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OPTIMIZATION OF STIRRING SPEED AND STIRRING TIME
TOWARD NANOPARTICLE SIZE OF CHITOSAN-SIAM CITRUS
PEEL (*Citrus nobilis* L.var *Microcarpa*) 70% ETHANOL EXTRACT. *Maj
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Etanol 50% Kulit Buah Manggis (*Gaarcinia mangostana* L.) dengan Bentuk
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Verapamil Hidroklorida dari Kitosan dan Natrium Tripolifosfat dengan
Metode Gelasi Ionik. *J Farm Indones.* 2013;6: 4(April 2014):201–10.
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EKSTRAK BAWANG DAYAK (*Eleutherine americana* (Aubl)Merr)

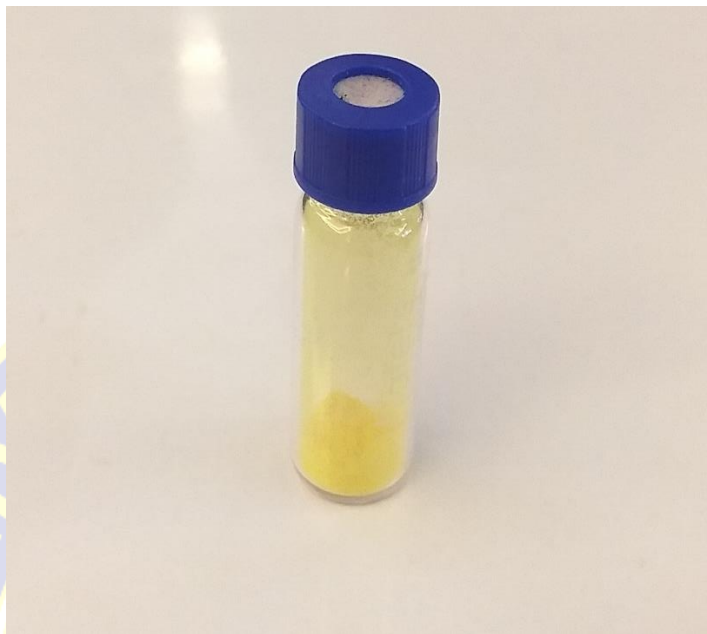
DENGAN VARIASI KONSENTRASI KITOSAN-TRIFOLIFOSFAT. J

Penelit Pendidik Guru Sekol Dasar. 2016;6(August):128.



LAMPIRAN 1

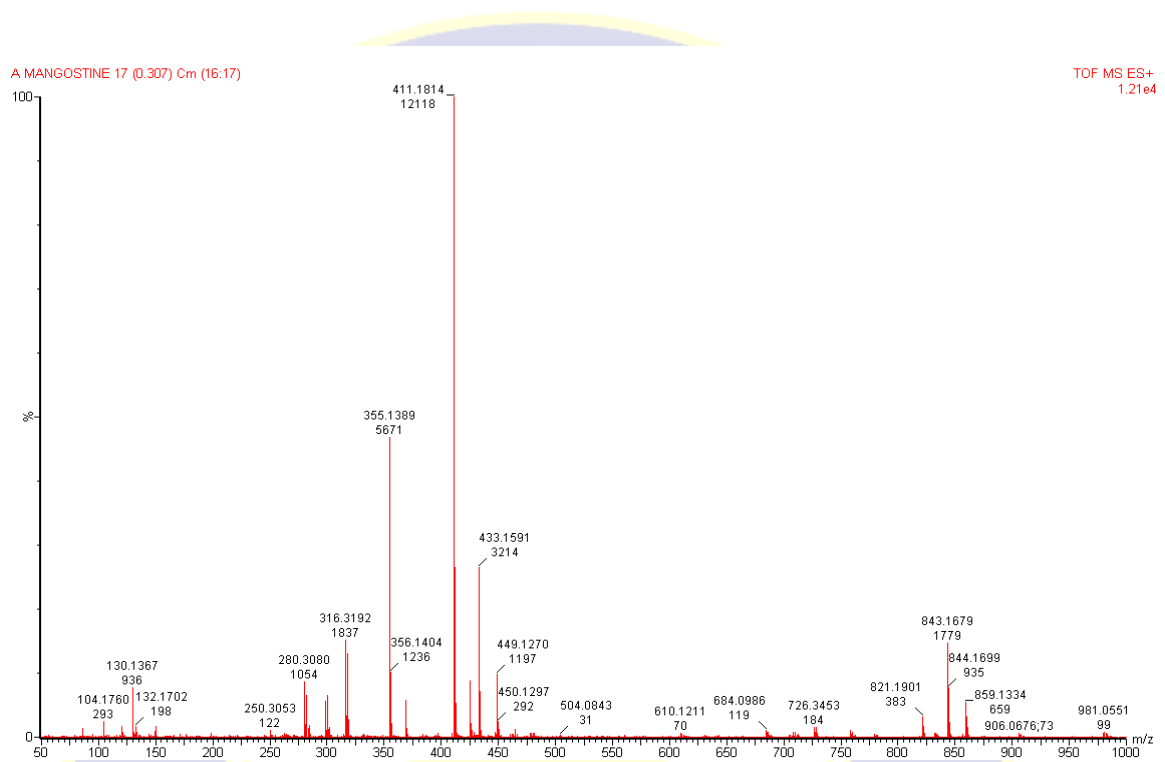
ISOLAT α -MANGOSTIN (*Garcinia Mangostana L.*)



