

BAB V

KESIMPULAN DAN SARAN

A. Kesimpulan

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

Pertama, fitosom alfa mangostin dapat dibuat dengan menggunakan metode hidrasi lapis tipis-sonikasi

Kedua, variasi konsentrasi fosfatidilkolin pada fitosom akan berpengaruh pada ukuran partikel dan efisinesi penyerapan. Untuk fitosom alfa mangostin perbandingan mol terbaik alfa mangostin:fosftaidilkolin yaitu pada perbandingan 1:2, dengan nilai rata-rata ukuran partikel 148,5 dan efisiensi penyerapan 97,630%.

Ketiga, karakterisasi fitosom dilihat dari ukuran partikel, zeta potensial dan indeks polidispersitas formula. Semua formula memiliki ukuran dalam rentang nanometer 10-500 nm, dengan nilai efisiensi penyerapan tertinggi 97,630% .

Keempat, fitosom alfa mangostin selama penyimpanan 21 hari teramati terdapat gumpalan kolesterol yang artinya kelima formula kurang stabil.

B. Saran

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

Pertama, perlu dilakukan pembuatan fitosom dengan metode lain yang bisa memberikan nilai ukuran partikel dibawah 100 nm serta formula yang terbentuk dapat stabil.

Kedua, perlu dilakukan uji untuk mengetahui morfologi sediaan nano-fitosom.

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Lampiran 1. Sertifikat analisis alfa mangostin

TOCRIS
a biotechnique brand

Print Date: Apr 10th 2019

Certificate of Analysis

www.tocris.com

Product Name: α -Mangostin

Catalog No.: 6856

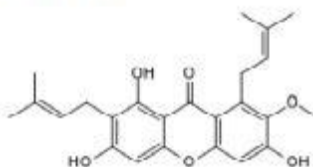
Batch No.: 1

CAS Number: 6147-11-1

IUPAC Name: 1,3,6-Trihydroxy-7-methoxy-2,8-bis(3-methyl-2-buten-1-yl)-9H-xanthen-9-one

1. PHYSICAL AND CHEMICAL PROPERTIES

Batch Molecular Formula:	C ₂₄ H ₂₆ O ₈
Batch Molecular Weight:	410.47
Physical Appearance:	Yellow solid
Solubility:	DMSO to 100 mM ethanol to 100 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	70.23	6.38
Found	70.38	6.42

Lampiran 2. Sertifikat analisis fosfatidilkolin



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Safety data sheet
 according to 1907/2006/EC, Article 32

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Printing date 04.05.2016
Revision: 04.05.2016

SECTION 1: Identification of the substance/mixture and of the company/undertaking

- 1.1 Product identifier
- Trade name: **PHOSPHOLIPON® 90 G**
- Article number: 228154; 368202; 368247
- 1.2 Relevant identified uses of the substance or mixture and uses advised against
No further relevant information available.
- Application of the substance / the mixture
Additive for cosmetic or pharmaceutical preparations
Food additives
- 1.3 Details of the supplier of the safety data sheet
- Manufacturer/Supplier:
PHOSPHOLIPID GmbH
Nattermannallee 1
D-50829 Köln
Tel.: +49 (0) 221 - 987 48 0
Fax: +49 (0) 221 - 987 46 216
e-mail: info@phospholipid.de
- Informing department: Product Safety Department
- 1.4 Emergency telephone number:
Mo-Fr: 8.00-16.30
Tel.: +49 (0) 221- 98746-444

SECTION 2: Hazards identification

- 2.1 Classification of the substance or mixture
- Classification according to Regulation (EC) No 1272/2008
The product is not classified according to the CLP regulation.
- 2.2 Label elements
- Labelling according to Regulation (EC) No 1272/2008 Void
- Hazard pictograms Void
- Signal word Void
- Hazard statements Void
- Additional information:
Contains 3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-ol. May produce an allergic reaction.
- 2.3 Other hazards
- Results of PBT and vPvB assessment
- PBT: Not applicable.
- vPvB: Not applicable.

SECTION 3: Composition/Information on ingredients

- 3.1 Chemical characterisation: Substances
- CAS No. Designation:
97281-47-5 + 10191-41-0 + 137-66-6

(Contd. on page 2)

Safety data sheet

according to 1907/2006/EC, Article 32

Printing date 04.05.2016

Revision: 04.05.2016

Trade name: PHOSPHOLIPON® 90 G

(Contd. of page 1)

- Identification number(s):
- EC number: 306-547-4 + 233-466-0 + 205-305-4
- 3.2 Chemical characterisation: Mixtures
- Description: Purified phosphatidylcholine from soybean lecithin

Dangerous components:

CAS: 10191-41-0	3,4-dihydro-2,5,7,8-tetramethyl-2-[(4,8,12-trimethyltridecyl)-2H-benzopyran-6-yl]	max. 0.3%
EINECS: 233-466-0	⚠ Skin Sens. 1, H317	

SECTION 4: First aid measures

- 4.1 Description of first aid measures
- After inhalation Supply fresh air; consult doctor in case of symptoms.
- After skin contact Instantly wash with water and soap and rinse thoroughly.
- After eye contact Rinse opened eye for several minutes under running water.
- After swallowing In case of persistent symptoms consult doctor.
- 4.2 Most important symptoms and effects, both acute and delayed
No further relevant information available.
- 4.3 Indication of any immediate medical attention and special treatment needed
No further relevant information available.

SECTION 5: Firefighting measures

- 5.1 Extinguishing media
- Suitable extinguishing agents CO₂, sand, extinguishing powder. Do not use water.
- For safety reasons unsuitable extinguishing agents Water.
- 5.2 Special hazards arising from the substance or mixture
No further relevant information available.
- 5.3 Advice for firefighters
- Protective equipment: Wear full protective suit.

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures
Product forms slippery surface when combined with water.
Keep away from ignition sources
- 6.2 Environmental precautions: Do not allow to enter drainage system, surface or ground water.
- 6.3 Methods and material for containment and cleaning up: Collect mechanically.
- 6.4 Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

SECTION 7: Handling and storage

- 7.1 Precautions for safe handling No special precautions necessary if used correctly.
- Information about protection against explosions and fires: No special measures required.
- 7.2 Conditions for safe storage, including any incompatibilities
- Storage
- Requirements to be met by storerooms and containers: No special requirements.
- Information about storage in one common storage facility: Not required.
- Further information about storage conditions: < 8 °C

(Contd. on page 3)

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Safety data sheet according to 1907/2006/EC, Article 32

Printing date 04.05.2016

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Trade name: PHOSPHOLIPON® 90 G

· 7.3 Specific end use(s) No further relevant information available.

(Contd. of page 2)

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **8.1 Control parameters**
- **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** The lists that were valid during the compilation were used as basis.
- **8.2 Exposure controls**
- **Personal protective equipment**
- **General protective and hygienic measures**
Take off immediately all contaminated clothing
Wash hands during breaks and at the end of the work.
- **Breathing equipment:** Not required.
- **Protection of hands:**
Protective gloves.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
- **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Eye protection:** Safety glasses
- **Body protection:** Protective work clothing.

SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**
- **General Information**
- **Appearance:**

Form:	Solid.
Colour:	yellowish
Odour:	Characteristic
Odour threshold:	Not determined.
- **pH-value (10 g/l) at 20 °C:** 5 - 7
- **Change in condition**

Melting point/Melting range:	Not determined
Boiling point/Boiling range:	Not determined
- **Flash point:** Not applicable
- **Inflammability (solid, gaseous)** Not determined.

(Contd. on page 4)

Safety data sheet

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Trade name: PHOSPHOLIPON® 90 G

(Contd. of page 3)

• Ignition temperature:	
• Decomposition temperature:	Not determined.
• Self-inflammability:	Product is not selfigniting.
• Danger of explosion:	Product is not explosive.
• Critical values for explosion:	
Lower:	Not determined.
Upper:	Not determined.
• Vapour pressure:	Not applicable.
• Density	Not determined
• Relative density	Not determined.
• Vapour density	Not applicable.
• Evaporation rate	Not applicable.
• Solubility in / Miscibility with Water:	Dispersible
• Partition coefficient (n-octanol/water):	Not determined.
• Viscosity:	
dynamic:	Not applicable.
kinematic:	Not applicable.
• 9.2 Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
To avoid thermal decomposition do not overheat.
- **10.3 Possibility of hazardous reactions** No dangerous reactions known
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:**
Carbon dioxide
Carbon monoxide

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity** Based on available data, the classification criteria are not met.
- **Primary irritant effect:**
- **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
- **Serious eye damage/irritation** Based on available data, the classification criteria are not met.
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

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Revision: 04.05.2016

Trade name: PHOSPHOLIPON® 90 G

(Contd. of page 4)

SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability** biodegradable
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.
Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Waste disposal key number:** 07 05 14
- **Uncleaned packagings:**
- **Recommendation:**
Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning.

