

LAMPIRAN**Lampiran 1 Certifikat Of Analysis (CoA)**

CoA Vitamin E Asetat

DL-ALPHA-TOCOPHERYL ACETATE**COVERSHEET FOR CERTIFICATE OF ANALYSIS**

Productcode : 0420085
Lot No. : UT18080219
Analysis No. : 03D07192

CfC Number : 03667910
Articlecode : 0420085301
Sales Name : DL-ALPHA-TOCOPHERYL
ACETATE PO No PH-22022
Manufacturing Date : 31.07.2018
Best Use Before Date : 30.07.2022
Invoice Number : 2831231116
Destination : TANJUNG PRIOK,
Customer Ref. No : PH-22022
Customer Article No:
Customer Name: P.T. MENJANGAN SAKTI
JL H.R. RASUNA SAID KAV.
B-34
JAKARTA

Lampiran 1. Lanjutan

CoA Gliceryl Monostearate (Geleol®)



GATTEFOSSE
Certificate of Analysis

Product name : GELEOL MONO AND DIGLYCERIDES NF

Item N° : 5749PPD
Batch N° : 176267
Manufacturing date : 07.2019
Expiry date : 07.2022

CHEMICAL DEFINITION :
 Glycerol monostearate 40-55 (Type I) EP current edition /
 Mono and diglycerides NF current edition.

Characteristic	Method	Specification	Result
APPEARANCE	MA0193	Waxy solid	Conforms
ODOUR	MA0170	Faint	Conforms
COLOUR (Gardner Scale)	MA0214	<= 3.0	1.0
MELTING POINT (Cap Tube)	MA0167	54.0 to 64.0 °C	58.5
DROP POINT (METTLER)	MA0003	54.5 to 64.5 °C	59.3
ACID VALUE	MA0008	<= 1.5 mgKOH/g	0.2
SAPONIFICATION VALUE (NV = 174)	MA0172	158 to 177 mgKOH/g	174
IODINE VALUE (NV < 3)	MA0092	<= 3.0 gI2/100g	<= 3.0*
WATER CONTENT	MA0007	<= 1.0 %	< 0.1
HYDROXYL VALUE (NV = 216)	MA0172	194 to 237 mgKOH/g	227
FREE GLYCEROL CONTENT	MA0006	<= 3.0 %	1.4
TOTAL MONOGLYCERIDES CONTENT (NV = 47)	MA0006	42.3 to 51.7 %	50.1
TOTAL DIESTERS CONTENT	MA0006	30.0 to 45.0 %	40.3
TOTAL TRIESTERS CONTENT	MA0006	5.0 to 15.0 %	8.1
STEARIC ACID (C18)	MA0002	40.0 to 60.0 %	53.4
SUM OF PALMITIC AND STEARIC ACIDS	MA0002	>= 90.0 %	98.6
TOTAL ASHES CONTENT	MA0028	<= 0.1 %	<= 0.1*
HEAVY METALS CONTENT (Pb)	MA0032	< 10 ppm	Conforms *
NICKEL CONTENT	MA0256	< 1 ppm	Conforms *
ARSENIC CONTENT	MA0323	< 2 ppm	Conforms *
RESIDUAL SOLVENTS (Eur. Pharm., USP/NF)		Meets the requirements	Conforms *
EUR. PHARM. AND USP/NF (Current ed.)		Conforms	Conforms *
RESIDUE ON IGNITION	MA0028	<= 0.10 %	<= 0.10*
MONOESTER AND DIESTER CONTENT	MA0006	>= 70 %	90
LEAD CONTENT	MA0323	< 2 ppm	Conforms *
MERCURY CONTENT	MA0323	< 1 ppm	Conforms *
CADMIUM CONTENT	MA0323	< 1 ppm	Conforms *
TOTAL GLYCEROL CONTENT	MA0328	16.0 to 33.0 %	21.9

* Characteristic guaranteed but not tested.

This batch was released by our authorized Quality Manager and was found to meet the specifications as stated above. The above results do not discharge the customer from the obligation to carry out an inspection of goods received.
 This report has been produced electronically and does not require a signature.

