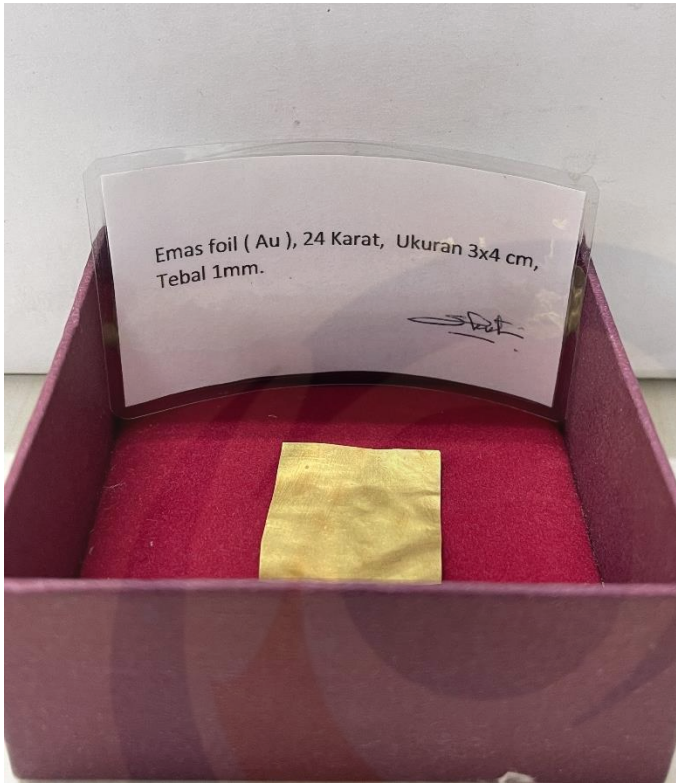


DAFTAR LAMPIRAN

Lampiran 1. Emas foil



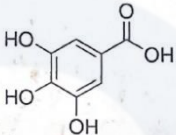
Lampiran 2. Sertifikat dari Asam Galat

Sigma-Aldrich

3050 Spruce Street, Saint Louis, MO 63103, USA
 Website: www.sigma-aldrich.com
 Email USA: techserv@sial.com
 Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name : Gallic acid 97.5-102.5% (titration)
Product Number : G7384-100G
Batch Number : 0000158698
Source Batch : SLCK2507
CAS Number : 149-91-7
Molecular Formula : C₇H₆O₅
Formula Weight : 170.12
Quality Release Date : 12 MAY 2021




Test	Specification	Result
Appearance (Color)	White to Beige	Off White
Appearance (Form)	Powder	Powder
Solubility (Color)	Colorless to Faint Yellow	Almost Colorless
Solubility (Turbidity)	Clear to Very Slightly Hazy	Clear
50 mg/mL, EtOH ^{AAAA} LIGHT SENSITIVE WEIGHING INSTRUCTIONS: WEIGH 250 MG. PROC-DEK-OP-003154 Dilute sample in EtOH to a concentration of 50 mg/mL. Prepare 5 mL of solution by adding 5 mL of EtOH to 250 mg of sample.		
Loss on Drying	≤ 10 %	3 %
Purity (GC)	≥ 98.5 %	99.5 %
Titration by NaOH (dry basis)	97.5 - 102.5 %	99.4 %

Brian Dulle, Supervisor
 Quality Assurance
 St. Louis, Missouri
 US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchase must determine the suitability of the product for its particular use. See reverse side of website or packing slip for additional terms and conditions of sale.
 Version Number: 01 Doc: 1077784 Page 1 of 1

The branding on the header and/or label of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in this document regarding the product remains unchanged and matches the product ordered. For further information please contact us at ask@sigmaaldrich.com



