV	0,52%

Hasil presisi didapatkan nilai SD sebesar 0,05016 dan nilai CVnya 0,52%.

6. Penentuan LOD dan LOQ

Konsentrasi (ppm)	Absorbansi	Y’	y-y’	(y-y’)^2
18,8	1,143	1,13117	0,01183	0,00014
16,45	0,981	0,98942	-0,00842	0,00007
14,1	0,843	0,84767	-0,00467	0,00002
11,75	0,72	0,70593	0,01407	0,00020
9,4	0,541	0,56418	-0,02318	0,00054
4,7	0,285	0,28069	0,00431	0,00002
2,35	0,145	0,13894	0,00606	0,00004
Jumlah total		0,00102		

Nilai ŷ diperoleh dari substitusi konsentrasi (x) dalam persamaan y = a + bx, yaitu y = -0,0028 + 0,06032x sehingga didaptkan nilai

$S_{x/y}$ =

$S_{x/y}$ = simpangan baku residual

n = jumlah data

= jumlah kuadrat total residual

$S_{x/y} = \sqrt{\frac{0,00102}{7-2}}$ = 0,014307 µg/ml

- LOD = 3,3 x

  = 3,3 x $\frac{0,014307}{0,06032}$

  = 0,782746 µg/ml

- LOQ = 10 x

  = 10 x $\frac{0,014307}{0,06032}$

  = 2,371959 µg/ml

Lampiran 7. Uji stabilitas SLN miricetin

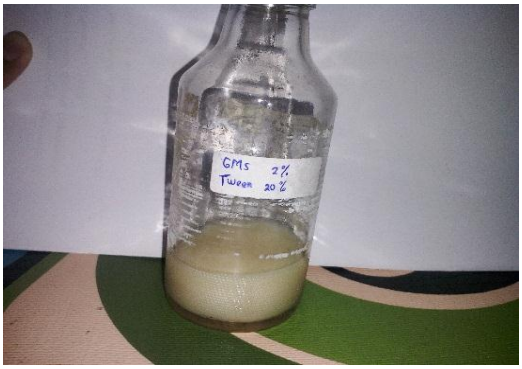
a. Pengamatan secara visual

Formula	Minggu	Endapan
Formula 1	**I**	-
	II	-
Formula 7	**I**	-
	II	-
Formula 8	**I**	-
	II	-
Formula 9	**I**	-
	II	-

*ket : formula 1 = GMS 2%, formula 7 = presirol 2%, formula 8 = presirol 8%, formula 9 = presirol 6%

Foto stabilitas Minggu 1.

Foto stabilitas Minggu 2.



b. Uji zeta potensial

Instrument

Serial Number:	3214-DMP
Model:	DelsaMax Pro
Pals Firmware Version:	1.1.0.6
DLS Firmware Version:	2.3.1.0
Assist Firmware Version:	1.0.0.9
Instrument Name:	BCI-3214-DMP
Laser Wavelength (nm):	532.0
Has DLS:	Yes
DLS Detector Angle (degrees):	163.5
Minimum Temperature (C):	3.5
Minimum Temperature without N2 (C):	20
Maximum Temperature (C):	70
Minimum Ramp Rate (C/min):	0
Maximum Ramp Rate (C/min):	1.5