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GATTEFOSSÉ
Certificate of Analysis

Product Name : GELEOL MONO AND DIGLYCERIDES NF

Item N° : 5749PPD

Batch N° : 176267

Characteristic	Method	Specification	Result
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Printing Date : 06.05.2020

Quality Manager
Magali DRONNIER

Lampiran 2 Kurva Kalibrasi Vitamin E Asetat

1.1 Perhitungan pembuatan larutan Vitamin E Asetat

1) Larutan induk

$$\begin{aligned}\text{Konsentrasi Larutan} &= \frac{\text{Bobot Vitamin E Asetat}}{\text{Volume}} \\ 100 \text{ ppm} &= \frac{100 \text{ mg}}{1000 \text{ ml}} \\ &= \frac{10 \text{ mg}}{100 \text{ ml}} \\ \text{Bobot Vitamin E} &= \frac{5 \text{ mg}}{50 \text{ ml}}\end{aligned}$$

1.2 Pengenceran Larutan

a. Konsentrasi 10 ppm

$$\begin{aligned}V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 100 \text{ ppm} &= 5 \text{ ml} \times 10 \text{ ppm} \\ V_1 &= \frac{50 \text{ ml}}{100 \text{ ppm}} \\ V_1 &= 0,5 \text{ ml} = 500 \mu\text{L}\end{aligned}$$

b. Konsentrasi 9 ppm

$$\begin{aligned}V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 100 \text{ ppm} &= 5 \text{ ml} \times 9 \text{ ppm} \\ V_1 &= \frac{45 \text{ ml}}{100 \text{ ppm}} \\ V_1 &= 0,45 \text{ ml} = 450 \mu\text{L}\end{aligned}$$

c. Konsentrasi 8 ppm

$$\begin{aligned}V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 100 \text{ ppm} &= 5 \text{ ml} \times 8 \text{ ppm} \\ V_1 &= \frac{40 \text{ ml}}{100 \text{ ppm}} \\ V_1 &= 0,4 \text{ ml} = 400 \mu\text{L}\end{aligned}$$

d. Konsentrasi 7 ppm

$$\begin{aligned}V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 100 \text{ ppm} &= 5 \text{ ml} \times 7 \text{ ppm} \\ V_1 &= \frac{35 \text{ ml}}{100 \text{ ppm}} \\ V_1 &= 0,35 \text{ ml} = 350 \mu\text{L}\end{aligned}$$