Gambar V.1 Isolat α -Mangostin (*Garcinia Mangostana L.*)

LAMPIRAN 2

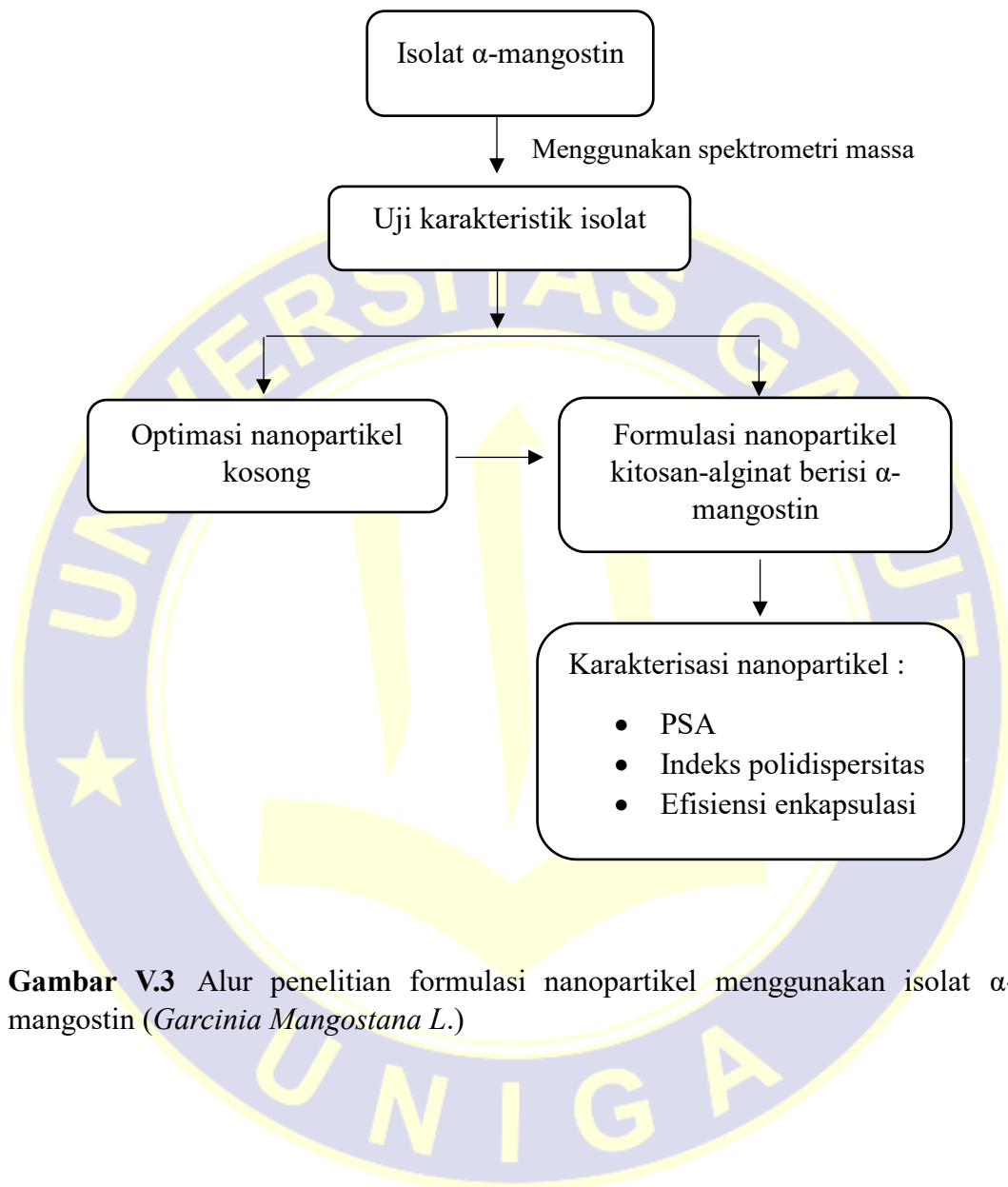
UJI KARAKTERISTIK ISOLAT α -MANGOSTIN (*Garcinia*
Mangostana L.) MENGGUNAKAN SPEKTROMETRI MASSA



Gambar V.2 Spektrum massa α -mangostin

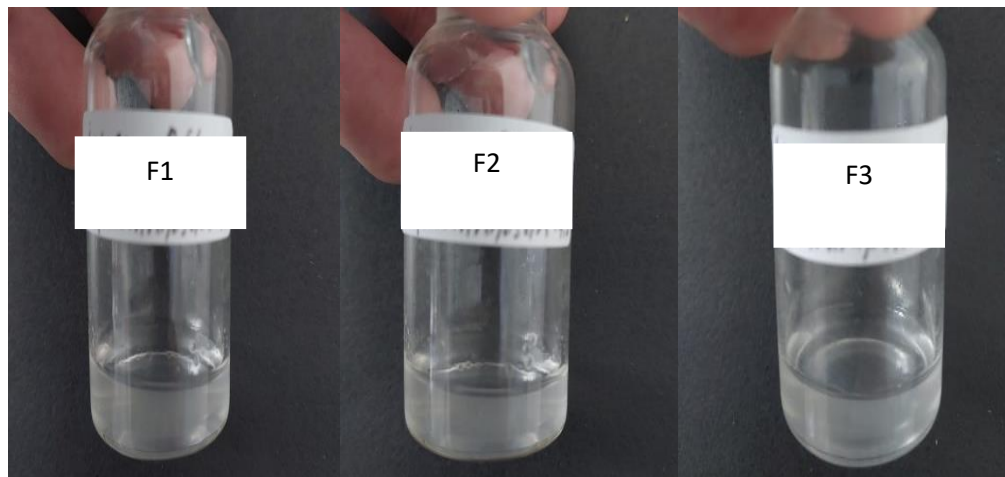
LAMPIRAN 3

ALUR PENELITIAN



Gambar V.3 Alur penelitian formulasi nanopartikel menggunakan isolat α -mangostin (*Garcinia Mangostana L.*)