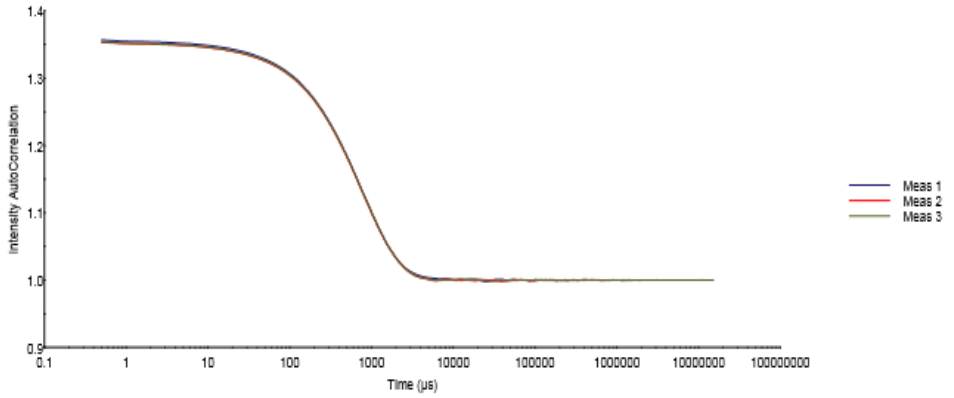
Instrument Parameters: Measurements

Collect Data:	DLS and Pals (Simultaneous)
Acq Time (s):	20
Read Interval (s):	1
Number Acq:	3
Electric Field Frequency (Hz):	10.0
Voltage Amplitude (V):	2.5
Collection Period (s):	15.0
Auto-attenuation:	Yes
Attenuation Level (%):	0
Auto-attenuation Time Limit(s):	0
Laser Mode:	Normal
Set Temp On Connection:	No
Set Temp (C):	20
Temp Ramp Enabled:	Yes
Temp Ramp Rate (C/min):	1

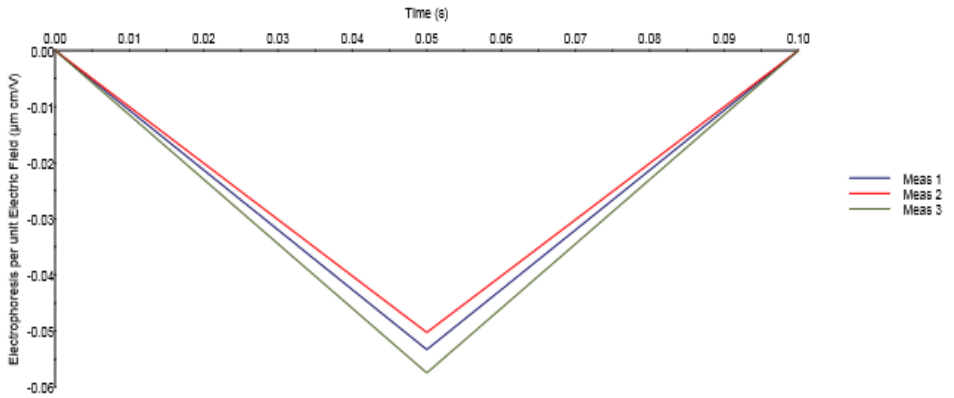
Datalog Table: Measurements

	Item	Zeta Potential (mV)
1	Meas 1	-13.91
2	Meas 2	-13.12
3	Meas 3	-15.00
Mean		-14.01
S		0.94
%S		6.73
S^2		0.89
Min		-15.00
Max		-13.12

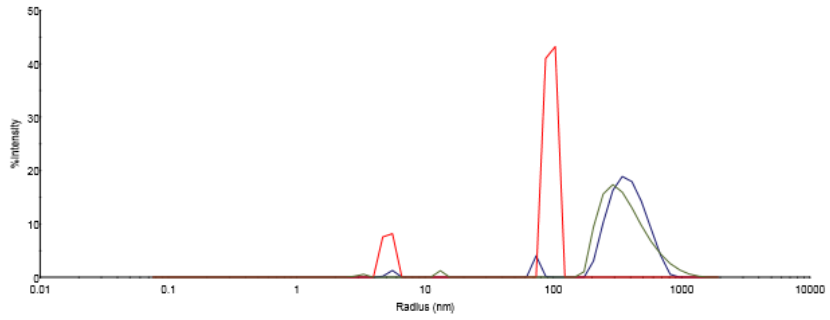
Correlation Function: Measurements



Mobility: Measurements



Regularization Results: Measurements



Lampiran 8. Perhitungan efisiensi penjerapan SLN mirisetin

GMS 2%

- Larutan induk : 200 mg SLN mirisetin/10 ml etanol p.a = 20.000 ppm
- Perhitungan teoritis :