e. Konsentrasi 6 ppm

$$V_1 \times C_1 = V_2 \times C_2$$

$$V1 \times 100 \text{ ppm} = 5 \text{ ml} \times 6 \text{ ppm}$$

$$V1 = \frac{30 \text{ ml}}{100 \text{ ppm}}$$

$$V1 = 0,3 \text{ ml} = 300 \mu\text{L}$$

f. Konsentrasi 5 ppm

$$V1 \times C1 = V2 \times C2$$

$$V1 \times 100 \text{ ppm} = 5 \text{ ml} \times 5 \text{ ppm}$$

$$V1 = \frac{25 \text{ ml}}{100 \text{ ppm}}$$

$$V1 = 0,25 \text{ ml} = 250 \mu\text{L}$$

g. Konsentrasi 4 ppm

$$V1 \times C1 = V2 \times C2$$

$$V1 \times 100 \text{ ppm} = 5 \text{ ml} \times 4 \text{ ppm}$$

$$V1 = \frac{20 \text{ ml}}{100 \text{ ppm}}$$

$$V1 = 0,2 \text{ ml} = 200 \mu\text{L}$$

h. Konsentrasi 3 ppm

$$V1 \times C1 = V2 \times C2$$

$$V1 \times 100 \text{ ppm} = 5 \text{ ml} \times 3 \text{ ppm}$$

$$V1 = \frac{15 \text{ ml}}{100 \text{ ppm}}$$

$$V1 = 0,15 \text{ ml} = 150 \mu\text{L}$$

i. Konsentrasi 2 ppm

$$V1 \times C1 = V2 \times C2$$

$$V1 \times 100 \text{ ppm} = 5 \text{ ml} \times 2 \text{ ppm}$$

$$V1 = \frac{10 \text{ ml}}{100 \text{ ppm}}$$

$$V1 = 0,1 \text{ ml} = 100 \mu\text{L}$$

j. Konsentrasi 1 ppm

$$V1 \times C1 = V2 \times C2$$

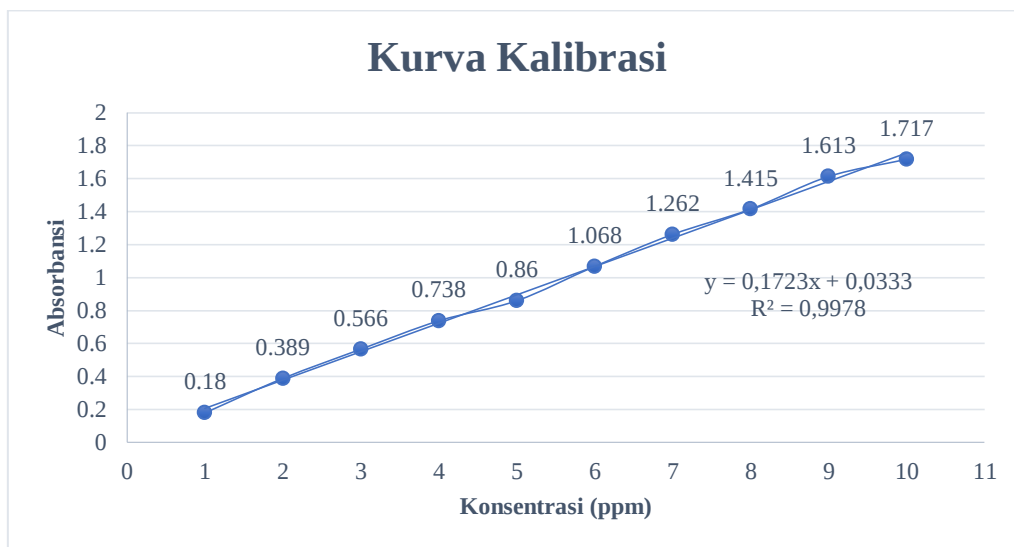
$$V1 \times 100 \text{ ppm} = 5 \text{ ml} \times 1 \text{ ppm}$$

$$V1 = \frac{5 \text{ ml}}{100 \text{ ppm}}$$

$$V1 = 0,05 \text{ ml} = 50 \mu\text{L}$$

1.3 Kurva kalibrasi Vitamin E Asetat

Konsentrasi	Absorbansi
1 ppm	0,18
2 ppm	0,389
3 ppm	0,566
4 ppm	0,738
5 ppm	0,86
6 ppm	1,068
7 ppm	1,262
8 ppm	1,415
9 ppm	1,613
10 ppm	1,717



Lampiran 3 Perhitungan %EE NLC Vitamin E Asetat

Konsentrasi Larutan

$$\text{Konsentrasi} = \frac{y - a}{b}$$

Bobot zat aktif bebas

$$\text{Bobot zat aktif bebas} = \text{Konsentrasi} \times \text{Volume} \times \text{fp}$$

Rumus EE%

$$\% \text{ EE} = \frac{\text{total zat aktif} - \text{zat aktif bebas}}{\text{total zat aktif}} \times 100\%$$

Data Pengukuran Efisiensi Penjerapan Hari Ke-1								
Formula	Absorbansi			% EE			$\Sigma\%EE$	SD
	1	2	3	%EE 1	%EE 2	%EE 3		
F1	0.168	0.22	0.238	97.39408009	96.38808	96.03985	96.60734	0.703233682
F2	0.542	0.689	0.637	90.15863803	87.31476	88.32076	88.59805	1.442074222
F3	0.326	0.477	0.36	94.33739601	91.41613	93.67963	93.14439	1.53241806
F4	0.426	0.589	0.692	92.40278584	89.24937	87.25672	89.63629	2.594758712
F5	0.508	0.392	0.564	90.81640549	93.06055	89.73302	91.20333	1.697172544

1. F 1

a. Absorbansi 1

$$\text{Konsentrasi} = \frac{0,168 - 0,0333}{0,1723} = 0,7817 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 0,7817 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 781,7 \mu\text{g} \\ &= 0,7817 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 0,7817}{30 \text{ mg}} \times 100\% \\ &= 97,394 \% \end{aligned}$$

b. Absorbansi 2

$$\text{Konsentrasi} = \frac{0,22 - 0,0333}{0,1723} = 1,0835 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 1,0835 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 1083,5 \mu\text{g} \\ &= 1,0835 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 1,0835}{30 \text{ mg}} \times 100\% \\ &= 96,388 \% \end{aligned}$$

c. Absorbansi 3

$$\text{Konsentrasi} = \frac{0.238-0.0333}{0.1723} = 1,1880 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 1,1880 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 1188 \mu\text{g} \\ &= 1,188 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 1,188}{30 \text{ mg}} \times 100\% \\ &= 96,04\% \end{aligned}$$