LAMPIRAN 4
OPTIMASI NANOPARTIKEL KOSONG
(KITOSAN-ALGINAT)



Keterangan :

F1 = kitosan 1 mg/mL ; Alginat 5mg/mL ; TPP 0,75mg/mL

F2 = kitosan 1 mg/mL ; Alginat 6,25mg/mL ; TPP 0,75mg/mL

F3 = kitosan 1 mg/mL ; Alginat 7,5mg/mL ; TPP 0,75mg/mL

Gambar V.4 hasil optimasi nanopartikel kosong kitosan-alginat

LAMPIRAN 5

HASIL PENGUJIAN PSA (*PARTICLE SIZE ANALYZER*)

FORMULASI NANOPARTIKEL KOSONG

(KITOSAN-ALGINAT)

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HORIBA SZ-100 for Windows [Z Type] Ver2.20

SZ-100

Kitosan Na Alginat_2769.nsz Measurement

Results

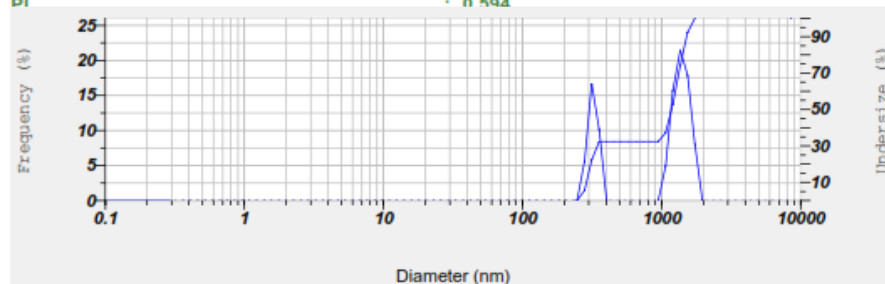
Date : 15 June 2023 15:04:01
 Measurement Type : Particle Size
 Sample Name : Kitosan Na Alginat
 Scattering Angle : 90
 Temperature of the Holder : 25.0 deg. C
 Dispersion Medium Viscosity : 0.895 mPa.s
 Transmission Intensity before Meas. : 17342
 Distribution Form : [Standard]
 Distribution Form(Dispersity) : Polydisperse
 Representation of Result : Scattering Light Intensity
 Count Rate : 580 kCPS

Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	0.32	302.8 nm	25.0 nm	301.6 nm
2	0.68	1314.7 nm	177.7 nm	1291.4 nm
3	---	--- nm	--- nm	--- nm
Total	1.00	987.9 nm	495.4 nm	1291.4 nm

Cumulant Operations

Z-Average : 672.1 nm
 PI : 0.594



No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation
1	0.34	0.000	0.000	22	4.40	0.000	0.000	43	57.09	0.000	0.000	64	740.89	0.000	32.288
2	0.38	0.000	0.000	23	4.87	0.000	0.000	44	64.50	0.000	0.000	65	837.07	0.000	32.288
3	0.43	0.000	0.000	24	5.61	0.000	0.000	45	72.87	0.000	0.000	66	945.74	0.000	32.288
4	0.49	0.000	0.000	25	6.34	0.000	0.000	46	82.33	0.000	0.000	67	1069.52	4.629	37.117
5	0.55	0.000	0.000	26	7.17	0.000	0.000	47	93.62	0.000	0.000	68	1207.24	15.694	52.801
6	0.62	0.000	0.000	27	8.10	0.000	0.000	48	105.10	0.000	0.000	69	1363.87	21.399	74.200
7	0.70	0.000	0.000	28	9.15	0.000	0.000	49	118.74	0.000	0.000	70	1541.04	17.309	92.109
8	0.80	0.000	0.000	29	10.34	0.000	0.000	50	134.16	0.000	0.000	71	1741.10	7.891	100.000
9	0.90	0.000	0.000	30	11.68	0.000	0.000	51	151.57	0.000	0.000	72	1967.14	0.000	100.000
10	1.02	0.000	0.000	31	13.20	0.000	0.000	52	171.25	0.000	0.000	73	2222.51	0.000	100.000
11	1.15	0.000	0.000	32	14.91	0.000	0.000	53	193.48	0.000	0.000	74	2511.05	0.000	100.000
12	1.30	0.000	0.000	33	16.84	0.000	0.000	54	218.80	0.000	0.000	75	2837.04	0.000	100.000
13	1.47	0.000	0.000	34	19.03	0.000	0.000	55	246.88	0.000	0.000	76	3205.35	0.000	100.000
14	1.66	0.000	0.000	35	21.50	0.000	0.000	56	279.04	5.536	5.536	77	3621.48	0.000	100.000
15	1.87	0.000	0.000	36	24.29	0.000	0.000	57	315.37	16.638	22.175	78	4591.63	0.000	100.000
16	2.11	0.000	0.000	37	27.45	0.000	0.000	58	356.20	10.113	32.288	79	4622.81	0.000	100.000
17	2.39	0.000	0.000	38	31.01	0.000	0.000	59	402.44	0.000	32.288	80	5222.98	0.000	100.000
18	2.70	0.000	0.000	39	35.03	0.000	0.000	60	454.69	0.000	32.288	81	5961.02	0.000	100.000
19	3.05	0.000	0.000	40	39.58	0.000	0.000	61	513.71	0.000	32.288	82	6967.10	0.000	100.000
20	3.45	0.000	0.000	41	44.72	0.000	0.000	62	580.41	0.000	32.288	83	7532.65	0.000	100.000
21	3.89	0.000	0.000	42	50.53	0.000	0.000	63	658.76	0.000	32.288	84	8510.56	0.000	100.000