SECTION 14: Transport information

- | | |
|--|-----------------|
| • 14.1 UN-Number | |
| • ADR, ADN, IMDG, IATA | Void |
| • 14.2 UN proper shipping name | |
| • ADR, ADN, IMDG, IATA | Void |
| • 14.3 Transport hazard class(es) | |
| • ADR, ADN, IMDG, IATA | |
| • Class | Void |
| • 14.4 Packing group | |
| • IMDG, IATA | Void |
| • 14.5 Environmental hazards: | |
| • Marine pollutant: | No |
| • 14.6 Special precautions for user | Not applicable. |
| • 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code | Not applicable. |
| • UN "Model Regulation": | Void |

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ANALYTICAL DATA

AN3019394/8

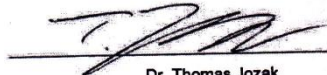
- 2 -

PHOSPHOLIPON 90 G

Batch 228154-3180044

Sample for laboratory use only

Köln, September 26, 2018

Dr. Thomas Jozak
Head of Quality ControlAhmet Tengersek
Quality Assurance

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ANALYTICAL DATA



AN3019394/6

- 1 -

PHOSPHOLIPON 90 G

Batch 228154-3180044

Recommended storage
Date of productionn.m.t. +8 °C
07/2018

Sample for laboratory use only

Parameter	Result	Specification		Unit	Method
		min	max		
Phosphatidylcholine	96,1	94,0	102,0	% (m/m)	05.P07.857
Identity (TLC)	conform to reference	conform to reference			05.P08.309
Lysophosphatidylcholine	1,4		4,0	% (m/m)	05.P07.857
Nonpolar lipids	1,0		3,0	% (m/m)	05.P03.008
Tocopherol	0,21		0,30	% (m/m)	05.P07.142
Acid value	0,2		0,5		05.P03.002
Peroxide value	1,6		5,0		05.P06.120
Water	0,2		1,5	% (m/m)	05.P10.013
Toluene insolubles	0,00		0,05	% (m/m)	05.P06.001
Ethanol	0,1		0,2	% (m/m)	05.P05.049
Heavy metals	< 10		10	mg/kg	USP <231> method II
Arsenic	< 0,015		0,15	mg/kg	USP <232>/ USP <233>
Lead	< 0,015		0,10	mg/kg	USP <232>/ USP <233>
Appearance	yellowish, waxy	yellowish, waxy			05.P06.155

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PHOSPHOLIPID GmbH * Nattermannallee 1 * DE-50829 Köln

University Setia Budi
Attn. Ms Devi Nur Indah Sari
Jl. Let. Jend. Sutoyo Road, Mojosongo, Jebres
Jawa Tengah
57127 Surakarta
INDONESIA

Customer no.: 908933
Person in Charge: Peter Fußbroich
Your Order no: EMAIL
Order date: October 10, 2018
Order Acknow. no.: V3008730
Reference Lipoid AG MV0007014 / E0020430

Packing List

Page 1
Shipment No. L3008333
Date October 11, 2018
Delivery Date (departing): October 16, 2018

Terms of delivery (Incoterms 2010): DAP / ID-57127 Surakarta
Shipping agent / Service: Courier / DHL EXPRES

Pos.	Item	Quantity	Unit
	228154	0,200	kg
	PHOSPHOLIPON 90 G		
	HS-No.: 29232000		
	Origin: Germany		
	Recommended storage: n.m.t. +8 °C		
	Batch [No. of packages]	Quantity	Unit
	228154-3180044/923 -- 924 [2]	0,200	kg
	Packaging: 2x 100g	Date of production	Retest Date
		07/2018	06/2020
	Free sample, without commercial value		
	Invoice for customs purpose only.		

SAMPLE FOR LABORATORY USE ONLY

Lipoid
PHOSPHOLIPID GmbH
Nattermannallee 1 · D 50829 Köln



PHOSPHOLIPID GmbH
Nattermannallee 1
DE-50829 Köln

Geschäftsführer:
Eduard Hoff
Dr. Herbert Rebmann

Tel. +49 221 987 46 0
Fax. +49 221 987 46 216

b. Formula 1:2

$$\begin{aligned}
 \text{Fosfatidilkolin yang dibutuhkan} &= 477,5 \mu\text{mol} \\
 \text{Fosfatidilkolin yang ditimbang} &= 477,4 \mu\text{mol} \times 768 \text{ g/mol} \\
 &= 366.720 \text{ mcg} \\
 &= 366,720 \text{ mg}
 \end{aligned}$$

c. Formula 1:3

$$\begin{aligned}
 \text{Fosfatidilkolin yang dibutuhkan} &= 716,25 \mu\text{mol} \\
 \text{Fosfatidilkolin yang ditimbang} &= 716,25 \mu\text{mol} \times 768 \text{ g/mol} \\
 &= 550.000 \text{ mcg} \\
 &= 550 \text{ mg}
 \end{aligned}$$

d. Formula 1:4

$$\begin{aligned}
 \text{Fosfatidilkolin yang dibutuhkan} &= 955 \mu\text{mol} \\
 \text{Fosfatidilkolin yang ditimbang} &= 955,00 \mu\text{mol} \times 768 \text{ g/mol} \\
 &= 733.440 \text{ mcg} \\
 &= 733,4 \text{ mg}
 \end{aligned}$$

e. Formula 1:3

$$\begin{aligned}
 \text{Fosfatidilkolin yang dibutuhkan} &= 1.193,75 \mu\text{mol} \\
 \text{Fosfatidilkolin yang ditimbang} &= 1.193,75 \mu\text{mol} \times 768 \text{ g/mol} \\
 &= 916.800 \text{ mcg} \\
 &= 916,8 \text{ mg}
 \end{aligned}$$

- Perhitungan Kolesterol**

Perbandingan alfa mangostin:kolesterol = 1:0,2.

Maka jumlah kolesterol yang dibutuhkan adalah $0,2 \times 238,75 \mu\text{mol} = 47,75 \mu\text{mol}$

$$\begin{aligned}
 \text{Kolesterol yang ditimbang} &= 47,75 \mu\text{mol} \times 386,670 \text{ g/mol} \\
 &= 18.463 \text{ mcg} \\
 &= 18,46 \text{ mg}
 \end{aligned}$$

Lampiran 4. Data ukuran partikel dan zeta potensial sebelum penyimpanan.

	Replikasi	Z-ave psa (nm)	Rata- rata(nm)	SD	Pdi	Zeta
Formula 1	1	154,6	152,567	1,767	0,376	
	2	151,7			0,348	
	3	151,4			0,353	
Formula 2	1	144,2	148,867	4,601	0,356	-3,33
	2	153,4			0,272	-3,71
	3	149			0,365	-3,06
Formula 3	1	167,8	170,033	7,310	0,348	
	2	164,1			0,367	
	3	178,2			0,286	
Formula 4	1	170,3	167,800	2,166	0,328	
	2	166,5			0,357	
	3	166,6			0,347	
Formula 5	1	187,2	183,700	3,081	0,416	
	2	182,5			0,555	
	3	181,4			0,590	

Lampiran 5. Data kurva baku alfa mangostin

- Larutan stok alfa mangostin 1000 ppm → 100 mg alfa mangostin + 10 ml etanol 96% + ad 100 ml dapar fosfat Ph 7,4.
- Larutan stok kemudian diencerkan menjadi 6 seri pengenceran yakni 22 ppm, 26 ppm, 30 ppm, 34 ppm, 38 ppm dan 42 ppm sebanyak 10 ml.

Konsentrasi 22 ppm

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 1000 \text{ ppm} &= 10\text{ml} \times 22 \text{ ppm} \\ V_1 &= 0,22 \text{ ml} \end{aligned}$$

Konsentrasi 26 ppm

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 1000 \text{ ppm} &= 10\text{ml} \times 24 \text{ ppm} \\ V_1 &= 0,26 \text{ ml} \end{aligned}$$

Konsentrasi 30 ppm

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 1000 \text{ ppm} &= 10\text{ml} \times 28 \text{ ppm} \\ V_1 &= 0,30 \text{ ml} \end{aligned}$$

Konsentrasi 34 ppm

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 1000 \text{ ppm} &= 10\text{ml} \times 34 \text{ ppm} \\ V_1 &= 0,34 \text{ ml} \end{aligned}$$

Konsentrasi 38 ppm

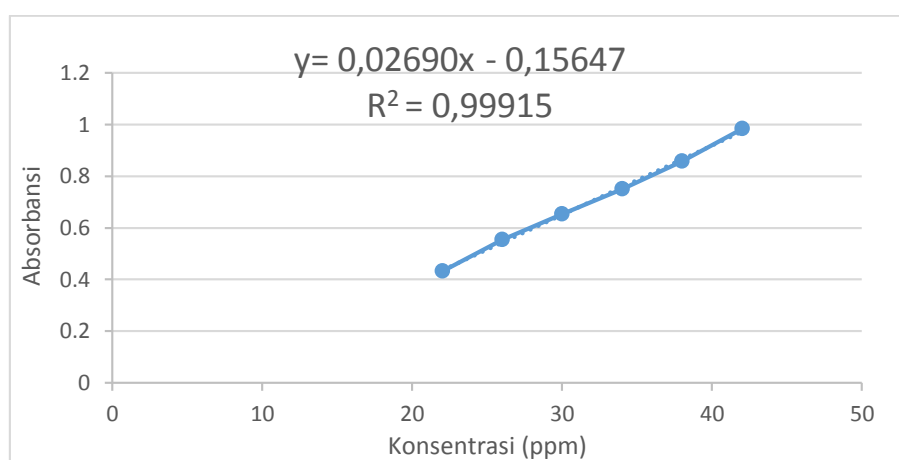
$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 1000 \text{ ppm} &= 10\text{ml} \times 38 \text{ ppm} \\ V_1 &= 0,38 \text{ ml} \end{aligned}$$