2. F 2

a. Absorbansi 1

$$\text{Konsentrasi} = \frac{0.542-0.0333}{0.1723} = 4,0906 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 4,0906 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 4090,6 \mu\text{g} \\ &= 4,0906 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 4,0906}{30 \text{ mg}} \times 100\% \\ &= 86,364 \% \end{aligned}$$

b. Absorbansi 2

$$\text{Konsentrasi} = \frac{0.689-0.0333}{0.1723} = 3,8055 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 3,8055 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 3805,5 \mu\text{g} \\ &= 3,8055 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 3,8055}{30 \text{ mg}} \times 100\% \\ &= 87,315 \% \end{aligned}$$

c. Absorbansi 3

$$\text{Konsentrasi} = \frac{0.637-0.0333}{0.1723} = 3,5037 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 3,5037 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 3503,7 \mu\text{g} \\ &= 3,5037 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 3,5037}{30 \text{ mg}} \times 100\% \\ &= 88,321 \% \end{aligned}$$

3. F 3

a. Absorbansi 1

$$\text{Konsentrasi} = \frac{0,326-0,0333}{0,1723} = 1,6987 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 1,6987 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 1698,7 \mu\text{g} \\ &= 1,6987 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 1,6987}{30 \text{ mg}} \times 100\% \\ &= 99,337 \% \end{aligned}$$

b. Absorbansi 2

$$\text{Konsentrasi} = \frac{0,477-0,0333}{0,1723} = 2,5751 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 2,5751 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 25751 \mu\text{g} \\ &= 2,5751 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 2,5751}{30 \text{ mg}} \times 100\% \\ &= 91,416\% \end{aligned}$$

c. Absorbansi 3

$$\text{Konsentrasi} = \frac{0,36-0,0333}{0,1723} = 1,8961 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 1,8961 \text{ ppm} \times 10 \text{ mL} \times 1 \\ &= 18,961 \mu\text{g} \\ &= 0,018961 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 0,018961}{30 \text{ mg}} \times 100\% \\ &= 99,936 \% \end{aligned}$$

4. F 4

a. Absorbansi 1

$$\text{Konsentrasi} = \frac{0,426-0,0333}{0,1723} = 2,2791 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 2,2791 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 2279,1 \mu\text{g} \\ &= 2,2791 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 2,2791}{30 \text{ mg}} \times 100\% \\ &= 92,403 \% \end{aligned}$$

b. Absorbansi 2

$$\text{Konsentrasi} = \frac{0.589-0,0333}{0,1723} = 3,2251 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 3,2251 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 3225,1 \mu\text{g} \\ &= 3,2251 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 3,2251}{30 \text{ mg}} \times 100\% \\ &= 89,249 \% \end{aligned}$$

c. Absorbansi 2

$$\text{Konsentrasi} = \frac{0.692-0,0333}{0,1723} = 3,8229 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 3,8229 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 3822,9 \mu\text{g} \\ &= 3,8229 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 3,8229}{30 \text{ mg}} \times 100\% \\ &= 87,257 \% \end{aligned}$$

5. F 5

a. Absorbansi 1

$$\text{Konsentrasi} = \frac{0.508-0,0333}{0,1723} = 2,7550 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 2,7550 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 27550 \mu\text{g} \\ &= 2,7550 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 2,7550}{30 \text{ mg}} \times 100\% \\ &= 90,816 \% \end{aligned}$$

b. Absorbansi 2

$$\text{Konsentrasi} = \frac{0.392-0,0333}{0,1723} = 2,0818 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 2,0818 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 2081,8 \mu\text{g} \\ &= 2,0818 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 2,0818}{30 \text{ mg}} \times 100\% \\ &= 93,061 \% \end{aligned}$$

c. Absorbansi 3

$$\text{Konsentrasi} = \frac{0.564 - 0.0333}{0.1723} = 3,0800 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 3,0800 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 3080 \text{ } \mu\text{g} \\ &= 3,08 \text{ mg} \end{aligned}$$

$$\begin{aligned} \% \text{EE} &= \frac{30 \text{ mg} - 3,08}{30 \text{ mg}} \times 100\% \\ &= 89,733 \% \end{aligned}$$