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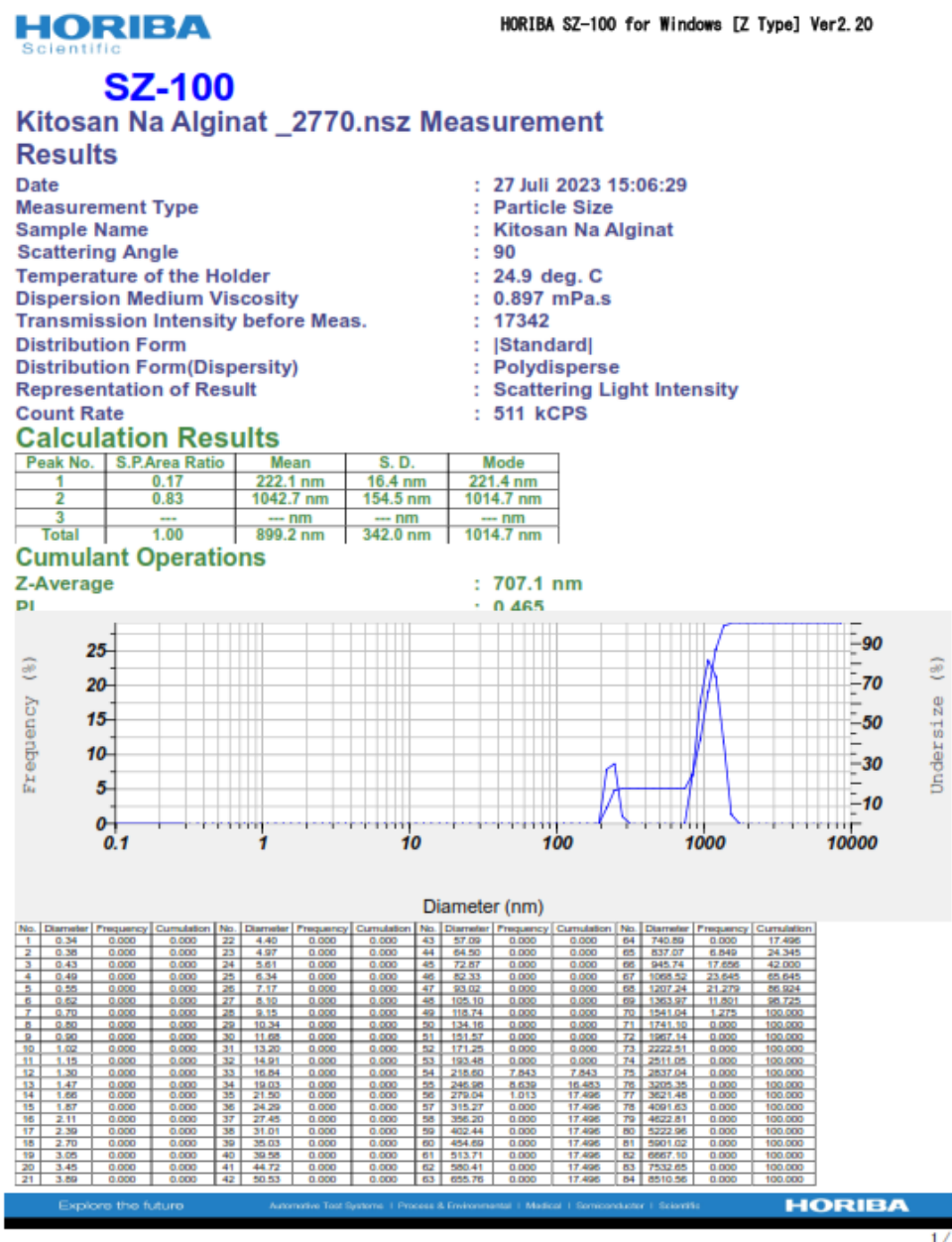
Gambar V.5 hasil pengujian PSA (*particle size analyzer*) pada formulasi nanopartikel kosong F1

LAMPIRAN 6

HASIL PENGUJIAN PSA (*PARTICLE SIZE ANALYZER*)

FORMULASI NANOPARTIKEL KOSONG

(KITOSAN-ALGINAT)