Konsentrasi 42 ppm

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 1000 \text{ ppm} &= 10\text{ml} \times 42 \text{ ppm} \\ V_1 &= 0,42 \text{ ml} \end{aligned}$$

Kurva baku alfa mangostin

Konsentrasi(ppm)	Absorbansi
22	0,431
26	0,553
30	0,653
34	0,749
38	0,858
42	0,982



Ket : a = -0,15647

b = 0,02690

r = 0,99915

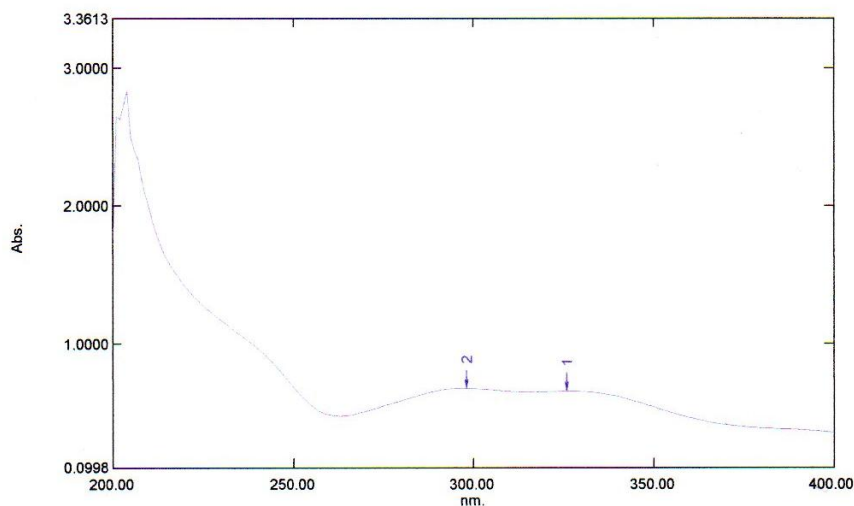
Lampiran 6. Penentuan lamda maksimal alfa mangostin

Lamda maksimal alfa mangostin = 326 nm, dengan absorbansi 0,651.

Spectrum Peak Pick Report

04/05/2019 12:36:02 PM

Data Set: 30 ppm - RawData



[Measurement Properties]
Wavelength Range (nm.): 200.00 to 400.00
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	●	326.00	0.6511	
2	●	298.00	0.6722	
3	●	317.00	0.6436	
4	●	263.00	0.4692	

Lampiran 7. Penentuan Operating Time

Operating time alfa mangostin : menit ke 18-21, dengan nilai serapan berturut-turut = 0,666

Kinetics Data Print Report

alfa mangostin OT
30 rpm

04/05/2019 01:10:37 PM

Time (Minute)	RawData ...
0.000	0.643
1.000	0.646
2.000	0.648
3.000	0.650
4.000	0.652
5.000	0.653
6.000	0.655
7.000	0.656
8.000	0.658
9.000	0.658
10.000	0.659
11.000	0.660
12.000	0.661
13.000	0.662
14.000	0.663
15.000	0.663
16.000	0.664
17.000	0.665
18.000	0.666
19.000	0.666
20.000	0.666
21.000	0.666
22.000	0.667
23.000	0.669
24.000	0.668
25.000	0.669
26.000	0.669
27.000	0.670
28.000	0.671
29.000	0.671
30.000	0.672

Lampiran 8. Verifikasi metode

1. Linieritas

Konsentrasi(ppm)	Absorbansi	y'
22	0,431	0,425022
26	0,553	0,524956
30	0,653	0,624889
34	0,749	0,724822
38	0,858	0,824756
42	0,982	0,924689

$$a = -0,15647$$

$$b = 0,02690$$

$$r = 0,99915$$

$$y = bx + a = 0,02690x - 0,15647$$

Hasil Linieritas diperoleh $R = 0,99915$, sehingga dapat disimpulkan bahwa data linier.

2. LOD(Batas deteksi) dan LOQ(Batas kuantitasi)

Konsentrasi(ppm)	Absorbansi	Y'	y-y'	(y-y') ²
22	0,431	0,435333	0,004333	0,000019
26	0,553	0,542933	0,010067	0,000101
30	0,653	0,650533	0,002467	0,000006
34	0,749	0,758133	0,009133	0,000083
38	0,858	0,865733	0,007733	0,000060
42	0,982	0,973333	0,008667	0,000075

Nilai y' yaitu substitusi konsentrasi dalam persamaan $y = 0,02690x - 0,15647$, dengan nilai x adalah konsentrasi (ppm) dan y adalah serapan (y').

a. $y = 0,02690x - 0,15647$

$$y = (0,02690 \times 22\text{ppm}) - 0,15647$$

$$y = 0,435$$

b. $y = 0,02690x - 0,15647$

$$y = (0,02690 \times 26\text{ppm}) - 0,15647$$

$$y = 0,543$$

- c. $y = 0,02690x - 0,15647$
 $y = (0,02690 \times 30\text{ppm}) - 0,15647$
 $y = 0,650$
- d. $y = 0,02690x - 0,15647$
 $y = (0,02690 \times 34\text{ppm}) - 0,15647$
 $y = 0,758$
- e. $y = 0,02690x - 0,15647$
 $y = (0,02690 \times 38\text{ppm}) - 0,15647$
 $y = 0,865$
- f. $y = 0,02690x - 0,15647$
 $y = (0,02690 \times 42\text{ppm}) - 0,15647$
 $y = 0,973$

$$\bullet \quad S_{x/y} = \sqrt{\frac{(\sum |y - y'|)^2}{N - 2}}$$

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

N = jumlah data

$(\sum |y - y'|)^2$ = jumlah kuadrat total residual

$$S_{x/y} = \sqrt{\frac{0,000345}{6 - 2}} = 0,009287$$

$$\bullet \quad \text{LOD} = 3,3 \times \frac{S_{x/y}}{b}$$

$$\text{LOD} = 3,3 \times \frac{0,009287}{0,0269}$$

$$\text{LOD} = 1.1393 \text{ ppm}$$

$$\bullet \quad \text{LOQ} = 10 \times \frac{S_{x/y}}{b}$$

$$\text{LOQ} = 10 \times \frac{0,009287}{0,0269}$$

$$\text{LOQ} = 3,4524 \text{ ppm}$$

3. Akurasi

Konsentrasi	Replikasi	Abs	Konsentrasi	Sebenarnya	%	
80%	1	0,420	21,429988	22	97%	99%
	2	0,431	21,83891	22	99%	
	3	0,434	21,950434	22	100%	
100%	1	0,535	25,705081	26	99%	100%
	2	0,546	26,114002	26	100%	
	3	0,546	26,114002	26	100%	
120%	1	0,648	29,905824	30	100%	100%
	2	0,650	29,980173	30	100%	
	3	0,653	30,091698	30	100%	

4. Presisi

Membuat larutan alfa mangostin konsentrasi 30 ppm dengan 10 replikasi.

REPLIKASI	ABS	Konsentrasi (ppm)	Sebenarnya
1	0,647	29,868649	30ppm
2	0,649	29,942999	
3	0,652	30,054523	
4	0,653	30,091698	
5	0,655	30,166047	
6	0,654	30,128872	
7	0,655	30,166047	
8	0,659	30,314746	
9	0,659	30,314746	
10	0,659	30,314746	
SD		0,154572	
RATA-RATA	30,136307		
CV	0,005129		
RSD	1%		
		Syarat : <2%	

Lampiran 9. Efisiensi penjerapan dan jumlah obat yang terjerap

Formula	Absorbansi	Efisiensi penjerapan
1	0,533	97,43%
2	0,480	97,63%
3	0,681	96,887%
4	0,826	96,348%
5	0,813	96,396%

$$a = -0,1564$$

$$b = 0,0269$$

$$r = 0,99915$$

$$y = bx - a$$

$$y = 0,0269x - 0,1564$$

Efisiensi penjerapan (%EE)

$$\%EE = \frac{TD - FD}{TD} \times 100\%$$

TD → total jumlah fenolat yang terdapat pada formula

FD → total senyawa fenolat yang terdeteksi pada supernatan (tidak terjerap)

FORMULA 1 →

- $y = bx - a$

$$y = 0,0269x - 0,1564$$

$$0,533 = 0,0269x - 0,1564$$

$$x = 25,628 \text{ ppm}$$

- jumlah alfa mangostin tidak terjerap = $\frac{25,628 \text{ ppm}}{1000 \text{ ppm}} \times 100 \text{ mg} = 2,5628 \text{ mg}$