  Mirisetin = 19,8 mg

  Eksipien (tween + lipid) = 11000 mg

  % kadar miriseti = $\frac{19{,}8\ mg}{11000\ mg} x\ 100\% = 0{,}18\ \%$

  Kadar dalam 200 mg SLN = 0,18 % x 200 mg = 0,36 mg
- Perhitungan kadar mirisetin terjerap menggunakan persamaan regresi linier

  Y = a+bx

  0,577 = -0,00280 + 0,06032x

  0,5798 = 0,06032x

  X = 9,612 ppm

  % kadar = $\frac{9{,}612\ ppm}{20.000\ ppm} x\ 100\% = 0{,}04806\%$

  Kadar dalam 200 mg SLN mirisetin = $0{,}05535\% \, x \, 200\ mg = 0{,}09612\ mg$

  % efisiensi penjerapan = $\frac{kadar\ terjerap}{kadar\ teoritis} x\ 100\%$

  = $\frac{0{,}09612\ mg}{0{,}36\ \text{mg}} x\ 100\%$

  = 26,7%

Presirol 2%

- Larutan induk : 200 mg SLN mirisetin/10 ml etanol p.a = 20.000 ppm
- Perhitungan teoritis :

  Mirisetin = 19,8 mg

  Eksipien (tween + lipid) = 11000 mg

  % kadar miriseti = $\frac{19{,}8\ mg}{11000\ mg} x\ 100\% = 0{,}18\ \%$

  Kadar dalam 200 mg SLN = 0,18 % x 200 mg = 0,36 mg

- Perhitungan kadar mirisetin terjerap menggunakan persamaan regresi linier :

  Y = a+bx

  0,665 = -0,00280 + 0,06032x

  0,6678 = 0,06032x

  X = 11,071 ppm

  % kadar = $\frac{11{,}071\ ppm}{20.000\ ppm} x\ 100\% = 0{,}05535\%$

  Kadar dalam 200 mg SLN mirisetin = $0{,}05535\% \, x \, 200\ mg = 0{,}1107\ mg$

  % efisiensi penjerapan = $\frac{kadar\ terjerap}{kadar\ teoritis} x\ 100\%$

  = $\frac{0{,}1107\ mg}{0{,}36\ \text{mg}} x\ 100\%$

  = 30,7%

Presirol 4%

- Larutan induk : 200 mg SLN mirisetin/10 ml etanol p.a = 20.000 ppm
- Perhitungan teoritis :

  Mirisetin = 19,9 mg

  Eksipien (tween + lipid) = 12000 mg

  % kadar miriseti = $\frac{19{,}9\ mg}{12000\ mg} x\ 100\% = 0{,}1658\ \%$

  Kadar dalam 200 mg SLN = 0,1658 % x 200 mg = 0,3316 mg
- Perhitungan kadar mirisetin terjerap menggunakan persamaan regresi linier :

  Y = a+bx

  0,649 = -0,00280 + 0,06032x

  0,6518 = 0,06032x

  X = 10,806 ppm

  % kadar = $\frac{10{,}806\ ppm}{20.000\ ppm} x\ 100\% = 0{,}05403\%$

  Kadar dalam 200 mg SLN mirisetin = $0{,}05403\% \, x \, 200\ mg = 0{,}10806\ mg$

% efisiensi penjerapan $= \frac{kadar\ terjerap}{kadar\ teoritis} x\ 100\%$

$= \frac{0{,}10806\ mg}{0{,}3316\ \text{mg}} x\ 100\%$

= 32,6%

Presirol 6%

- Larutan induk : 200 mg SLN mirisetin/10 ml etanol p.a = 20.000 ppm.
- Perhitungan teoritis :