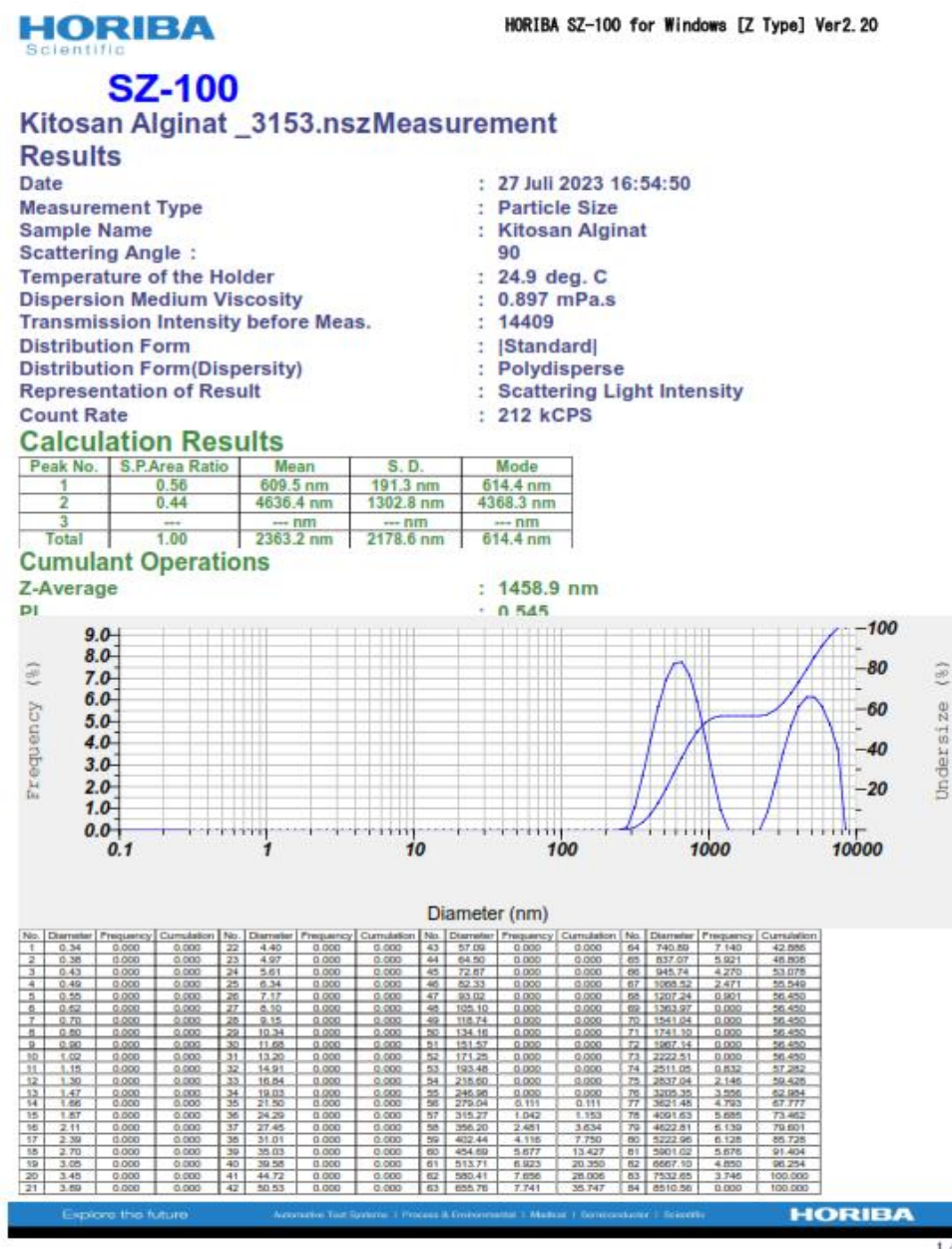
Gambar V.6 hasil pengujian PSA (*particle size analyzer*) pada formulasi nanopartikel kosong F2

LAMPIRAN 7

HASIL PENGUJIAN PSA (*PARTICLE SIZE ANALYZER*)

FORMULASI NANOPARTIKEL KOSONG

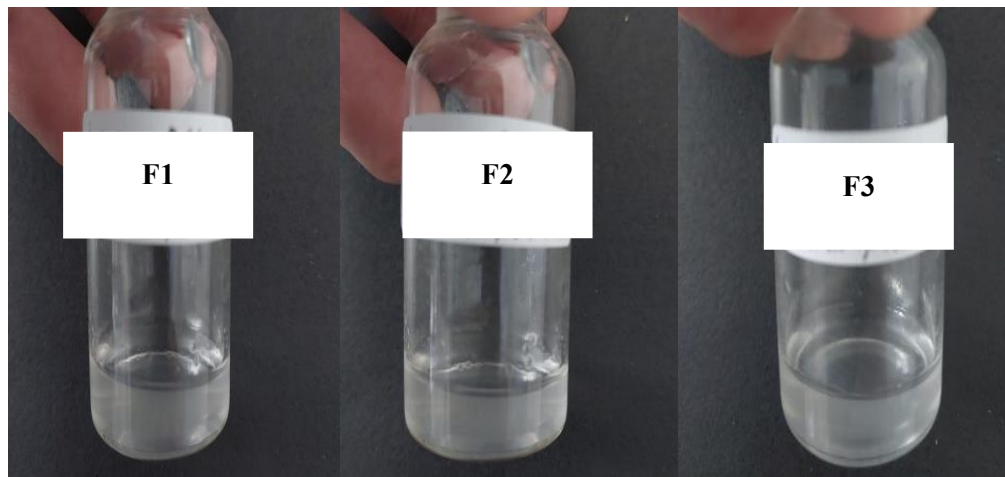
(KITOSAN-ALGINAT)



