Lampiran 2 Certificate of Analysis DPPH

HIMEDIA LabChemicals & BioChemicals

Product Information

Revision : 01
Date of Revision: 19.12.2018

2,2-Diphenyl-1-picrylhydrazyl **MB263**

For Molecular Biology

Product Identifier

CAS No.	:	1898-66-4
EC No.	:	217-591-8
Molecular Formula	:	$C_{18}H_{12}N_5O_6$
Molecular Weight	:	394.32
HS Code	:	2928 00 90
Storage	:	Below 30°C
Shelf life	:	4 years

Technical Specification

Appearance	:	Green to dark violet to black-gold to black crystals or powder or solid
Solubility	:	33.3 mg soluble in 1 mL of dimethylformamide
FTIR	:	Matches with the standard pattern
DNases	:	None detected
RNases	:	None detected
Assay (HPLC)	:	min. 85.00%

Safety Information

Hazard Pictogram(s) :

Signal Word	:	Danger
Hazard Statement(s)	:	H317- H334
Precautionary Statement(s)	:	P261- P280- P342 + P311
UN No.	:	Not dagerous goods
Class	:	-
Packing Group	:	-
RTECS	:	MW3250000
WGK	:	1

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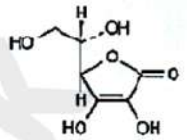
Lampiran 3 Certificate of Analysis Asam askorbat

BADAN POM RI

SERTIFIKAT ANALISIS

NAMA ZAT : **ASAM ASKORBAT** BPL
NO KONTROL : B0114243
FORMULA : $C_6H_8O_6$
BOBOT MOLEKUL : 176.12 g/mol



TUJUAN PENGGUNAAN :
- identifikasi secara spektrofotometri inframerah
- identifikasi secara spektrofotometri ultraviolet
- titik lebur dan kemurnian secara *differential scanning calorimetry*
- penetapan kadar secara kromatografi cair kinerja tinggi
- penetapan kadar secara spektrofotometri ultraviolet

WADAH DAN PENYIMPANAN : dalam wadah tertutup rapat, terhindar dari kontak langsung dengan cahaya.

PENGUJIAN	ACUAN/METODE	SPESIFIKASI	HASIL
Pemerian		Serbuk hablur putih atau hampir putih, atau hablur tidak berwarna	Memenuhi syarat
Identifikasi	Spektrofotometri Inframerah (USP 35 hal. 2242; BP 2009 hal. 173)	Sesuai dengan spektrum inframerah baku primer Ascorbic acid USPRS no. Lot R0K142	Memenuhi syarat
	Spektrofotometri Ultraviolet (BP 2009 hal. 173)	Sesuai dengan spektrum ultraviolet baku primer Ascorbic acid USPRS no. Lot R0K142; Serapan jenis pada 243 nm adalah 545-585	Memenuhi syarat ; Serapan jenis pada 243 nm = 550
Titik Lebur dan Kemurnian	*Differential Scanning Calorimetry* (BP 2009 hal. 173)	190°C	189,01°C; Kemurnian 99,60%
Penetapan Kadar	Spektrofotometri Ultraviolet (BP 2009 hal. 173)	99,0 – 100,5%	99,56 ± 2,03%
	Kromatografi Cair Kinerja Tinggi(Modifikasi MA 02/PK/12)	99,0 – 100,5%	100,15 ± 0,83 %

Kepala Pusat Pengujian Obat dan Makanan Nasional
U.b. Manajer Teknis Laboratorium Bahan Baku Pembanding

Dra. Dwi Prapti Karyani, M.Si., Apt.
NIP. 19601223 199503 2 001

BADAN PENGAWAS OBAT DAN MAKANAN REPUBLIK INDONESIA
Jl. Percetakan Negara No. 23, Jakarta Pusat 10560 Telp. 4245075, Fax. : 4201427, 4245150, E-mail. : ppomn@pom.go.id