  Mirisetin = 19,9 mg

  Eksipien (tween + lipid) = 13000 mg

  % kadar miriseti $= \frac{19{,}9\ mg}{13000\ mg} x\ 100\% = 0{,}153\ \%$

  Kadar dalam 200 mg SLN = 0,153 % x 200 mg = 0,306 mg
- Perhitungan kadar mirisetin terjerap menggunakan persamaan regresi linier :

  Y = a+bx

  0,615 = -0,00280 + 0,06032x

  0,6178 = 0,06032x

  X = 10,242 ppm

  % kadar $= \frac{10{,}242\ ppm}{20.000\ ppm} x\ 100\% = 0{,}05121\%$

  Kadar dalam 200 mg SLN mirisetin = $0{,}05121\% \, x \, 200\ mg = 0{,}10242\ mg$

  % efisiensi penjerapan $= \frac{kadar\ terjerap}{kadar\ teoritis} x\ 100\%$

  $= \frac{0{,}10242\ mg}{0{,}306\ \text{mg}} x\ 100\%$

  = 33,5%

Lampiran 9. Uji DPPH

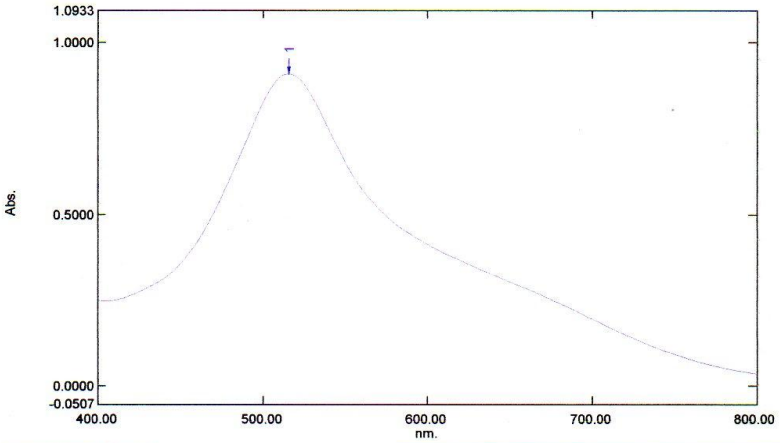
a. Panjang gelombang DPPH

DPPH 16 mg di larutkan dalam 100 ml etanol p.a (konsentrasi 160 ppm).

Spectrum Peak Pick Report

05/10/2019 10:03:42 AM

Data Set: lamda maks dpph fix 1 - RawData



No.	P/V	Wavelength	Abs.	Description
1	↑	516.00	0.9096	
2	↓	405.00	0.2479	

[Measurement Properties]
Wavelength Range (nm.): 400.00 to 800.00
Scan Speed: Medium
Sampling Interval: 1.0
Auto Sampling Interval: Disabled
Scan Mode: Auto

[Instrument Properties]
Instrument Type: UV-1800 Series
Measuring Mode: Absorbance
Slit Width: 1.0 nm
Light Source Change Wavelength: 340.0 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:

b. OT DPPH

Time (Minute)	RawData ...
0.000	0.229
1.000	0.229
2.000	0.229
3.000	0.229
4.000	0.229
5.000	0.230
6.000	0.230
7.000	0.230
8.000	0.229
9.000	0.230
10.000	0.229
11.000	0.229
12.000	0.230
13.000	0.230
14.000	0.230
15.000	0.230
16.000	0.230
17.000	0.230
18.000	0.230
19.000	0.230
20.000	0.230
21.000	0.230
22.000	0.230
23.000	0.230
24.000	0.230
25.000	0.230
26.000	0.230
27.000	0.230
28.000	0.230
29.000	0.230
30.000	0.230
31.000	0.230
32.000	0.230
33.000	0.231
34.000	0.231
35.000	0.231
36.000	0.231
37.000	0.230
38.000	0.231
39.000	0.231
40.000	0.231
41.000	0.231
42.000	0.231
43.000	0.231
44.000	0.231
45.000	0.231

c. Mirisetin murni

Penimbangan mirisetin :