- % efisiensi penjerapan = $\frac{TD - FD}{TD} \times 100\%$
 $= \frac{100 \text{ mg} - 2,5628 \text{ mg}}{100 \text{ mg}} \times 100\% = 97,43\%$

FORMULA 2 →

- $y = 0,0269x - 0,1564$

$$0,480 = 0,0269x - 0,1564$$

$$x = 23,657 \text{ ppm}$$

- jumlah alfa mangostin tidak terjerap = $\frac{23,657 \text{ ppm}}{1000 \text{ ppm}} \times 100 \text{ mg} = 2,3657 \text{ mg}$

- % efisiensi penjerapan = $\frac{TD - FD}{TD} \times 100\%$
 $= \frac{100 \text{ mg} - 2,3657 \text{ mg}}{100 \text{ mg}} \times 100\% = 97,63\%$

FORMULA 3 →

- $y = 0,0269x - 0,1564$
 $0,681 = 0,0269x - 0,1564$
 $x = 31,130 \text{ ppm}$
- jumlah alfa mangostin tidak terjerap = $\frac{31,130 \text{ ppm}}{1000 \text{ ppm}} \times 100 \text{ mg} = 3,113 \text{ mg}$
- % efisiensi penjerapan = $\frac{TD-FD}{TD} \times 100\%$
 $= \frac{100 \text{ mg} - 3,113 \text{ mg}}{100 \text{ mg}} \times 100\% = 96,887\%$

FORMULA 4 →

- $y = 0,0269x - 0,1564$
 $0,826 = 0,0269x - 0,1564$
 $x = 36,520 \text{ ppm}$
- jumlah alfa mangostin tidak terjerap = $\frac{36,520 \text{ ppm}}{1000 \text{ ppm}} \times 100 \text{ mg} = 3,652 \text{ mg}$
- % efisiensi penjerapan = $\frac{TD-FD}{TD} \times 100\%$
 $= \frac{100 \text{ mg} - 3,652 \text{ mg}}{100 \text{ mg}} \times 100\% = 96,348\%$

FORMULA 5 →

- $y = 0,0269x - 0,1564$
 $0,813 = 0,0269x - 0,1564$
 $x = 36,037 \text{ ppm}$
- jumlah alfa mangostin tidak terjerap = $\frac{36,037 \text{ ppm}}{1000 \text{ ppm}} \times 100 \text{ mg} = 3,6037 \text{ mg}$
- % efisiensi penjerapan = $\frac{TD-FD}{TD} \times 100\%$
 $= \frac{100 \text{ mg} - 3,6037 \text{ mg}}{100 \text{ mg}} \times 100\% = 96,396\%$

Lampiran 10. Uji stabilitas

Stabilitas fitosom alfa mangostin pada suhu kamar			
Formula	Minggu ke 1	Minggu ke 2	Minggu ke 3
1	-	+	+
2	-	+	+
3	-	+	+
4	-	+	+
5	+	+	+

Ket. Negatif (-) tidak ada endapan, positif (+) ada endapan.

Ukuran partikel dan zeta potensial setelah penyimpanan			
Formula	Ukuran partikel (nm)	Indeks polidispersitas	Zeta potensial (mV)
2	141,3	0,257	-2,173

Lampiran 11. Pengujian ukuran partikel dan zeta potensial fitosom alfa mangostin sebelum penyimpanan

Size Distribution Report by Intensity v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F1 1

SOP Name: mansettings.nano

General Notes:

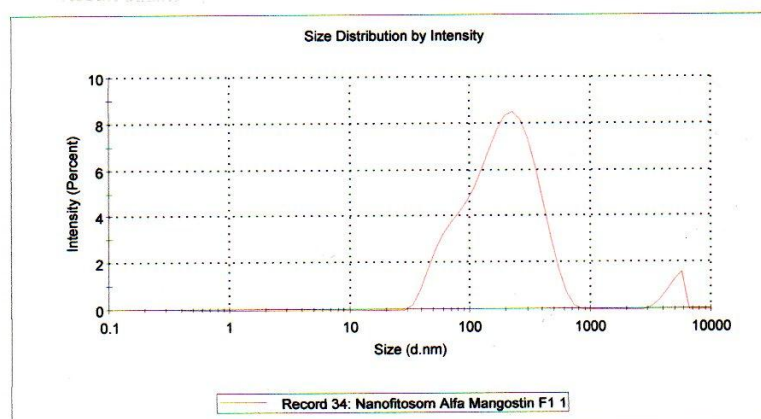
File Name: NanofitosomMyricetin_2...	Dispersant Name: Water
Record Number: 34	Dispersant RI: 1,330
Material RI: 1,52	Viscosity (cP): 0,8872
Material Absorbance: 0,100	Measurement Date and Time: Jumat, 26 April 2019 12.03....

System

Temperature (°C): 25,0	Duration Used (s): 60
Count Rate (kcps): 249,0	Measurement Position (mm): 0,85
Cell Description: Disposable sizing cuvette	Attenuator: 3

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 154,6	Peak 1: 203,8	95,9	123,4
Pdl: 0,376	Peak 2: 4820	4,1	717,3
Intercept: 0,884	Peak 3: 0,000	0,0	0,000
Result quality Good			



Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F1 2

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... **Dispersant Name:** Water

Record Number: 35 **Dispersant RI:** 1,330

Material RI: 1,52 **Viscosity (cP):** 0,8872

Material Absorbion: 0,100 **Measurement Date and Time:** Jumat, 26 April 2019 12.05....

System

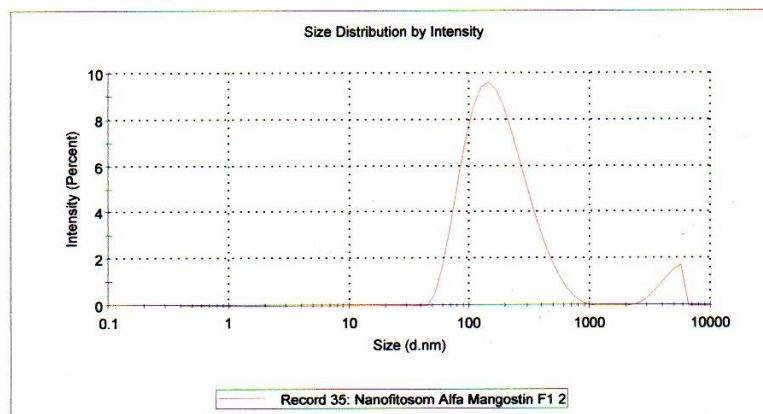
Temperature (°C): 25,0 **Duration Used (s):** 60

Count Rate (kcps): 242,7 **Measurement Position (mm):** 0,85

Cell Description: Disposable sizing cuvette **Attenuator:** 3

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 151,7	Peak 1: 190,4	94,1	118,9
Pdl: 0,348	Peak 2: 4518	5,9	881,0
Intercept: 0,887	Peak 3: 0,000	0,0	0,000
Result quality Good			



Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F1 3

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... **Dispersant Name:** Water

Record Number: 36 **Dispersant RI:** 1,330

Material RI: 1,52 **Viscosity (cP):** 0,8872

Material Absorbion: 0,100 **Measurement Date and Time:** Jumat, 26 April 2019 12.07....

System

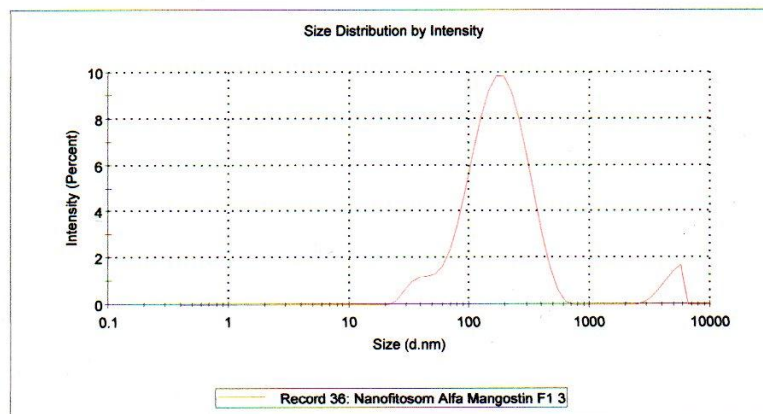
Temperature (°C): 25,0 **Duration Used (s):** 60

Count Rate (kcps): 241,4 **Measurement Position (mm):** 0,85

Cell Description: Disposable sizing cuvette **Attenuator:** 3

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 151,4	Peak 1: 184,9	94,9	100,3
PdI: 0,353	Peak 2: 4662	5,1	803,8
Intercept: 0,899	Peak 3: 0,000	0,0	0,000
Result quality Good			



Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F2 1

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... Dispersant Name: Water

Record Number: 37

Dispersant RI: 1,330

Material RI: 1,52

Viscosity (cP): 0,8872

Material Absorbance: 0,100

Measurement Date and Time: Jumat, 26 April 2019 12.13....