Lampiran 4 Certificate of Analysis Metanol

Certificate of Analysis

1.06009.2500 Methanol for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch I1258409

	Spec. Values		Batch Values	
Purity (GC)	≥ 99.9	%	99.9	%
Identity (IR)	conforms		conforms	
Appearance	clear		clear	
Color	≤ 10	Hazen	< 5	Hazen
Solubility in water	conforms		conforms	
Acidity	≤ 0.0002	meq/g	0.0001	meq/g
Alkalinity	≤ 0.0002	meq/g	< 0.0002	meq/g
Density (d 20 °C/20 °C)	0.791 - 0.793		0.793	
Boiling point	64 - 65	°C	64	°C
Benzene (impurity A) (GC)	≤ 2	ppm	< 1	ppm
Ethanol (GC)	≤ 0.05	%	< 0.01	%
Acetone	≤ 0.001	%	≤ 0.001	%
Acetaldehyde	≤ 0.001	%	≤ 0.001	%
Formaldehyde	≤ 0.001	%	≤ 0.001	%
Readily carbonizable substances	conforms		conforms	
Carbonyl compounds (as CO)	≤ 0.001	%	≤ 0.001	%
Chloride (Cl)	≤ 0.5	ppm	≤ 0.5	ppm
Sulfate (SO_4)	≤ 1	ppm	≤ 1	ppm
Substances reducing potassium permanganate (as O)	≤ 0.00025	%	≤ 0.00025	%
Ag (Silver)	≤ 0.000002	%	≤ 0.000002	%
Al (Aluminium)	≤ 0.00005	%	≤ 0.00005	%
As (Arsenic)	≤ 0.000002	%	≤ 0.000002	%
Au (Gold)	≤ 0.000002	%	≤ 0.000002	%
Ba (Barium)	≤ 0.00001	%	≤ 0.00001	%
Be (Beryllium)	≤ 0.000002	%	≤ 0.000002	%
Bi (Bismuth)	≤ 0.000002	%	≤ 0.000002	%
Ca (Calcium)	≤ 0.00005	%	≤ 0.00005	%
Cd (Cadmium)	≤ 0.000005	%	≤ 0.000005	%
Co (Cobalt)	≤ 0.000002	%	≤ 0.000002	%
Cr (Chromium)	≤ 0.000002	%	≤ 0.000002	%
Cu (Copper)	≤ 0.000002	%	≤ 0.000002	%
Fe (Iron)	≤ 0.00001	%	≤ 0.00001	%
Ga (Gallium)	≤ 0.000002	%	≤ 0.000002	%
In (Indium)	≤ 0.000002	%	≤ 0.000002	%
Li (Lithium)	≤ 0.000002	%	≤ 0.000002	%
Mg (Magnesium)	≤ 0.00001	%	≤ 0.00001	%
Mn (Manganese)	≤ 0.000002	%	≤ 0.000002	%
Mo (Molybdenum)	≤ 0.000002	%	≤ 0.000002	%
Ni (Nickel)	≤ 0.000002	%	≤ 0.000002	%
Pb (Lead)	≤ 0.00001	%	≤ 0.00001	%
Pt (Platinum)	≤ 0.000005	%	≤ 0.000005	%

Certificate of Analysis

1.06009.2500 Methanol for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch I1258409

Sn (Tin)	≤ 0.00001	%	≤ 0.00001	%
Ti (Titanium)	≤ 0.000002	%	≤ 0.000002	%
Tl (Thallium)	≤ 0.000002	%	≤ 0.000002	%
V (Vanadium)	≤ 0.000002	%	≤ 0.000002	%
Zn (Zinc)	≤ 0.00001	%	≤ 0.00001	%
Zr (Zirconium)	≤ 0.000002	%	≤ 0.000002	%
Evaporation residue	≤ 0.0005	%	< 0.0001	%
Water	≤ 0.05	%	< 0.01	%

ACS, ISO, Reag Ph Eur

Date of release (DD.MM.YYYY) 01.12.2022
Minimum shelf life (DD.MM.YYYY) 31.10.2027

Jeannette David
Responsible laboratory manager quality control

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

Lampiran 5 Dokumentasi Hasil Fermentasi Kombucha sari buah belimbing wuluh

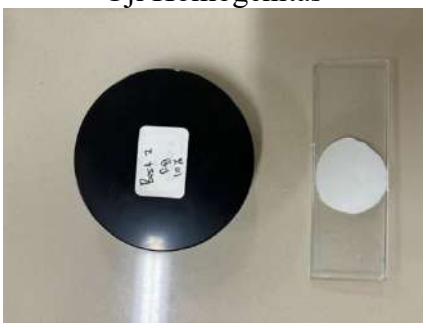
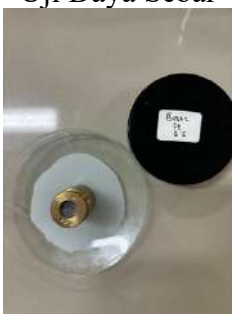
Uji Organoleptik	Uji PH
Uji Aktivitas Antioksidan	