Kertas kosong : 0,2762 g

Kertas + isi : 0,3263 g

Kertas sisa : 0,2766 g

Zat aktif : 0,0497 g

Membuat larutan induk mirisetin 497 ppm dengan cara menimbang 49,7 mg mirisetin ditambahkan etanol p.a sampai 100 ml, selanjutnya dibuat seri konsentrasi :

1. 0,97 ppm

   C1 x V1 = C2 x V2

497 ppm x V1 = 0,97 ppm x 10 ml

V1 = 0,02 ml

2. 1,94 ppm

   C1 x V1 = C2 x V2

   497 ppm x V1 = 1,94 ppm x 10 ml

   V1 = 0,04 ml

3. 3,88 ppm

   C1 x V1 = C2 x V2

   497 ppm x V1 = 3,88 ppm x 10 ml

   V1 = 0,08 ml

4. 7,77 ppm

   C1 x V1 = C2 x V2

   497 ppm x V1 = 7,77 ppm x 10 ml

   V1 = 0,16 ml

5. 15,53 ppm

   C1 x V1 = C2 x V2

   497 ppm x V1 = 15,53 ppm x 10 ml

   V1 = 0,3 ml

Konsentrasi (ppm)	Abs			% inhibisi			IC50		
	1	2	3	1	2	3	1	2	3
15,53	0,249	0,237	0,24	72,63	73,94	73,61			
7,77	0,445	0,442	0,438	51,08	51,41	51,85			
3,88	0,526	0,528	0,53	42,17	41,95	41,73	7,02	6,86	6,90
1,94	0,578	0,578	0,577	36,46	36,46	46,57			
0,97	0,595	0,593	0,597	34,59	34,81	34,37			

Perhitungan mirisetin murni dengan persamaan regresi linier :

1. Replikasi 1
   - Didapatkan persamaan regresi antara absorbansi kengan konsentrasi :

     A = 0, 0,6218

     B = -0,0238

     R = -0,9993

- Perhitungan % inhibisi

  $= \frac{absorbansi\ DPPH - absorbansi\ sampel}{absorbansi\ DPPH}\ X100\ \%$

  Keterangan :

  Abs DPPH = 0,9096

  Dicari persamaan regresi antara % inhibisi dengan konsentrasi didapatkan :

  A = 31,6390

  B = 2,6162

  R = 0,9993

- Perhitungan IC50 :

  Y = a + bx

  50 = 31,6390 + 2,6162x

  X = 7,02

2. Replikasi 2
   - Didapatkan persamaan regresi antara absorbansi kengan konsentrasi :

     A = 0, 0,6237

     B = -0,0246

     R = -0,9990

   - Perhitungan % inhibisi

     $= \frac{absorbansi\ DPPH - absorbansi\ sampel}{absorbansi\ DPPH}\ X100\ \%$

     Keterangan :

     Abs DPPH = 0,9096

     Dicari persamaan regresi antara % inhibisi dengan konsentrasi didapatkan :

     A = 31,4330

     B = 2,7053

     R = 0,9990

- Perhitungan IC50 :

  Y = a + bx

  50 = 31,4330 + 2,7053x

  X = 6,86

3. Replikasi 3
   - Didapatkan persamaan regresi antara absorbansi kengan konsentrasi :

     A = 0, 0,6244

     B = -0,0246

     R = -0,9998
   - Perhitungan % inhibisi

     $= \frac{absorbansi\ DPPH - absorbansi\ sampel}{absorbansi\ DPPH}\ X100\ \%$

     Keterangan :

     Abs DPPH = 0,9096

     Dicari persamaan regresi antara % inhibisi dengan konsentrasi didapatkan :

     A = 31,3504

     B = 2,7044

     R = 0,9998
   - Perhitungan IC50 :

     Y = a + bx

     50 = 31,3504 + 2,7044x

     X = 6,90

     Rata-rata IC_{50} mirisetin :