Data pengukuran Efisiensi Penjerapan Hari Ke-30								
Formula	Abs 1	Abs 2	Abs 3	%EE 1	%EE 2	%EE 3	Σ %EE	SD
F1	0.295	0.335	0.45	94.93713	94.16328	91.93848	93.67963	1.55673
F2	0.669	0.524	0.732	87.70168	90.50687	86.48288	88.23048	2.063453
F3	0.499	0.353	0.337	90.99052	93.81505	94.12459	92.97672	1.727048
F4	0.626	0.605	0.526	88.53357	88.93983	90.46818	89.31386	1.020098
F5	0.623	0.191	0.695	88.5916	96.94912	87.19868	90.91314	5.273507

1. F 1

a. Absorbansi 1

$$\text{Konsentrasi} = \frac{0.295 - 0.0333}{0.1723} = 1,5188 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 1,5188 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 1518,8 \mu\text{g} \\ &= 1,5188 \text{ mg} \\ \text{\%EE} &= \frac{30 \text{ mg} - 1,5188}{30 \text{ mg}} \times 100\% \\ &= 94,937 \% \end{aligned}$$

b. Absorbansi 2

$$\text{Konsentrasi} = \frac{0.335 - 0.0333}{0.1723} = 1,7510 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 1,7510 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 1751 \mu\text{g} \\ &= 1,751 \text{ mg} \\ \text{\%EE} &= \frac{30 \text{ mg} - 1,751}{30 \text{ mg}} \times 100\% \\ &= 94,163 \% \end{aligned}$$

c. Absorbansi 3

$$\text{Konsentrasi} = \frac{0.45 - 0.0333}{0.1723} = 2,4184 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 2,4184 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 2418,4 \mu\text{g} \\ &= 2,4184 \text{ mg} \\ \text{\%EE} &= \frac{30 \text{ mg} - 2,4184}{30 \text{ mg}} \times 100\% \\ &= 91,938 \% \end{aligned}$$

2. F 2

a. Absorbansi 1

$$\text{Konsentrasi} = \frac{0,669 - 0,0333}{0,1723} = 3,6894 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 3,6894 \text{ ppm} \times 10 \text{ mL} \times 1 \\ &= 3689,4 \text{ } \mu\text{g} \\ &= 3,6894 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 3,6894}{30 \text{ mg}} \times 100\% \\ &= 87,702 \% \end{aligned}$$

b. Absorbansi 2

$$\text{Konsentrasi} = \frac{0,524 - 0,0333}{0,1723} = 1,1085 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 1,1085 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 1108,5 \text{ } \mu\text{g} \\ &= 1,1085 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 1,1085}{30 \text{ mg}} \times 100\% \\ &= 96,305 \% \end{aligned}$$

c. Absorbansi 3

$$\text{Konsentrasi} = \frac{0,732 - 0,0333}{0,1723} = 4,0551 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 4,0551 \text{ ppm} \times 10 \text{ mL} \times 1 \\ &= 4055,1 \text{ } \mu\text{g} \\ &= 4,0551 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 4,0551}{30 \text{ mg}} \times 100\% \\ &= 86,483 \% \end{aligned}$$

3. F 3

a. Absorbansi 1

$$\text{Konsentrasi} = \frac{0,499 - 0,0333}{0,1723} = 2,7028 \text{ ppm}$$

$$\begin{aligned} \text{Bobot Zat Aktif Bebas} &= 2,7028 \text{ ppm} \times 10 \text{ mL} \times 1 \\ &= 2702,8 \text{ } \mu\text{g} \\ &= 2,7028 \text{ mg} \end{aligned}$$

$$\begin{aligned} \%EE &= \frac{30 \text{ mg} - 2,7028}{30 \text{ mg}} \times 100\% \\ &= 90,991 \% \end{aligned}$$

b. Absorbansi 2

$$\text{Konsentrasi} = \frac{0.353-0.0333}{0.1723} = 1,8554 \text{ ppm}$$

$$\begin{aligned}\text{Bobot Zat Aktif Bebas} &= 1,8554 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 1855,4 \text{ } \mu\text{g} \\ &= 1,8554 \text{ mg}\end{aligned}$$