System

Temperature (°C): 25,0

Duration Used (s): 60

Count Rate (kcps): 398,9

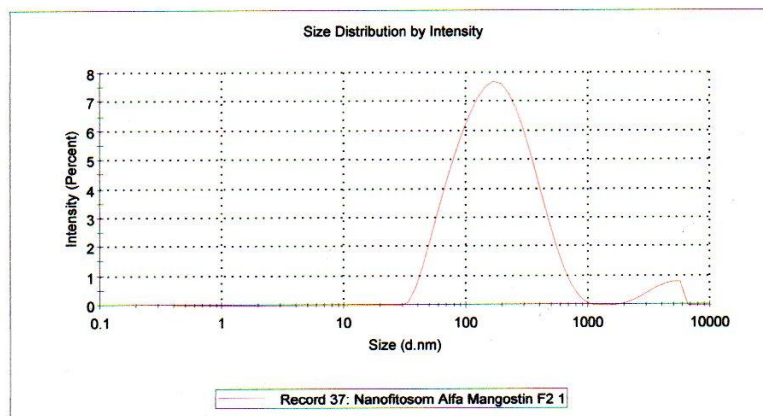
Measurement Position (mm): 4,65

Cell Description: Disposable sizing cuvette

Attenuator: 6

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 144,2	Peak 1: 203,4	96,0	139,8
Pdl: 0,356	Peak 2: 4113	4,0	1044
Intercept: 0,892	Peak 3: 0,000	0,0	0,000

Result quality **Good**

Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F2 2

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... Dispersant Name: Water

Record Number: 38 Dispersant RI: 1,330

Material RI: 1,52 Viscosity (cP): 0,8872

Material Absorbtion: 0,100 Measurement Date and Time: Jumat, 26 April 2019 12.15....

System

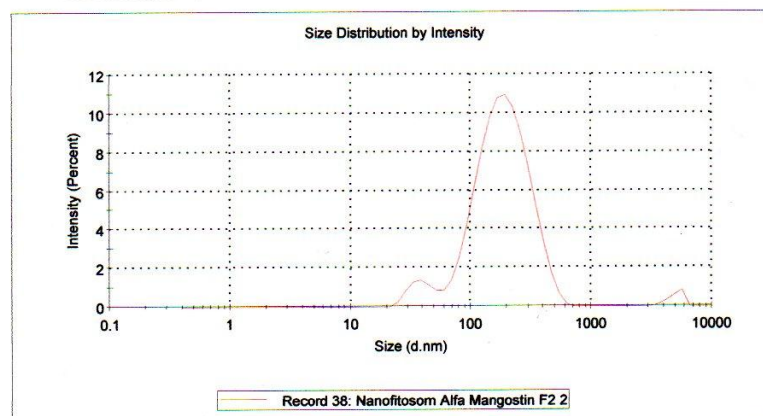
Temperature (°C): 25,0 Duration Used (s): 60

Count Rate (kcps): 396,4 Measurement Position (mm): 4,65

Cell Description: Disposable sizing cuvette Attenuator: 6

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 153,4	Peak 1: 201,9	91,6	94,57
Pdl: 0,272	Peak 2: 40,66	6,4	9,981
Intercept: 0,895	Peak 3: 4929	1,9	653,1
Result quality Good			



Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F2 3

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... Dispersant Name: Water

Record Number: 39

Dispersant RI: 1,330

Material RI: 1,52

Viscosity (cP): 0,8872

Material Absorbtion: 0,100

Measurement Date and Time: Jumat, 26 April 2019 12.17....

System

Temperature (°C): 25,0

Duration Used (s): 60

Count Rate (kcps): 377,8

Measurement Position (mm): 4,65

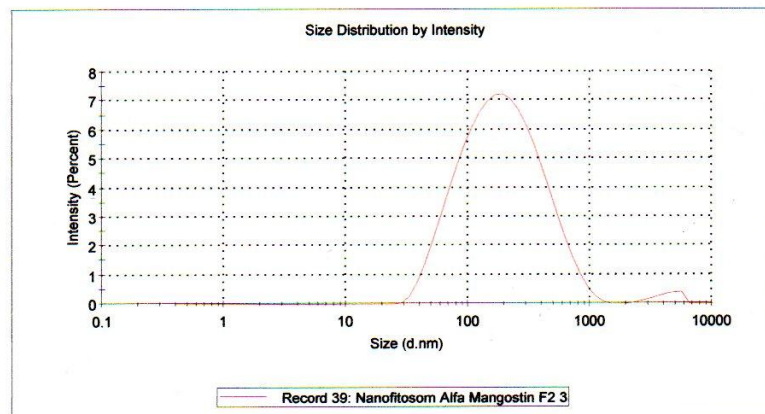
Cell Description: Disposable sizing cuvette

Attenuator: 6

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 149,0	Peak 1: 233,9	98,2	178,8
Pdl: 0,365	Peak 2: 4273	1,8	981,0
Intercept: 0,893	Peak 3: 0,000	0,0	0,000

Result quality **Good**



Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F3 1

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... **Dispersant Name:** Water

Record Number: 40 **Dispersant RI:** 1,330

Material RI: 1,52 **Viscosity (cP):** 0,8872

Material Absorbtion: 0,100 **Measurement Date and Time:** Jumat, 26 April 2019 12.24....

System

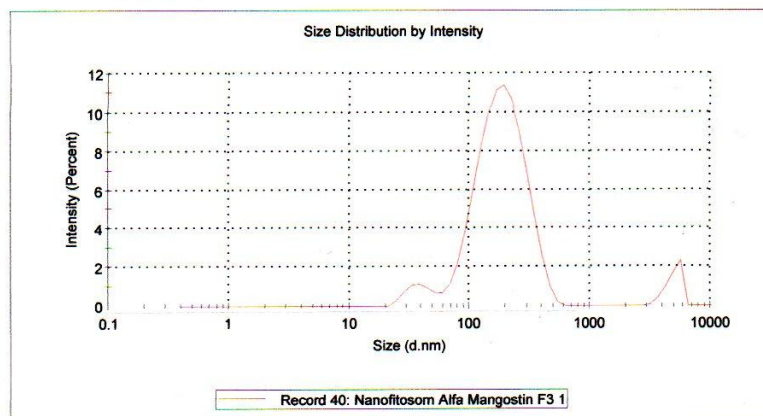
Temperature (°C): 25,0 **Duration Used (s):** 60

Count Rate (kcps): 373,1 **Measurement Position (mm):** 1,25

Cell Description: Disposable sizing cuvette **Attenuator:** 3

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 167,8	Peak 1: 195,8	89,0	84,50
Pdl: 0,348	Peak 2: 4890	5,5	678,4
Intercept: 0,904	Peak 3: 40,16	5,5	10,10
Result quality Good			



Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F3 2

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... **Dispersant Name:** Water

Record Number: 41

Dispersant RI: 1,330

Material RI: 1,52

Viscosity (cP): 0,8872

Material Absorbtion: 0,100

Measurement Date and Time: Jumat, 26 April 2019 12.26....

System

Temperature (°C): 25,0

Duration Used (s): 60

Count Rate (kcps): 389,5

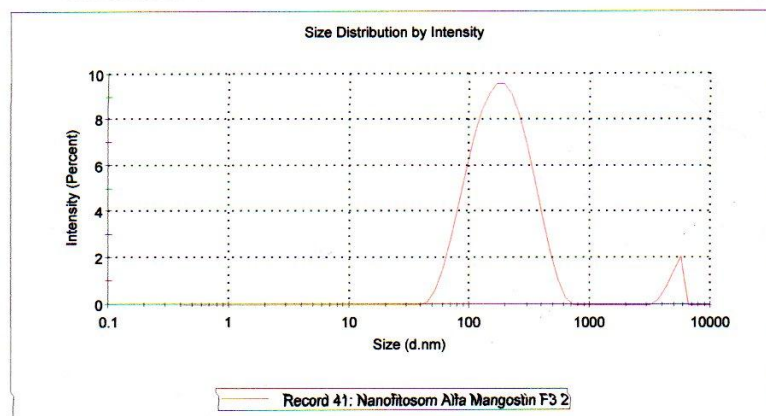
Measurement Position (mm): 1,25

Cell Description: Disposable sizing cuvette

Attenuator: 3

Results

		Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 164,1	Peak 1:	198,0	95,6	105,2
Pdl: 0,367	Peak 2:	4991	4,4	613,9
Intercept: 0,902	Peak 3:	0,000	0,0	0,000
Result quality Good				



Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F3 3

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... Dispersant Name: Water

Record Number: 42

Dispersant RI: 1,330

Material RI: 1,52

Viscosity (cP): 0,8872

Material Absorbtion: 0,100

Measurement Date and Time: Jumat, 26 April 2019 12.28....