     IC50 1 = 7,02 ppm

     IC50 2 = 6,86 ppm } 6,93 ppm

     IC50 3 = 6,90 ppm

d. Formula presirol 2%

Dibuat larutan induk 200 ppm yaitu sediaan diambil 5 ml dilarutkan dengan etanol p.a sampai 10 ml, selanjutnya dibuat seri konsentrasi :

1. 50 ppm

   C1 x V1 = C2 x V2

   200 ppm x V1 = 50 ppm x 10 ml

   V1 = 2,5 ml

2. 25 ppm

   C1 x V1 = C2 x V2

   200 ppm x V1 = 25 ppm x 10 ml

   V1 = 1,25 ml

3. 12,5 ppm

   C1 x V1 = C2 x V2

   200 ppm x V1 = 12,5 ppm x 10 ml

   V1 = 0,625 ml

4. 6,25 ppm

   C1 x V1 = C2 x V2

   200 ppm x V1 = 6,25 ppm x 10 ml

   V1 = 0,3 ml

5. 3,13 ppm

   C1 x V1 = C2 x V2

   200 ppm x V1 = 3,13 ppm x 10 ml

   V1 = 0,16 ml

Konsentrasi	Abs			% inhibisi			IC50		
(ppm)	1	2	3	1	2	3	1	2	3
50	0,238	0,204	0,227	73,83	77,57	75,04			
25	0,436	0,433	0,439	52,07	52,40	51,74			
12,5	0,555	0,56	0,553	38,98	38,43	39,20	23,93	22,80	23,77
6,25	0,601	0,605	0,603	33,93	33,43	33,71			
3,13	0,637	0,629	0,645	29,97	30,85	29,09			

Perhitungan mirisetin murni dengan persamaan regresi linier :

1. Replikasi 1

- Didapatkan persamaan regresi antara absorbansi kengan konsentrasi :

  A = 0, 0,6576

  B = -0,0085

  R = -0,9992

- Perhitungan % inhibisi

  $= \frac{absorbansi\ DPPH - absorbansi\ sampel}{absorbansi\ DPPH}\ X100\ \%$

  Keterangan :

  Abs DPPH = 0,9096

  Dicari persamaan regresi antara % inhibisi dengan konsentrasi didapatkan :

  A = 27,7044

  B = 0,9317

  R = 0,9992

- Perhitungan IC50 :

  Y = a + bx

  50 = 27,7044 + 0,9317X

  X = 23,93

2. Replikasi 2
   - Didapatkan persamaan regresi antara absorbansi kengan konsentrasi :

     A = 0, 0,6639

     B = -0,0092

     R = -0,9993

   - Perhitungan % inhibisi

     $= \frac{absorbansi\ DPPH - absorbansi\ sampel}{absorbansi\ DPPH}\ X100\ \%$

     Keterangan :

     Abs DPPH = 0,9096

Dicari persamaan regresi antara % inhibisi dengan konsentrasi didapatkan :

A = 27,0079

B = 1,0085

R = 0,9993

- Perhitungan IC50 :

  Y = a + bx

  50 = 27,0079 + 1,0085X

  X = 22,80

3. Replikasi 3
   - Didapatkan persamaan regresi antara absorbansi kengan konsentrasi :

     A = 0, 0,6638

     B = -0,0088

     R = -0,9994
   - Perhitungan % inhibisi

     $= \frac{absorbansi\ DPPH - absorbansi\ sampel}{absorbansi\ DPPH}\ X100\ \%$

     Keterangan :

     Abs DPPH = 0,9096

     Dicari persamaan regresi antara % inhibisi dengan konsentrasi didapatkan :

     A = 27,0264

     B = 0,9667

     R = 0,9994
   - Perhitungan IC50 :

     Y = a + bx

     50 = 27,0264 + 0,9667X

     X = 23,77

Rata-rata IC50 sediaan :

IC50 1 = 23,93 ppm

IC50 2 = 22,80 ppm

IC50 3 = 23,77 ppm

} 23,5 ppm