$$\begin{aligned}\%EE &= \frac{30 \text{ mg} - 1,8554}{30 \text{ mg}} \times 100\% \\ &= 93,815 \%\end{aligned}$$

c. Absorbansi 3

$$\text{Konsentrasi} = \frac{0.337-0.0333}{0.1723} = 1,7626 \text{ ppm}$$

$$\begin{aligned}\text{Bobot Zat Aktif Bebas} &= 1,7626 \text{ ppm} \times 10 \text{ mL} \times 1 \\ &= 1762,6 \text{ } \mu\text{g} \\ &= 1,7626 \text{ mg}\end{aligned}$$

$$\begin{aligned}\%EE &= \frac{30 \text{ mg} - 1,7626}{30 \text{ mg}} \times 100\% \\ &= 94,124 \%\end{aligned}$$

4. F 4

a. Absorbansi 1

$$\text{Konsentrasi} = \frac{0.626-0.0333}{0.1723} = 3,4399 \text{ ppm}$$

$$\begin{aligned}\text{Bobot Zat Aktif Bebas} &= 3,4399 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 3439,9 \text{ } \mu\text{g} \\ &= 3,4399 \text{ mg}\end{aligned}$$

$$\begin{aligned}\%EE &= \frac{30 \text{ mg} - 3,4399}{30 \text{ mg}} \times 100\% \\ &= 88,533 \%\end{aligned}$$

b. Absorbansi 2

$$\text{Konsentrasi} = \frac{0.605-0.0333}{0.1723} = 3,3180 \text{ ppm}$$

$$\begin{aligned}\text{Bobot Zat Aktif Bebas} &= 3,3180 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 3318 \text{ } \mu\text{g} \\ &= 3,318 \text{ mg}\end{aligned}$$

$$\begin{aligned}\%EE &= \frac{30 \text{ mg} - 3,318}{30 \text{ mg}} \times 100\% \\ &= 88,94 \%\end{aligned}$$

c. Absorbansi 3

$$\text{Konsentrasi} = \frac{0.526-0.0333}{0.1723} = 2,8595 \text{ ppm}$$

$$\begin{aligned}\text{Bobot Zat Aktif Bebas} &= 2,8595 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 2859,5 \text{ } \mu\text{g} \\ &= 2,8595 \text{ mg}\end{aligned}$$

$$\begin{aligned}\%EE &= \frac{30 \text{ mg} - 2,8595}{30 \text{ mg}} \times 100\% \\ &= 90,468 \%\end{aligned}$$

5. F 5

a. Absorbansi 1

$$\text{Konsentrasi} = \frac{0.623-0.0333}{0.1723} = 3,4225 \text{ ppm}$$

$$\begin{aligned}\text{Bobot Zat Aktif Bebas} &= 3,4225 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 3422,5 \text{ } \mu\text{g} \\ &= 3,4225 \text{ mg}\end{aligned}$$

$$\begin{aligned}\%EE &= \frac{30 \text{ mg} - 3,4225}{30 \text{ mg}} \times 100\% \\ &= 88,591 \%\end{aligned}$$

b. Absorbansi 2

$$\text{Konsentrasi} = \frac{0.191-0.0333}{0.1723} = 0,9152 \text{ ppm}$$

$$\begin{aligned}\text{Bobot Zat Aktif Bebas} &= 0,9152 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 915,2 \text{ } \mu\text{g} \\ &= 0,9152 \text{ mg}\end{aligned}$$

$$\begin{aligned}\%EE &= \frac{30 \text{ mg} - 0,9152}{30 \text{ mg}} \times 100\% \\ &= 96,949 \%\end{aligned}$$

c. Absorbansi 3

$$\text{Konsentrasi} = \frac{0.695-0.0333}{0.1723} = 3,8403 \text{ ppm}$$

$$\begin{aligned}\text{Bobot Zat Aktif Bebas} &= 3,8403 \text{ ppm} \times 10 \text{ mL} \times 100 \\ &= 3840,3 \text{ } \mu\text{g} \\ &= 3,8403 \text{ mg}\end{aligned}$$

$$\begin{aligned}\%EE &= \frac{30 \text{ mg} - 3,8403}{30 \text{ mg}} \times 100\% \\ &= 87,199 \%\end{aligned}$$