Lampiran 3. Sertifikat Analisis dari Vitamin C



Certificate of Analysis

1.00468.0000 L(+)-Ascorbic Acid for analysis EMSURE® ACS, Reag. Ph Eur
Batch K54197668

	Spec. Values		Batch Values	
Assay (iodometric)	99.0 - 100.5	%	99.7	%
Identity (IR-spectrum)	conforms		conforms	
Appearance	white or almost white, crystalline powder		white or almost white, crystalline powder	
Appearance of solution (50 g/l CO ₂ -free water)	clear (≤ 3 NTU) and not so intense in colour than reference solution BY:		clear (≤ 3 NTU) and not so intense in colour than reference solution BY:	
pH (50 g/l CO ₂ -free water)	2.1 - 2.6		2.4	
Spec. rotation [α] _D (100 g/l, water)	+20.5 - +21.5	°	+20.8	°
Chloride (Cl)	≤ 50	ppm	≤ 50	ppm
Sulfate (SO ₄)	≤ 20	ppm	≤ 20	ppm
Cu (Copper)	≤ 5	ppm	≤ 5	ppm
Fe (Iron)	≤ 2	ppm	≤ 2	ppm
Heavy metals (ACS)	≤ 10	ppm	≤ 10	ppm
Oxalic acid	≤ 0.2	%	≤ 0.2	%
Related substances (HPLC) (Impurity C)	≤ 0.15	%	0.01	%
Related substances (HPLC) (Impurity D)	≤ 0.15	%	< 0.05	%
Related substances (HPLC) (unspecified impurities singly)	≤ 0.10	%	0.06	%
Related substances (HPLC) (sum of impurities (except impurity C and D))	≤ 0.2	%	< 0.1	%
Sulfated ash (600 °C)	≤ 0.05	%	≤ 0.05	%
Loss on Drying (105 °C)	≤ 0.1	%	< 0.1	%

Date of release (DD.MM.YYYY) 17.03.2022
Minimum shelf life (DD.MM.YYYY) 31.03.2024

Dr. Sebastian Lips
Responsible laboratory manager quality control

This document has been produced electronically and is valid without a signature.

Lampiran 4. Hasil Analisis Ukuran Nanopartikel Asam Galat

HORIBA
Scientific

HORIBA SZ-100 for Windows [Z Type] Ver2.00

SZ-100

035.C.PSA.VI.2022.nsz

Measurement Results

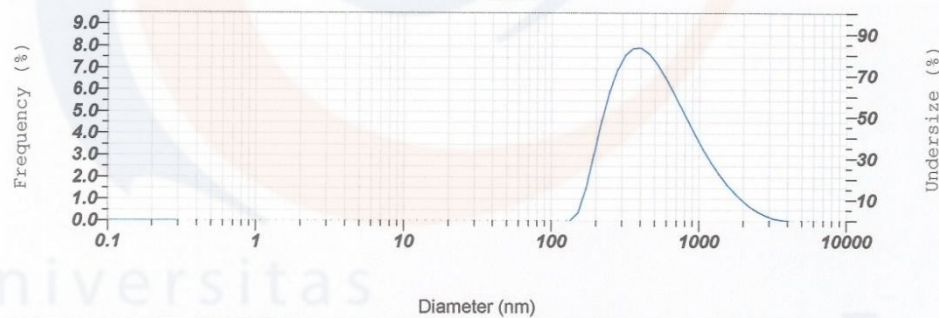
Date : Friday, June 17, 2022 11:24:12 AM
 Measurement Type : Particle Size
 Sample Name : AuNPs as. Galat
 Scattering Angle : 90
 Temperature of the Holder : 24.9 °C
 Dispersion Medium Viscosity : 0.897 mPa·s
 Transmission Intensity before Meas. : 24859
 Distribution Form : Standard
 Distribution Form(Dispersity) : Monodisperse
 Representation of Result : Scattering Light Intensity
 Count Rate : 1800 kCPS

Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	1.00	559.3 nm	399.6 nm	377.9 nm
2	---	--- nm	--- nm	--- nm
3	---	--- nm	--- nm	--- nm
Total	1.00	559.3 nm	399.6 nm	377.9 nm