System

Temperature (°C): 25,0

Duration Used (s): 60

Count Rate (kcps): 407,9

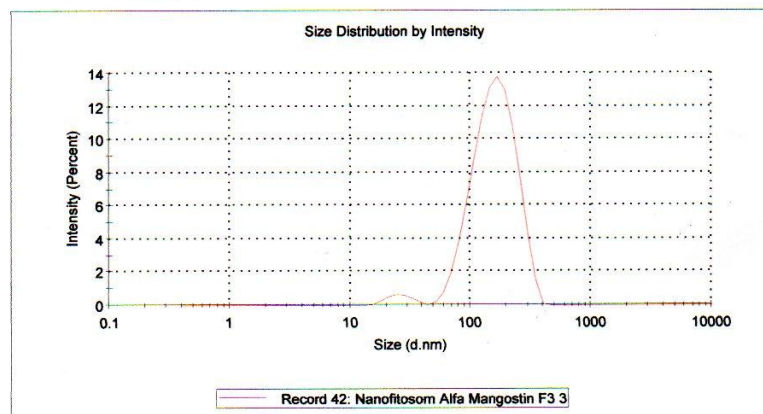
Measurement Position (mm): 1,25

Cell Description: Disposable sizing cuvette

Attenuator: 3

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 178,2	Peak 1: 165,8	97,3	62,51
Pdl: 0,286	Peak 2: 26,12	2,7	5,979
Intercept: 0,903	Peak 3: 0,000	0,0	0,000

Result quality **Refer to quality report**

Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F4 1

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... **Dispersant Name:** Water

Record Number: 43

Dispersant RI: 1,330

Material RI: 1,52

Viscosity (cP): 0,8872

Material Absorbion: 0,100

Measurement Date and Time: Jumat, 26 April 2019 12.34....

System

Temperature (°C): 25,0

Duration Used (s): 60

Count Rate (kcps): 438,5

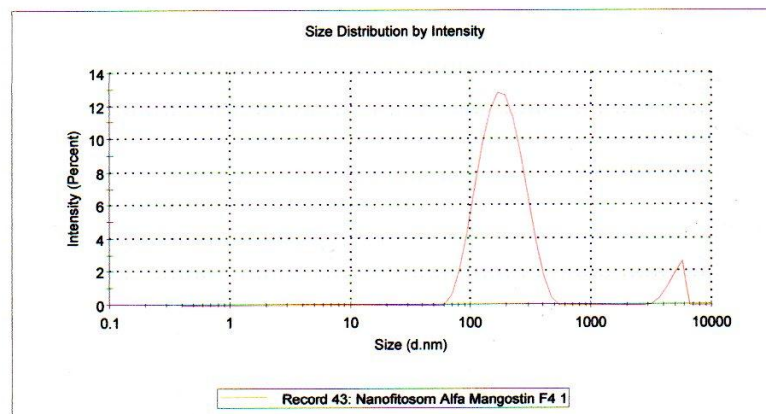
Measurement Position (mm): 1,25

Cell Description: Disposable sizing cuvette

Attenuator: 3

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 170,3	Peak 1: 187,8	93,9	74,73
PdI: 0,328	Peak 2: 4914	6,1	663,4
Intercept: 0,896	Peak 3: 0,000	0,0	0,000
Result quality Good			



Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F4 2

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... Dispersant Name: Water

Record Number: 44

Dispersant RI: 1,330

Material RI: 1,52

Viscosity (cP): 0,8872

Material Absorption: 0,100

Measurement Date and Time: Jumat, 26 April 2019 12.36....

System

Temperature (°C): 25,0

Duration Used (s): 60

Count Rate (kcps): 442,3

Measurement Position (mm): 1,25

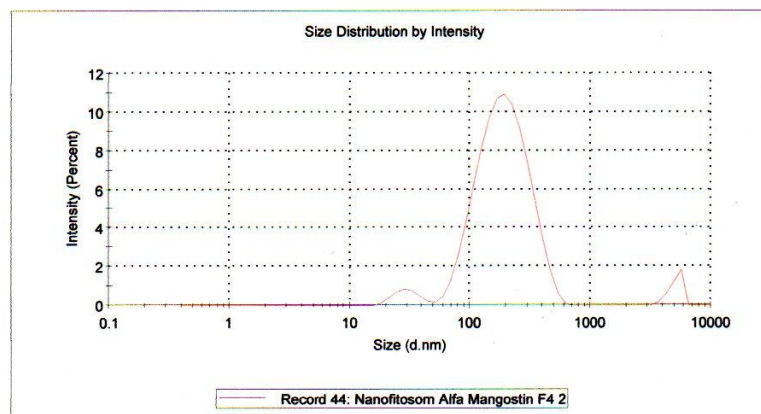
Cell Description: Disposable sizing cuvette

Attenuator: 3

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 166,5	Peak 1: 202,5	92,5	93,85
PdI: 0,357	Peak 2: 5014	3,8	601,8
Intercept: 0,894	Peak 3: 30,43	3,7	7,710

Result quality **Good**



Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F4 3

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... **Dispersant Name:** Water

Record Number: 45 **Dispersant RI:** 1,330

Material RI: 1,52 **Viscosity (cP):** 0,8872

Material Absorption: 0,100 **Measurement Date and Time:** Jumat, 26 April 2019 12.38....

System

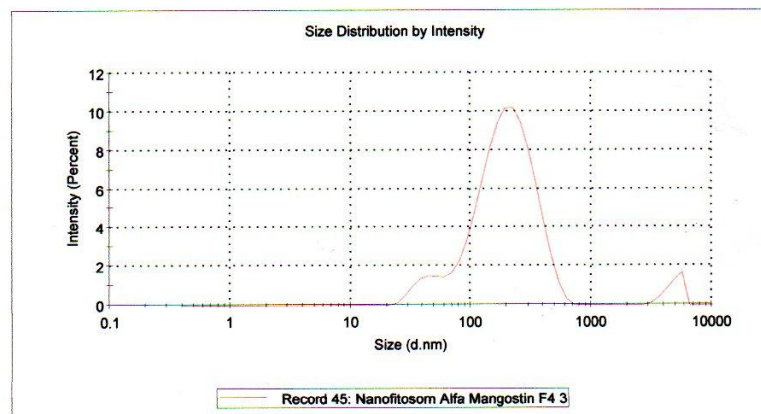
Temperature (°C): 25,0 **Duration Used (s):** 60

Count Rate (kcps): 422,3 **Measurement Position (mm):** 1,25

Cell Description: Disposable sizing cuvette **Attenuator:** 3

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 166,6	Peak 1: 216,3	88,5	104,0
PdI: 0,347	Peak 2: 44,18	7,2	9,933
Intercept: 0,894	Peak 3: 4812	4,2	720,0
Result quality Good			



Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F5 1

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... **Dispersant Name:** Water

Record Number: 46 **Dispersant RI:** 1,330

Material RI: 1,52 **Viscosity (cP):** 0,8872

Material Absorbtion: 0,100 **Measurement Date and Time:** Jumat, 26 April 2019 12.46...

System

Temperature (°C): 25,0 **Duration Used (s):** 90

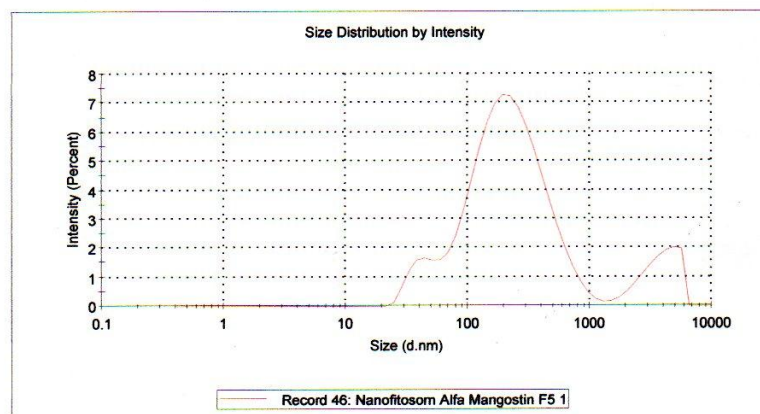
Count Rate (kcps): 93,6 **Measurement Position (mm):** 0,85

Cell Description: Disposable sizing cuvette **Attenuator:** 2

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 187,2	Peak 1: 255,6	81,5	177,8
Pdl: 0,416	Peak 2: 3801	11,9	1191
Intercept: 0,922	Peak 3: 40,26	6,6	7,624

Result quality **Refer to quality report**



Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F5 2

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... **Dispersant Name:** Water

Record Number: 47 **Dispersant RI:** 1,330

Material RI: 1,52 **Viscosity (cP):** 0,8872

Material Absorbtion: 0,100 **Measurement Date and Time:** Jumat, 26 April 2019 12.50....