Lampiran 4 Hasil Karakterisasi NLC Vitamin E Asetat

1. Data Karakterisasi NLC Vitamin E Asetat Hari Ke 1

Formula	Ukuran Partikel (nm)	PdI	Zeta Potensial (mV)
F1	133.23 ± 2.65	0.29 ± 0.05	-43.53 ± 1.27
F2	181.1 ± 3.48	0.35 ± 0.03	-31.03 ± 0.90
F3	126.26 ± 0.47	0.22 ± 0.02	-35.96 ± 0.25
F4	133.63 ± 1.76	0.23 ± 0.007	-32.83 ± 0.70
F5	142.96 ± 0.85	0.21 ± 0.035	-32.83 ± 1.72

2. Data Karakterisasi NLC Vitamin E Asetat Hari Ke 30

Formula	Ukuran Partikel (nm)	PdI	Zeta Potensial (mV)
F1	160.7 ± 27.71	0.406 ± 0.03	-38.4 ± 1.04
F2	222.56 ± 2.93	0.473 ± 0.07	-30.6 ± 0.26
F3	148.33 ± 3.55	0.25 ± 0.01	-40.03 ± 0.97
F4	180.63 ± 28.21	0.38 ± 0.04	-31.73 ± 0.63
F5	209.96 ± 44.44	0.33 ± 0.06	-31.1 ± 1.05

Lampiran 5 Uji Sampel T-TEST Karakterisasi NLC GMT Vitamin E Asetat

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	F1_UkuranPartikel_H1 - F1_UkuranPartikel_H30	-27.46667	25.15200	14.52152	-89.94771	35.01438	-1.891	2	.199
Pair 2	F2_UkuranPartikel_H1 - F2_UkuranPartikel_H30	-41.46667	4.89524	2.82627	-53.62711	-29.30623	-14.672	2	.005
Pair 3	F3_UkuranPartikel_H1 - F3_UkuranPartikel_H30	-22.06667	3.20208	1.84872	-30.02108	-14.11225	-11.936	2	.007
Pair 4	F4_UkuranPartikel_H1 - F4_UkuranPartikel_H30	-47.00000	27.29011	15.75595	-114.79239	20.79239	-2.983	2	.096
Pair 5	F5_UkuranPartikel_H1 - F5_UkuranPartikel_H30	-67.00000	44.29549	25.57401	-177.03608	43.03608	-2.620	2	.120
Pair 6	F1_Pdl_H1 - F1_Pdl_H30	-.11400	.09241	.05335	-.34355	.11555	-2.137	2	.166
Pair 7	F2_Pdl_H1 - F2_Pdl_H30	-.11433	.06726	.03883	-.28142	.05276	-2.944	2	.099
Pair 8	F3_Pdl_H1 - F3_Pdl_H30	-.03067	.01644	.00949	-.07151	.01018	-3.231	2	.084
Pair 9	F4_Pdl_H1 - F4_Pdl_H30	-.15000	.04967	.02868	-.27338	-.02662	-5.231	2	.035
Pair 10	F5_Pdl_H1 - F5_Pdl_H30	-.12600	.06384	.03686	-.28458	.03258	-3.419	2	.076
Pair 11	F1_ZetaPotensial_H1 - F1_ZetaPotensial_H30	-5.13333	.23094	.13333	-5.70702	-4.55965	-38.500	2	.001
Pair 12	F2_ZetaPotensial_H1 - F2_ZetaPotensial_H30	-.43333	.80208	.46308	-2.42581	1.55915	-.936	2	.448
Pair 13	F3_ZetaPotensial_H1 - F3_ZetaPotensial_H30	4.06667	.73711	.42557	2.23558	5.89775	9.556	2	.011
Pair 14	F4_ZetaPotensial_H1 - F4_ZetaPotensial_H30	-1.10000	.45826	.26458	-2.23837	.03837	-4.158	2	.053
Pair 15	F5_ZetaPotensial_H1 - F5_ZetaPotensial_H30	-1.73333	2.54820	1.47121	-8.06342	4.59675	-1.178	2	.360
Pair 16	F1_EE_H1 - F1_EE_H30	2.92771	1.02303	.59065	.38637	5.46905	4.957	2	.038
Pair 17	F2_EE_H1 - F2_EE_H30	.36758	3.09828	1.78879	-7.32897	8.06412	.205	2	.856
Pair 18	F3_EE_H1 - F3_EE_H30	.16767	2.92147	1.68671	-7.08968	7.42501	.099	2	.930
Pair 19	F4_EE_H1 - F4_EE_H30	.32244	3.54035	2.04402	-8.47229	9.11716	.158	2	.889
Pair 20	F5_EE_H1 - F5_EE_H30	.29019	3.62222	2.09129	-8.70790	9.28828	.139	2	.902