Cumulant Operations

Z-Average : 307.7 nm
 PI : 0.371



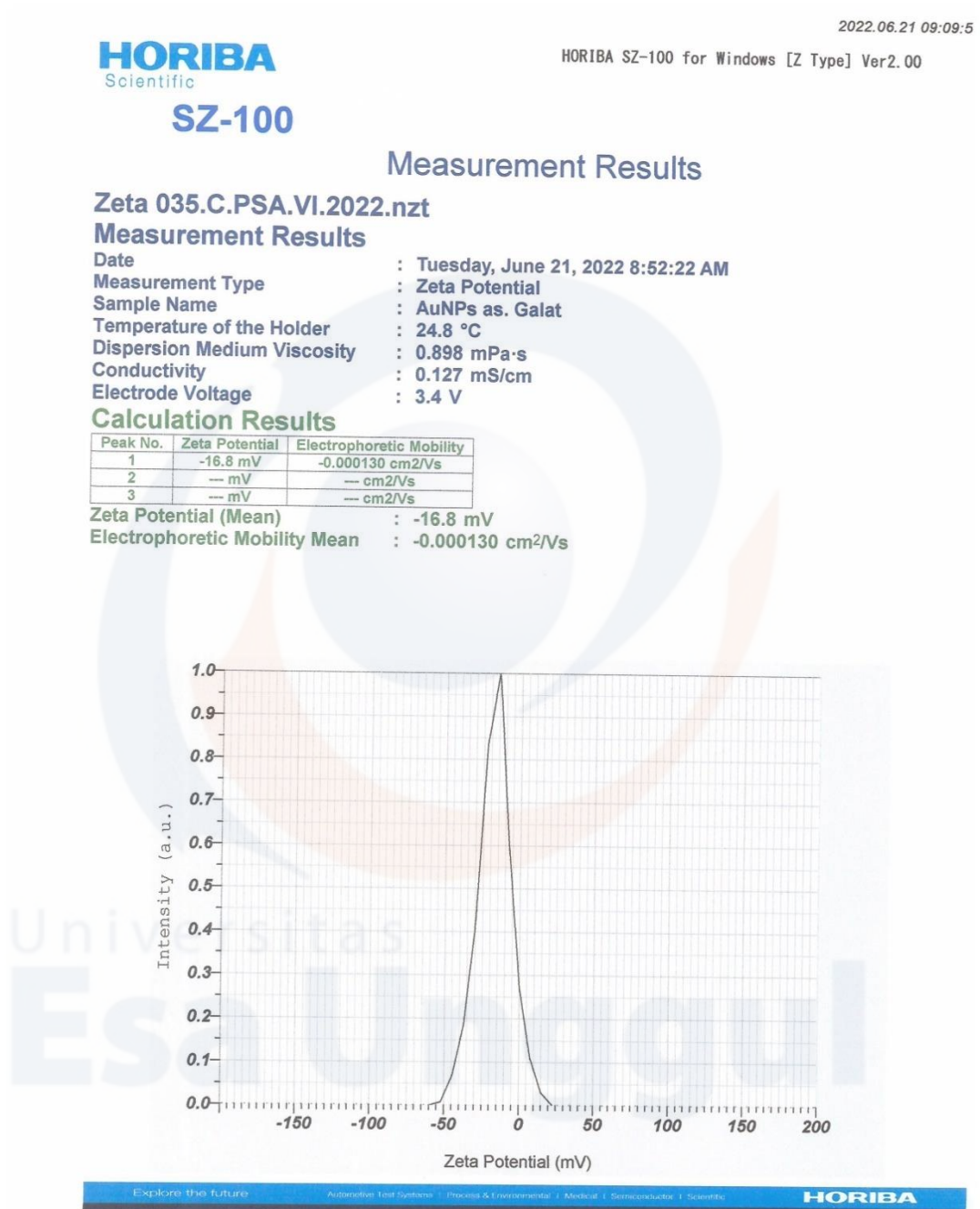
No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation
1	0.34	0.000	0.000	22	4.40	0.000	0.000	43	57.09	0.000	0.000	64	740.89	5.274	78.373
2	0.38	0.000	0.000	23	4.97	0.000	0.000	44	64.50	0.000	0.000	65	837.07	4.566	82.939
3	0.43	0.000	0.000	24	5.51	0.000	0.000	45	72.87	0.000	0.000	66	945.74	3.881	86.820
4	0.48	0.000	0.000	25	6.34	0.000	0.000	46	82.33	0.000	0.000	67	1088.52	3.238	90.058
5	0.55	0.000	0.000	26	7.17	0.000	0.000	47	93.02	0.000	0.000	68	1207.24	2.649	92.707
6	0.62	0.000	0.000	27	8.10	0.000	0.000	48	105.10	0.000	0.000	69	1363.97	2.122	94.829
7	0.70	0.000	0.000	28	9.15	0.000	0.000	49	118.74	0.000	0.000	70	1541.04	1.658	96.487
8	0.80	0.000	0.000	29	10.34	0.000	0.000	50	134.16	0.000	0.000	71	1741.10	1.257	97.744
9	0.90	0.000	0.000	30	11.68	0.000	0.000	51	151.57	0.343	0.343	72	1967.14	0.915	98.659
10	1.02	0.000	0.000	31	13.20	0.000	0.000	52	171.25	1.445	1.788	73	2222.51	0.630	99.289
11	1.15	0.000	0.000	32	14.91	0.000	0.000	53	193.48	3.006	4.794	74	2511.05	0.397	99.685
12	1.30	0.000	0.000	33	16.84	0.000	0.000	54	218.60	4.576	9.370	75	2837.04	0.214	99.899
13	1.47	0.000	0.000	34	19.03	0.000	0.000	55	246.95	5.915	15.285	76	3205.35	0.084	99.984
14	1.66	0.000	0.000	35	21.50	0.000	0.000	56	279.04	6.930	22.218	77	3621.48	0.016	100.000
15	1.87	0.000	0.000	36	24.29	0.000	0.000	57	315.27	7.585	29.803	78	4091.83	0.000	100.000
16	2.11	0.000	0.000	37	27.45	0.000	0.000	58	358.20	7.897	37.700	79	4622.81	0.000	100.000
17	2.39	0.000	0.000	38	31.01	0.000	0.000	59	402.44	7.903	45.603	80	5222.96	0.000	100.000
18	2.70	0.000	0.000	39	35.03	0.000	0.000	60	454.68	7.658	53.262	81	5901.02	0.000	100.000
19	3.05	0.000	0.000	40	39.58	0.000	0.000	61	513.71	7.218	60.480	82	6667.10	0.000	100.000
20	3.45	0.000	0.000	41	44.72	0.000	0.000	62	580.41	6.641	67.120	83	7532.85	0.000	100.000
21	3.89	0.000	0.000	42	50.53	0.000	0.000	63	655.76	5.978	73.098	84	8510.56	0.000	100.000