System

Temperature (°C): 25,0

Duration Used (s): 90

Count Rate (kcps): 95,7

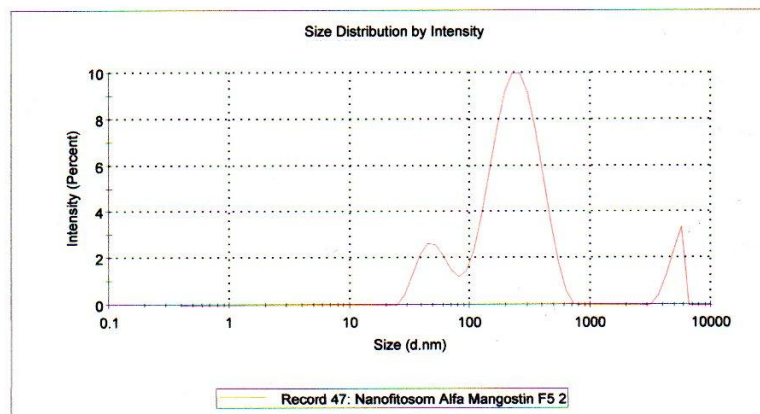
Measurement Position (mm): 0,85

Cell Description: Disposable sizing cuvette

Attenuator: 2

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 182,5	Peak 1: 251,5	78,8	109,2
Pdl: 0,555	Peak 2: 50,64	13,9	13,89
Intercept: 0,921	Peak 3: 4957	7,4	634,1
Result quality Good			



Size Distribution Report by Intensity

v2.2



Sample Details

Sample Name: Nanofitosom Alfa Mangostin F5 3

SOP Name: mansettings.nano

General Notes:

File Name: NanofitosomMyricetin_2... **Dispersant Name:** Water

Record Number: 48 **Dispersant RI:** 1,330

Material RI: 1,52 **Viscosity (cP):** 0,8872

Material Absorption: 0,100 **Measurement Date and Time:** Jumat, 26 April 2019 12.53....

System

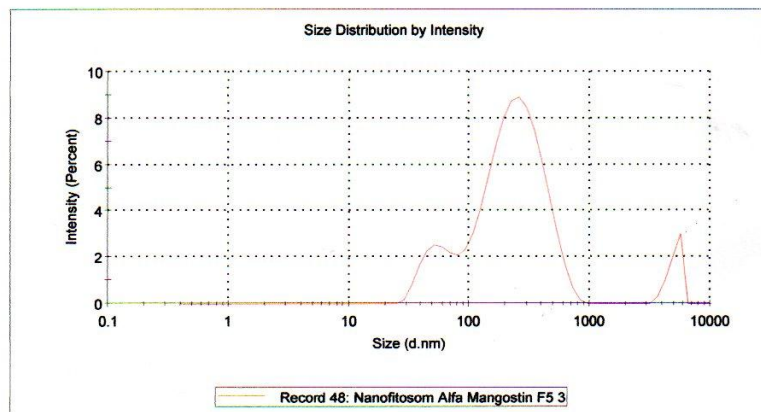
Temperature (°C): 25,0 **Duration Used (s):** 90

Count Rate (kcps): 95,9 **Measurement Position (mm):** 0,85

Cell Description: Disposable sizing cuvette **Attenuator:** 2

Results

	Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm): 181,4	Peak 1: 264,6	79,9	133,1
PdI: 0,590	Peak 2: 55,18	13,8	14,35
Intercept: 0,921	Peak 3: 4994	6,3	612,8
Result quality Good			



Lampiran 12. Penetapan ukuran partikel dan zeta potensial fitosom alfa mangostin setelah penyimpanan (Formula 2)

Size Distribution Report by Number
v2.2



Sample Details

Sample Name: Alfa 1

SOP Name: mansettings.nano

General Notes:

File Name: Latifah 2019.dts	Dispersant Name: Water
Record Number: 1	Dispersant RI: 1.330
Material RI: 1.33	Viscosity (mPa.s): 0.8872
Material Absorbance: 0.500	Measurement Date and Time: Monday, June 10, 2019 10...

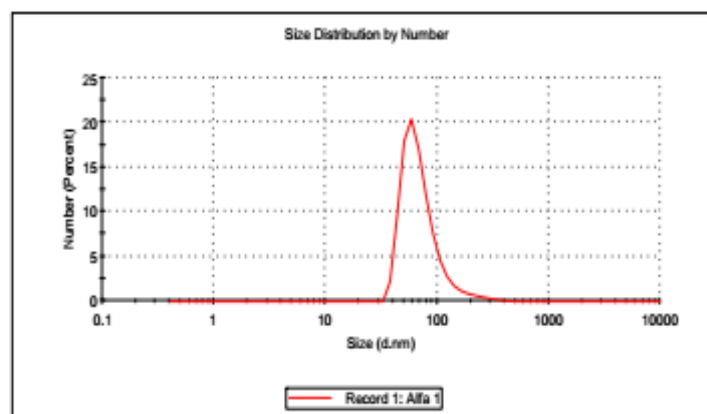
System

Temperature (°C): 25.0	Duration Used (s): 60
Count Rate (kcps): 356.2	Measurement Position (mm): 0.85
Cell Description: Disposable sizing cuvette	Attenuator: 4

Results

	Size (d.n...	% Number:	St Dev (d.n...
Z-Average (d.nm): 140.9	Peak 1: 73.48	100.0	38.11
PdI: 0.258	Peak 2: 0.000	0.0	0.000
Intercept: 0.940	Peak 3: 0.000	0.0	0.000

Result quality **Good**



Size Distribution Report by Number
v2.2



Sample Details

Sample Name: Alfa 2
SOP Name: mansettings.nano
General Notes:

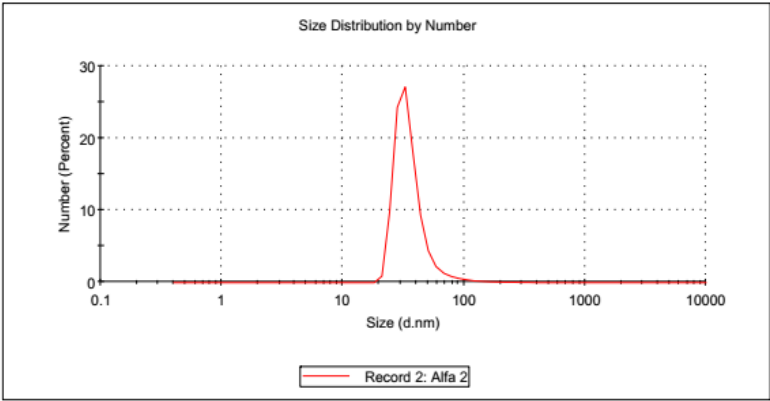
File Name: Latifah 2019.dts	Dispersant Name: Water
Record Number: 2	Dispersant RI: 1.330
Material RI: 1.33	Viscosity (mPa.s): 0.8872
Material Absorbion: 0.500	Measurement Date and Time: Monday, June 10, 2019 10...

System

Temperature (°C): 25.0	Duration Used (s): 60
Count Rate (kcps): 348.1	Measurement Position (mm): 0.85
Cell Description: Disposable sizing cuvette	Attenuator: 4

Results

	Size (d.n...	% Number:	St Dev (d.n...
Z-Average (d.nm): 141.3	Peak 1: 36.67	100.0	17.76
Pdl: 0.250	Peak 2: 0.000	0.0	0.000
Intercept: 0.943	Peak 3: 0.000	0.0	0.000
Result quality	Good		



Size Distribution Report by Number

v2.2



Sample Details

Sample Name: Alfa 3

SOP Name: mansettings.nano

General Notes:

File Name: Latifah 2019.dts

Dispersant Name: Water

Record Number: 3

Dispersant RI: 1.330

Material RI: 1.33

Viscosity (mPa.s): 0.8872

Material Absorbtion: 0.500

Measurement Date and Time: Monday, June 10, 2019 10...

System

Temperature (°C): 25.0

Duration Used (s): 60

Count Rate (kcps): 332.3

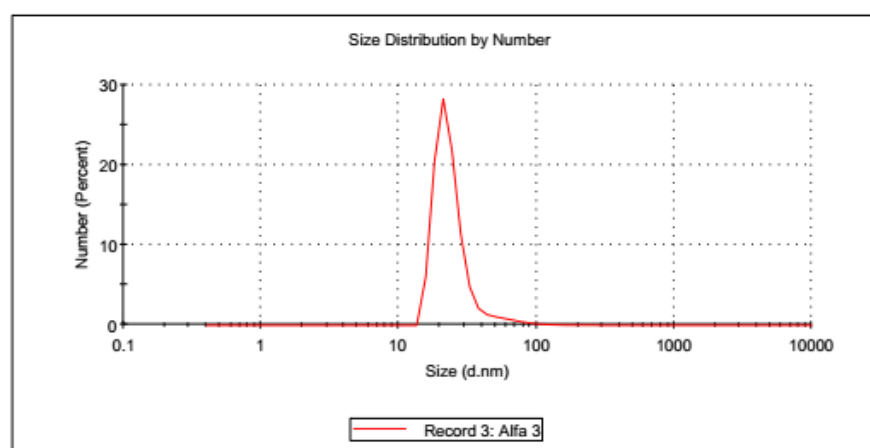
Measurement Position (mm): 0.85

Cell Description: Disposable sizing cuvette

Attenuator: 4

Results

	Size (d.n...	% Number:	St Dev (d.n...
Z-Average (d.nm): 141.5	Peak 1: 24.85	100.0	13.01
Pdl: 0.263	Peak 2: 0.000	0.0	0.000
Intercept: 0.944	Peak 3: 0.000	0.0	0.000

Result quality **Good**

Size Distribution Report by Number

v2.2



Sample Details

Sample Name: Alfa 4

SOP Name: mansettings.nano

General Notes:

File Name: Latifah 2019.dts

Dispersant Name: Water

Record Number: 4

Dispersant RI: 1.330

Material RI: 1.33

Viscosity (mPa.s): 0.8872

Material Absorbion: 0.500

Measurement Date and Time: Monday, June 10, 2019 10...