Uji Sampel T-TEST Karakterisasi NLC GMT Vitamin E Asetat

Lampiran 6 Hasil Penentuan Formula

1. Penentuan Formula Menggunakan Aplikasi Design Expert

D:\TA1 2018\DESIGN EXPERT\llmi.dpx* - Design-Expert 13
File Edit View Display Options Design Tools Help

Change View Round Columns Augment Design Hide/Show Columns

Navigation Pane

Design (Actual)

Information

Notes
Summary
Graph Columns
Evaluation
Constraints

Analysis [+]

Ukuran partikel (Analyzed)
PDI (Analyzed)
Zeta Potential (Analyzed)

Design Properties

Cell

Cell StatusNormal

Run 7

Comment
Row StatusNormal

Response

NameUkuran partikel
Unitsnm
FormatGeneral

Std	Run	Component 1 A:Geleol	Component 2 B:Tegocare	Response 1 Ukuran partikel nm	Response 2 PDI	Response 3 Zeta Potential mV	Response 4 % EE %
5	1	0.25	0.75				
2	2	0	1				
3	3	0.5	0.5				
4	4	0.75	0.25				
1	5	1	0				
6	6	1	0				
7	7	0	1				

2. Pengolahan data Hasil Optimasi

[illegible]

Lampiran 7 Dokumentasi Penelitian

Gambar Dokumentasi Penelitian

Lampiran 8 Surat Pernyataan Bebas Plagiasi

SURAT PERNYATAAN

Yang bertanda tangan di bawah ini,

Nama : Ilmi Aprilianti

N P M : 11181021

adalah mahasiswa Fakultas Farmasi, Universitas Bhakti Kencana, menyatakan dengan sesungguhnya bahwa Naskah Tugas Akhir/Skripsi yang saya tulis dengan judul:

Pengembangan Formula Dan Karakterisasi Nanostructured Lipid Carrier (NLC) Vitamin E Asetat Dengan Variasi Konsentrasi Lipid Padat Geleol[®] (Glyceryl Monostearate), Dan Surfaktan Tegocare[®] (Polyglyceryl-3 Methylglucose Distearate)

adalah benar-benar merupakan hasil karya saya sendiri. Apabila di kemudian hari diketahui bahwa isi Naskah Skripsi ini merupakan hasil plagiasi, maka saya bersedia menerima sanksi berupa pembatalan kelulusan dan atau pencabutan gelar yang saya peroleh.

Demikian surat pernyataan ini saya buat untuk dapat dipergunakan sebagaimana mestinya.

Bandung , 31 Agustus 2022

Yang membuat pernyataan,

A handwritten signature in black ink is written over a yellow revenue stamp. The stamp features the Garuda Pancasila emblem and the text '1000', 'METERAI TEMPEL', and a unique serial number 'D3E5CAJX912845398'.

(Ilmi Aprilianti)

NPM .11181021

Lampiran 9 Surat Persetujuan untuk dipublikasikan di media on line**SURAT PERNYATAAN**

Yang bertanda tangan di bawah ini,

Nama : Ilmi Aprilianti

N P M : 11181021

Menyatakan bahwa demi kepentingan perkembangan ilmu pengetahuan, saya menyetujui abstrak Skripsi yang saya tulis dengan judul:

Pengembangan Formula Dan Karakterisasi Nanostructured Lipid Carrier (NLC) Vitamin E Asetat Dengan Variasi Konsentrasi Lipid Padat Geleol[®] (*Glyceryl Monostearate*), Dan Surfaktan Tegocare[®] (*Polyglyceryl-3 Methylglucose Distearate*)

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Bandung , 31 Agustus 2022

Yang membuat pernyataan,



(Ilmi Aprilianti)

NPM .11181021

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