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Lampiran 5. Hasil Potensial Zeta Nanopartikel Emas



Lampiran 6. Dokumentasi Penelitian



Penimbangan Sebuk Asam Galat



Larutan Asam Galat



HCl pekat & HNO3 pekat



Serbuk DPPH



Metanol p.a



Vitamin C

(lanjutan)



Larutan DPPH 0,05 mM



Larutan Deret Konsentrasi
Vitamin C



Larutan Deret Konsentrasi
Nanopartikel Emas



Hotplate



Neraca Analitik

Lampiran 7. Perhitungan Bahan

1. Perhitungan Pembuatan Larutan Asam Galat

a. Konsentrasi 10 mM

$$M = \frac{\text{gr}}{\text{Mr}} \times \frac{1000}{\text{Volume}}$$

$$\text{gr} = \frac{M \times \text{Mr} \times V}{1000}$$

$$= \frac{0,01 \times 170,12 \times 50}{1000}$$

$$= 0,08506 \text{ gram}$$

b. Konsentrasi 5 mM

$$M = \frac{\text{gr}}{\text{Mr}} \times \frac{1000}{\text{Volume}}$$

$$\text{gr} = \frac{M \times \text{Mr} \times V}{1000}$$

$$= \frac{0,005 \times 170,12 \times 50}{1000}$$

$$= 0,04253 \text{ gram}$$

c. Konsentrasi 2,5 mM

$$M = \frac{\text{gr}}{\text{Mr}} \times \frac{1000}{\text{Volume}}$$

$$\text{gr} = \frac{M \times \text{Mr} \times V}{1000}$$

$$= \frac{0,0025 \times 170,12 \times 50}{1000}$$

$$= 0,021265 \text{ gram}$$

2. Perhitungan Larutan DPPH

Larutan DPPH 0,05 mM dalam 50 mL metanol (99,9%)

$$\text{mol DPPH} = 50 \text{ mL} \times 0,05 \text{ mM}$$

$$= 0,0025 \text{ mmol}$$

$$\text{mg DPPH} = 0,0025 \text{ mmol} \times \text{Mr DPPH}$$

$$= 0,0025 \text{ mmol} \times 394,33 \text{ g/mol}$$

$$= 1 \text{ mg}$$

3. Pembuatan Larutan Standar Vitamin C 100 ppm

Vitamin C 100 ppm dalam 50 mL metanol (99,9%)

$$\text{ppm} = \frac{\text{mg}}{\text{L}}$$

$$= \frac{5 \text{ mg}}{0,05 \text{ L}} = 100 \text{ ppm}$$

4. Pembuatan variasi konsentrasi larutan vitamin C

a. Larutan Vitamin C 10 ppm

$$V_1 \cdot M_1 = V_2 \cdot M_2$$

$$V_1 = \frac{10 \text{ mL} \times 10 \text{ ppm}}{100 \text{ ppm}}$$

$$V_1 = 1 \text{ mL}$$

Dalam pembuatan larutan vitamin C 10 ppm diperlukan larutan standar 100 ppm sebanyak 1 mL dan ditambahkan dengan metanol ad 10 mL.