System

Temperature (°C): 25.0

Duration Used (s): 60

Count Rate (kcps): 322.8

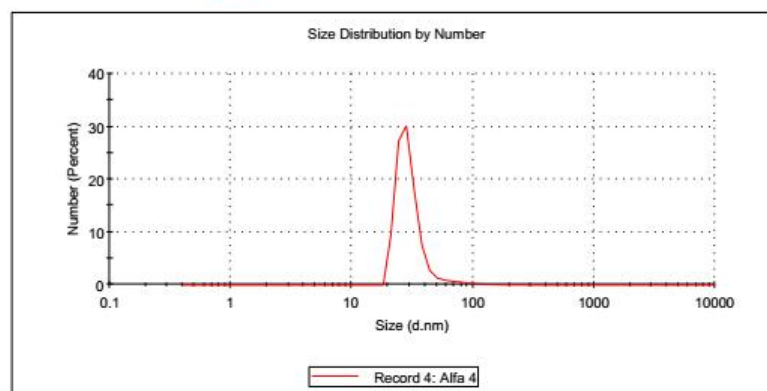
Measurement Position (mm): 0.85

Cell Description: Disposable sizing cuvette

Attenuator: 4

Results

	Size (d.n...	% Number:	St Dev (d.n...
Z-Average (d.nm): 138.6	Peak 1: 30.71	100.0	14.05
Pdl: 0.305	Peak 2: 0.000	0.0	0.000
Intercept: 0.945	Peak 3: 0.000	0.0	0.000
Result quality Good			



Size Distribution Report by Number
v2.2



Sample Details

Sample Name: Alfa 5
SOP Name: mansettings.nano
General Notes:

File Name: Latifah 2019.dts Dispersant Name: Water
Record Number: 5 Dispersant RI: 1.330
Material RI: 1.33 Viscosity (mPa.s): 0.8872
Material Absorbtion: 0.500 Measurement Date and Time: Monday, June 10, 2019 10...

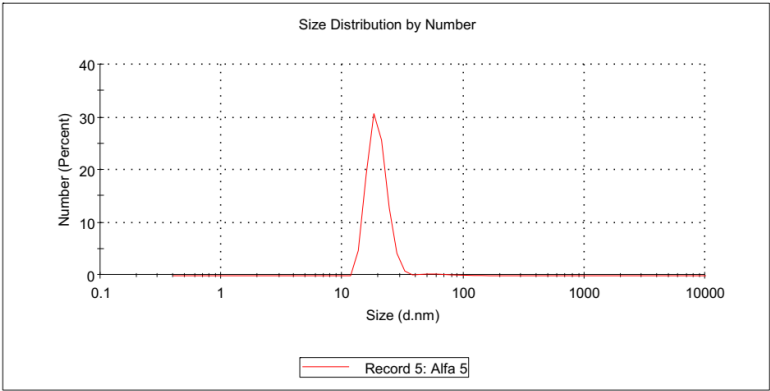
System

Temperature (°C): 25.0 Duration Used (s): 60
Count Rate (kcps): 312.9 Measurement Position (mm): 0.85
Cell Description: Disposable sizing cuvette Attenuator: 4

Results

	Size (d.n...	% Number:	St Dev (d.n...
Z-Average (d.nm): 141.9	Peak 1: 19.62	98.2	3.772
Pdl: 0.258	Peak 2: 67.56	1.8	34.87
Intercept: 0.945	Peak 3: 0.000	0.0	0.000

Result quality **Good**



Zeta Potential Report

v2.3



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Sample Details

Sample Name: Alfa 1

SOP Name: mansettings.nano

General Notes:

File Name: Latifah 2019.dts

Dispersant Name: Water

Record Number: 6

Dispersant RI: 1.330

Date and Time: Monday, June 10, 2019 10:53:...

Viscosity (cP): 0.8872

Dispersant Dielectric Constant: 78.5

System

Temperature (°C): 25.0

Zeta Runs: 100

Count Rate (kcps): 139.4

Measurement Position (mm): 4.50

Cell Description: Zeta dip cell

Attenuator: 7

Results

	Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV): -1.36	Peak 1: 0.00	0.0	0.00
Zeta Deviation (mV): 0.00	Peak 2: 0.00	0.0	0.00
Conductivity (mS/cm): 9.20	Peak 3: 0.00	0.0	0.00
Result quality See result quality report			

Zeta Potential Distribution

Record 6: Alfa 1

Zeta Potential Report

v2.3



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Sample Details

Sample Name: Alfa 2

SOP Name: mansettings.nano

General Notes:

File Name: Latifah 2019.dts

Dispersant Name: Water

Record Number: 7

Dispersant RI: 1.330

Date and Time: Monday, June 10, 2019 10:58:...

Viscosity (cP): 0.8872

Dispersant Dielectric Constant: 78.5

System

Temperature (°C): 25.0

Zeta Runs: 100

Count Rate (kcps): 167.0

Measurement Position (mm): 4.50

Cell Description: Zeta dip cell

Attenuator: 7

Results

	Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV): -2.72	Peak 1: 0.00	0.0	0.00
Zeta Deviation (mV): 0.00	Peak 2: 0.00	0.0	0.00
Conductivity (mS/cm): 12.0	Peak 3: 0.00	0.0	0.00
Result quality See result quality report			

Zeta Potential Distribution

Record 7: Alfa 2

Zeta Potential Report

v2.3



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Sample Details

Sample Name: Alfa 3

SOP Name: mansettings.nano

General Notes:

File Name: Latifah 2019.dts

Dispersant Name: Water

Record Number: 8

Dispersant RI: 1.330

Date and Time: Monday, June 10, 2019 11:01:...

Viscosity (cP): 0.8872

Dispersant Dielectric Constant: 78.5

System

Temperature (°C): 25.0

Zeta Runs: 100

Count Rate (kcps): 84.4

Measurement Position (mm): 4.50

Cell Description: Zeta dip cell

Attenuator: 7

Results

	Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV): -2.44	Peak 1: 0.00	0.0	0.00
Zeta Deviation (mV): 0.00	Peak 2: 0.00	0.0	0.00
Conductivity (mS/cm): 12.0	Peak 3: 0.00	0.0	0.00

Result quality **See result quality report**

Zeta Potential Distribution

Record 8: Alfa 3

Zeta Potential Report

v2.3



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Sample Details

Sample Name: Alfa 4

SOP Name: mansettings.nano

General Notes:

File Name: Latifah 2019.dts

Dispersant Name: Water

Record Number: 9

Dispersant RI: 1.330

Date and Time: Monday, June 10, 2019 11:03:...

Viscosity (cP): 0.8872

Dispersant Dielectric Constant: 78.5

System

Temperature (°C): 25.0

Zeta Runs: 34

Count Rate (kcps): 177.1

Measurement Position (mm): 4.50

Cell Description: Zeta dip cell

Attenuator: 7

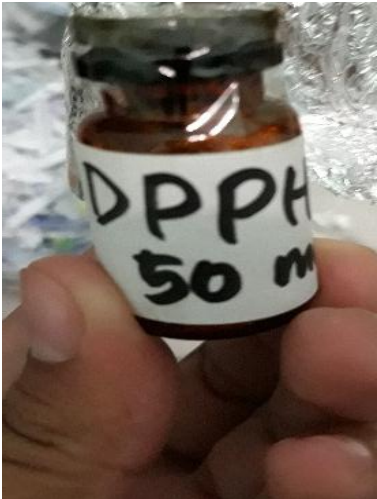
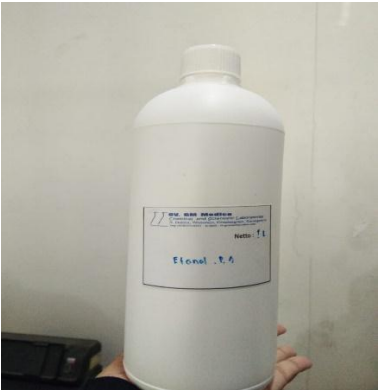
Results

	Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV): -2.60	Peak 1: 0.00	0.0	0.00
Zeta Deviation (mV): 0.00	Peak 2: 0.00	0.0	0.00
Conductivity (mS/cm): 12.0	Peak 3: 0.00	0.0	0.00
Result quality Good			

Zeta Potential Distribution

Record 9: Alfa 4

Lampiran 13. Gambar bahan dan alat penelitian

Bahan	
a. Gambar serbuk alfa mangostin 	b. Gambar Fosfatidilkolin 
c. Gambar serbuk kolesterol 	d. Gambar DPPH 
e. Gambar pelarut etanol p.a 	f. Gambar larutan PBS pH 7,38 

g. Gambar larutan stok alfa mangostin



Alat

a. Gambar Timbangan Analitik

b. Gambar *Magnetic stirrer*

c. Gambar Spektrofotometri UV-VIS

d. Gambar *vacuum rotary evaporator*

e. Gambar sonikator probe



f. Gambar alat sentrifugasi



g. Gambar alat PSA (Particle Size Analyzer)