Gambar V.7 hasil pengujian PSA (*particle size analyzer*) pada formulasi nanopartikel kosong F3

LAMPIRAN 8

**OPTIMASI NANOPARTIKEL (KITOSAN-ALGINAT) YANG
MENGANDUNG ISOLAT α -MANGOSTIN**



Keterangan :

F1 = α -mangostin 0,0125 mg/mL

F2 = α -mangostin 0,0250 mg/mL

F3 = α -mangostin 0,0500 mg/mL

Gambar V.8 hasil optimasi nanopartikel kitosan-alginat yang mengandung isolat α -mangostin

LAMPIRAN 9

NANOPARTIKEL (KITOSAN-ALGINAT) YANG

MENGANDUNG ISOLAT α -MANGOSTIN DALAM KEMASAN

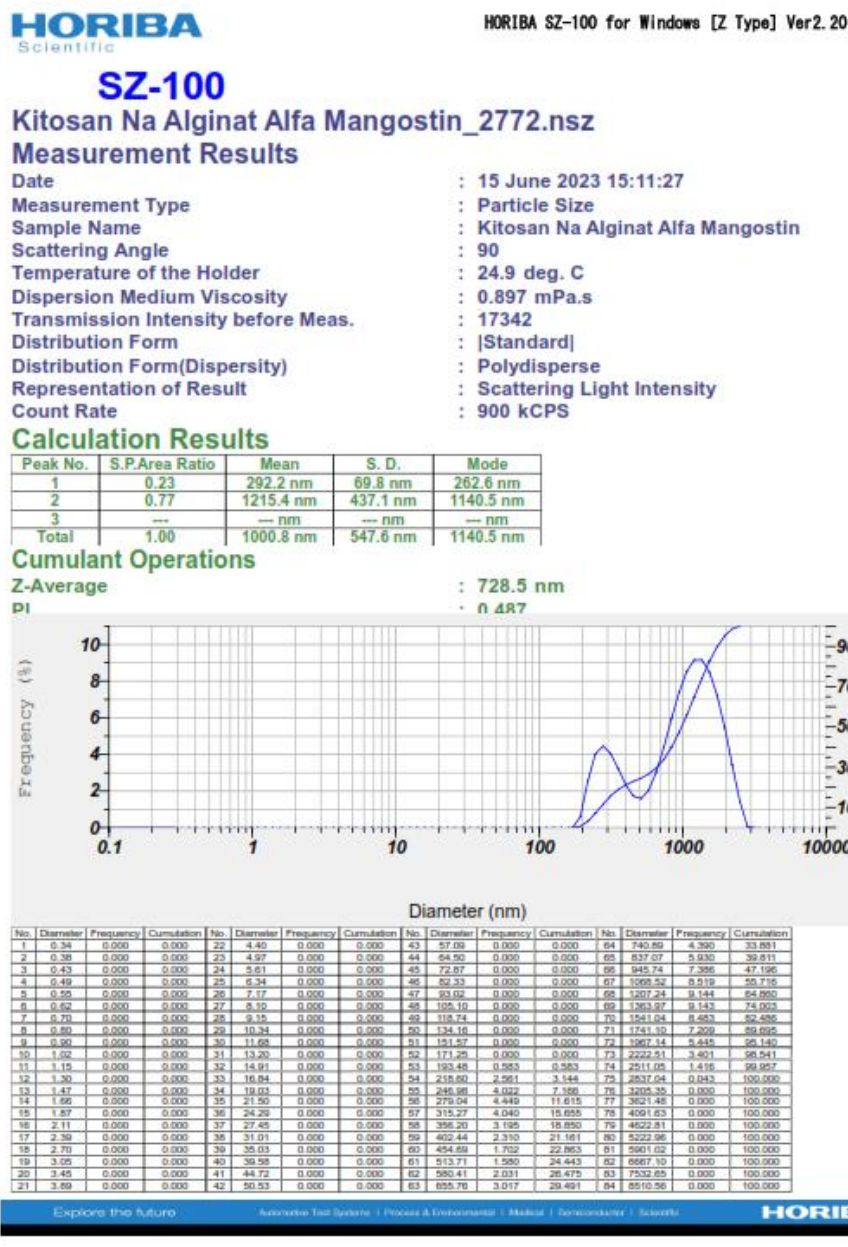


Gambar V.9 nanopartikel kitosan-alginat yang mengandung isolat α -mangostin

konsentrasi 0,0125 mg/mL

LAMPIRAN 10

HASIL PENGUJIAN PSA (*PARTICLE SIZE ANALYZER*) FORMULASI NANOPARTIKEL (KITOSAN-ALGINAT) YANG MENGANDUNG ISOLAT α -MANGOSTIN



Gambar V.9 hasil pengujian PSA (*particle size analyzer*) pada formulasi nanopartikel kitosan-alginat yang mengandung isolat α -mangostin 0,0125 mg/mL

LAMPIRAN 11

HASIL PENGUJIAN PSA (*PARTICLE SIZE ANALYZER*) FORMULASI NANOPARTIKEL (KITOSAN-ALGINAT) YANG MENGANDUNG ISOLAT α -MANGOSTIN