b. Larutan Vitamin C 5 ppm

$$V_1 \cdot M_1 = V_2 \times M_2$$

$$V_1 = \frac{10 \text{ mL} \times 5 \text{ ppm}}{100 \text{ ppm}}$$

$$V_1 = 0,5 \text{ mL}$$

Dalam pembuatan larutan vitamin C 5 ppm diperlukan larutan standar 100 ppm sebanyak 0,5 mL dan ditambahkan dengan metanol ad 10 mL.

c. Larutan Vitamin C 2,5 ppm

$$V_1 \cdot M_1 = V_2 \times M_2$$

$$V_1 = \frac{10 \text{ mL} \times 2,5 \text{ ppm}}{100 \text{ ppm}}$$

$$V_1 = 0,25 \text{ mL}$$

Dalam pembuatan larutan vitamin C 2,5 ppm diperlukan larutan standar 100 ppm sebanyak 0,25 mL dan ditambahkan dengan metanol ad 10 mL.

d. Larutan Vitamin C 1,25 ppm

$$V_1 \cdot M_1 = V_2 \times M_2$$

$$V_1 = \frac{10 \text{ mL} \times 1,25 \text{ ppm}}{100 \text{ ppm}}$$

$$V_1 = 0,125 \text{ mL}$$

Dalam pembuatan larutan vitamin C 1,25 ppm diperlukan larutan standar 100 ppm sebanyak 0,125 mL dan ditambahkan dengan metanol ad 10 mL.

e. Larutan Vitamin C 0,625 ppm

$$V_1 \cdot M_1 = V_2 \cdot M_2$$

$$V_1 = \frac{10 \text{ mL} \times 0,625 \text{ ppm}}{100 \text{ ppm}}$$

$$V_1 = 0,0625 \text{ mL}$$

Dalam pembuatan larutan vitamin C 0,625 ppm diperlukan larutan standar 100 ppm sebanyak 0,0625 mL dan ditambahkan dengan metanol ad 10 mL.

Lampiran 8. Data Absorbansi Uji Stabilitas Nanopartikel Emas

Minggu Ke-	Panjang Gelombang					
	480 nm	485 nm	490 nm	495 nm	500 nm	505 nm
0	0,4450	0,4407	0,4390	0,4384	0,4404	0,4446
1	0,4425	0,4382	0,4351	0,4344	0,4369	0,4412
2	0,3467	0,3422	0,3381	0,3367	0,3383	0,3413
3	0,4822	0,4776	0,4741	0,4739	0,4767	0,4816
4	0,4849	0,4800	0,4766	0,4763	0,4793	0,4845
5	0,3653	0,3620	0,3595	0,3593	0,3613	0,3649
6	0,4217	0,4172	0,4139	0,4132	0,4152	0,4191
7	0,4404	0,4356	0,4321	0,4313	0,4338	0,4380
8	0,4473	0,4429	0,4398	0,4389	0,4411	0,4453

Lampiran 9. Data Uji Aktivitas Antioksidan

1. Absorbansi Larutan Standar Vitamin C

Konsentrasi (ppm)	Abs 1	Abs 2	Abs 3	Rata" Absorbansi	Blanko	% inhibisi
40	0,0790	0,1420	0,0160	0,0790	0,8461	90,6630
20	0,4181	0,4342	0,4020	0,4181	0,8461	50,5732
5	0,7082	0,8030	0,6140	0,7084	0,8461	16,2747
1,25	0,7762	0,8440	0,7090	0,7764	0,8461	8,22598
0,625	0,8561	0,9460	0,7662	0,8561	0,8461	5,66675

Bahan	Abs 1	Abs 2	Abs 3	Rata" Absorbansi
Blanko	0,8461	0,8371	0,8551	0,8461

2. Absorbansi Nanopartikel Emas

Konsentrasi (ppm)	Abs 1	Abs 2	Abs 3	Rata" Absorbansi	Blanko	Inhibisi %
103,25	0,1421	0,1502	0,1340	0,1421	0,8461	83,2053
25,8125	0,5320	0,5210	0,5430	0,5320	0,8461	37,1233
6,453125	0,6572	0,6434	0,6710	0,6572	0,8461	22,3141
1,61328125	0,6791	0,7342	0,6240	0,6791	0,8461	19,7258
0,806640625	0,7393	0,8464	0,6322	0,7393	0,8461	18,5464

Bahan	Abs 1	Abs 2	Abs 3	Rata" Absorbansi
Blanko	0,8461	0,8371	0,8551	0,8461