HORIBA
Scientific

HORIBA SZ-100 for Windows [Z Type] Ver2.20

SZ-100

Kitosan Na Alginat Alfa Mangostin_2772.nsz

Measurement Results

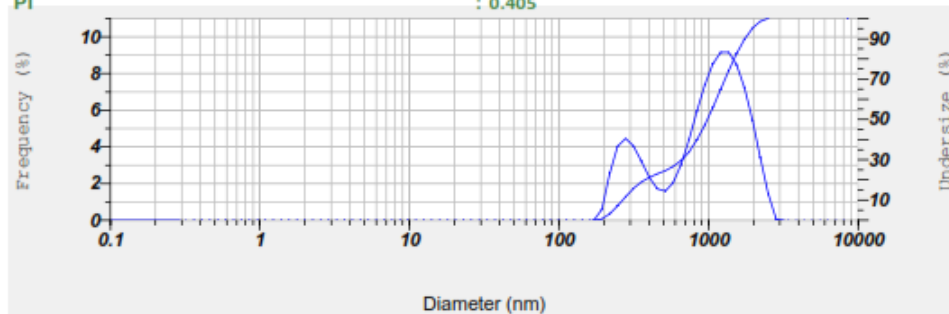
Date : 15 June 2023 15:11:27
Measurement Type : Particle Size
Sample Name : Kitosan Na Alginat Alfa Mangostin
Scattering Angle : 90
Temperature of the Holder : 24.9 deg. C
Dispersion Medium Viscosity : 0.897 mPa.s
Transmission Intensity before Meas. : 17342
Distribution Form : [Standard]
Distribution Form(Dispersity) : Polydisperse
Representation of Result : Scattering Light Intensity
Count Rate : 900 kCPS

Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	0.23	292.2 nm	69.8 nm	262.6 nm
2	0.77	1215.4 nm	437.1 nm	1140.5 nm
3	---	--- nm	--- nm	--- nm
Total	1.00	1000.8 nm	547.6 nm	1140.5 nm

Cumulant Operations

Z-Average : 759 nm
PI : 0.405



No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation
1	0.34	0.000	0.000	22	4.40	0.000	0.000	43	57.09	0.000	0.000	64	740.89	4.390	33.881
2	0.36	0.000	0.000	23	4.97	0.000	0.000	44	64.50	0.000	0.000	65	837.07	5.930	39.811
3	0.43	0.000	0.000	24	5.61	0.000	0.000	45	72.87	0.000	0.000	66	945.74	7.386	47.196
4	0.49	0.000	0.000	25	6.34	0.000	0.000	46	82.33	0.000	0.000	67	1069.52	8.519	55.716
5	0.55	0.000	0.000	26	7.17	0.000	0.000	47	93.02	0.000	0.000	68	1207.24	9.144	64.860
6	0.62	0.000	0.000	27	8.10	0.000	0.000	48	105.10	0.000	0.000	69	1363.87	9.143	74.003
7	0.70	0.000	0.000	28	9.15	0.000	0.000	49	118.74	0.000	0.000	70	1541.04	8.653	82.656
8	0.80	0.000	0.000	29	10.34	0.000	0.000	50	134.16	0.000	0.000	71	1741.10	7.209	89.865
9	0.90	0.000	0.000	30	11.68	0.000	0.000	51	151.87	0.000	0.000	72	1987.14	5.455	95.320
10	1.02	0.000	0.000	31	13.20	0.000	0.000	52	171.35	0.000	0.000	73	2222.51	3.401	98.721
11	1.15	0.000	0.000	32	14.91	0.000	0.000	53	193.48	0.583	0.583	74	2511.05	1.416	99.957
12	1.30	0.000	0.000	33	16.84	0.000	0.000	54	218.60	2.561	3.144	75	2837.04	0.043	100.000
13	1.47	0.000	0.000	34	19.03	0.000	0.000	55	246.96	4.622	7.766	76	3205.35	0.000	100.000
14	1.66	0.000	0.000	35	21.50	0.000	0.000	56	279.04	4.449	11.615	77	3621.48	0.000	100.000
15	1.87	0.000	0.000	36	24.29	0.000	0.000	57	315.27	4.040	15.655	78	4091.63	0.000	100.000
16	2.11	0.000	0.000	37	27.45	0.000	0.000	58	356.20	3.195	18.850	79	4622.81	0.000	100.000
17	2.39	0.000	0.000	38	31.01	0.000	0.000	59	402.44	2.310	21.161	80	5222.96	0.000	100.000
18	2.70	0.000	0.000	39	35.03	0.000	0.000	60	454.69	1.702	22.863	81	5901.02	0.000	100.000
19	3.05	0.000	0.000	40	39.58	0.000	0.000	61	513.71	1.580	24.443	82	6667.10	0.000	100.000
20	3.45	0.000	0.000	41	44.72	0.000	0.000	62	580.41	2.031	26.475	83	7532.65	0.000	100.000
21	3.89	0.000	0.000	42	50.53	0.000	0.000	63	655.76	3.017	29.491	84	8510.36	0.000	100.000

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Gambar V.10 hasil pengujian PSA (*particle size analyzer*) pada formulasi nanopartikel kitosan-alginat yang mengandung isolat α -mangostin 0,0250mg/mL

LAMPIRAN 12

HASIL PENGUJIAN PSA (*PARTICLE SIZE ANALYZER*)

FORMULASI NANOPARTIKEL (KITOSAN-ALGINAT) YANG

MENGANDUNG ISOLAT α -MANGOSTIN

HORIBA
Scientific

HORIBA SZ-100 for Windows [Z Type] Ver2.20

SZ-100

Kitosan Alginat Alfa Mangostin 75_3154.nsz

Measurement Results

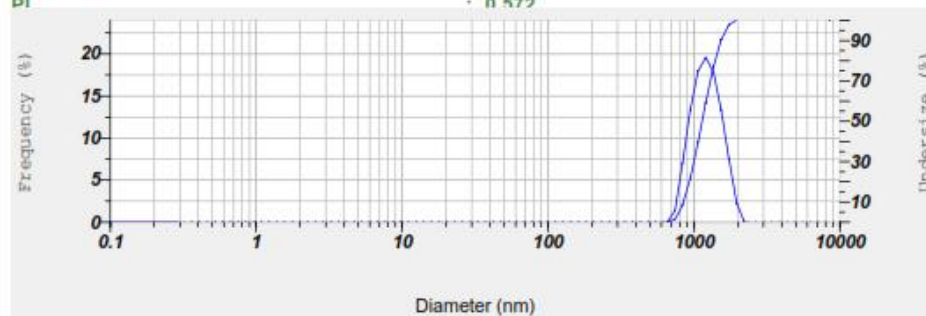
Date : 23 June 2023 16:57:22
Measurement Type : Particle Size
Sample Name : Kitosan Alginat Alfa Mangostin
Scattering Angle : 90
Temperature of the Holder : 25.0 deg. C
Dispersion Medium Viscosity : 0.895 mPa.s
Transmission Intensity before Meas. : 14409
Distribution Form : [Standard]
Distribution Form(Dispersity) : Polydisperse
Representation of Result : Scattering Light Intensity
Count Rate : 108 kCPS

Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	1.00	1170.9 nm	261.0 nm	1135.1 nm
2	---	--- nm	--- nm	--- nm
3	---	--- nm	--- nm	--- nm
Total	1.00	1170.9 nm	261.0 nm	1135.1 nm

Cumulant Operations

Z-Average : 1561.2 nm
PI : 0.572



No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation
1	0.34	0.000	0.000	22	4.40	0.000	0.000	43	57.09	0.000	0.000	64	740.69	1.326	1.326
2	0.36	0.000	0.000	23	4.97	0.000	0.000	44	64.50	0.000	0.000	65	837.07	6.870	8.206
3	0.43	0.000	0.000	24	5.61	0.000	0.000	45	72.67	0.000	0.000	66	945.74	13.363	21.661
4	0.49	0.000	0.000	25	6.34	0.000	0.000	46	82.33	0.000	0.000	67	1099.59	17.976	39.637
5	0.55	0.000	0.000	26	7.17	0.000	0.000	47	93.02	0.000	0.000	68	1307.34	19.535	59.175
6	0.62	0.000	0.000	27	8.10	0.000	0.000	48	105.10	0.000	0.000	69	1563.97	17.793	76.968
7	0.70	0.000	0.000	28	9.15	0.000	0.000	49	119.74	0.000	0.000	70	1841.04	15.339	92.304
8	0.80	0.000	0.000	29	10.34	0.000	0.000	50	134.16	0.000	0.000	71	2141.10	7.490	97.794
9	0.90	0.000	0.000	30	11.68	0.000	0.000	51	151.67	0.000	0.000	72	2507.14	2.215	100.000
10	1.02	0.000	0.000	31	13.20	0.000	0.000	52	171.25	0.000	0.000	73	2222.51	0.000	100.000
11	1.15	0.000	0.000	32	14.91	0.000	0.000	53	193.46	0.000	0.000	74	2511.09	0.000	100.000
12	1.30	0.000	0.000	33	16.84	0.000	0.000	54	219.60	0.000	0.000	75	2837.04	0.000	100.000
13	1.47	0.000	0.000	34	19.03	0.000	0.000	55	246.96	0.000	0.000	76	3205.35	0.000	100.000
14	1.66	0.000	0.000	35	21.50	0.000	0.000	56	279.04	0.000	0.000	77	3621.48	0.000	100.000
15	1.87	0.000	0.000	36	24.29	0.000	0.000	57	315.27	0.000	0.000	78	4091.63	0.000	100.000
16	2.11	0.000	0.000	37	27.48	0.000	0.000	58	366.20	0.000	0.000	79	4622.81	0.000	100.000
17	2.39	0.000	0.000	38	31.01	0.000	0.000	59	402.44	0.000	0.000	80	5222.96	0.000	100.000
18	2.70	0.000	0.000	39	35.03	0.000	0.000	60	454.69	0.000	0.000	81	5901.62	0.000	100.000
19	3.05	0.000	0.000	40	39.58	0.000	0.000	61	513.71	0.000	0.000	82	6667.10	0.000	100.000
20	3.45	0.000	0.000	41	44.72	0.000	0.000	62	580.41	0.000	0.000	83	7532.69	0.000	100.000
21	3.89	0.000	0.000	42	50.53	0.000	0.000	63	655.76	0.000	0.000	84	8510.56	0.000	100.000

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Gambar V.11 hasil pengujian PSA (*particle size analyzer*) pada formulasi nanopartikel kitosan-alginat yang mengandung isolat α -mangostin 0,0500 mg/mL