Lampiran 6 Dokumentasi Hasil Evaluasi Basis Lotion Formula A

Uji Organoleptik	Uji Homogenitas

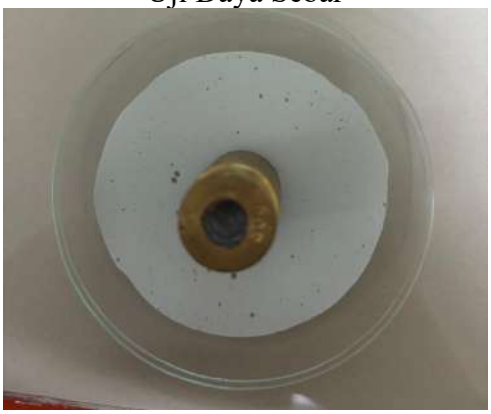
Uji PH	Uji Daya Sebar
Uji Viskositas	

Lampiran 7 Dokumentasi Hasil Evaluasi Basis Lotion Formula B

Uji Organoleptik	Uji Homogenitas 
Uji PH	Uji Daya Sebar 

Uji Viskositas	

Lampiran 8 dokumentasi uji kestabilan fisik selama 5 hari dalam suhu 400C

Uji Organoleptik	Uji Homogenitas
Uji PH	Uji Daya Sebar 

Uji Viskositas 	Uji Antioksidan
Uji Stabilitas 	

Lampiran 9 data hasil evaluasi fermentasi

Uji PH

Formula	Uji PH			Rata-rata	SD
	Batch 1	Batch 2	Batch 3		
Formula 1	1,49	1,57	1,40	1,49	0,085
Formula 2	1,49	1,51	1,48	1,50	0,006
Formula 3	1,37	1,34	1,38	1,35	0,015
Formula 4	1,36	1,34	1,33	1,35	0,020
Formula 5	1,4	1,43	1,38	1,41	0,023
Formula 6	1,44	1,41	1,48	1,45	0,023
S.B.Wuluh	0,80	0,78	0,82	0,80	0,006
Kombucha	1,82	1,85	1,87	1,85	0,025

Uji antioksidan

Formula	IC50			Rata-rata	SD
	Batch **1**	Batch **2**	Batch **3**		
Formula 1	347,324	347,535	347,54	347,46	0,122
Formula 2	237,653	239,231	237,436	238,11	0,980
Formula 3	169,651	169,651	167,965	169,09	0,973
Formula 4	134,179	132,571	132,672	133,14	0,901
Formula 5	120,033	120,027	120,076	120,05	0,027
Formula 6	98,560	98,560	98,560	98,56	0,000
S.B.Wuluh	597,310	597,107	597,107	597,17	0,117
Kombucha	75,159	75,210	75,236	75,20	0,039

Keterangan :
Formula 1 = Konsentrasi Kombucha 10 % Dan Belimbing Wuluh 100 %
Formula 2 = Konsentrasi Kombucha 10 % Dan Belimbing Wuluh 50 %
Formula 3 = Konsentrasi Kombucha 15 % Dan Belimbing Wuluh 100 %
Formula 4 = Konsentrasi Kombucha 15 % Dan Belimbing Wuluh 50 %
Formula 5 = Konsentrasi Kombucha 20 % Dan Belimbing Wuluh 100 %
Formula 6 = Konsentrasi Kombucha 20 % Dan Belimbing Wuluh 50 %
S.B.W Wuluh = Sari Buah Belimbing Wuluh 100 %
Kombucha = Kombucha 100 %

Lampiran 10 data hasil evaluasi basis lotion formula A

Uji pH

Formula	Uji pH			Rata-rata	SD
	Batch 1	**Batch 2**	**Batch 3**		
FI	7,89	7,68	7,8	7,79	0,105
FII	7,71	7,71	7,61	7,68	0,058
FIII	7,82	7,66	7,57	7,68	0,127

Uji daya sebar

Formula	UJI DAYA SEBAR			Rata-rata	SD
	Batch 1	**Batch 2**	**Batch 3**		
FI	5	5	5	5,13	0,231
FII	5	5	6	5,43	0,513
FIII	7	6	6	6,40	0,600

Uji Viskositas

Formula	UJI VISKOSITAS			Rata-rata	SD
	Batch 1	**Batch 2**	**Batch 3**		
FI	4.516	7.745	4.304	5522	1928
FII	4.700	6.494	5.933	5709	918
FIII	4.383	5.066	5.555	5001	589

Lampiran 11 data hasil evaluasi basis lotion formula B

Uji pH

Formula	Uji pH			Rata-rata	SD
	Batch 1	**Batch 2**	**Batch 3**		
FI	5,68	5,46	5,61	5,58	0,092
FII	5,74	5,64	5,62	5,67	0,052
FIII	6,36	6,28	6,22	6,29	0,057

Uji daya sebar

Formula	UJI DAYA SEBAR			Rata-rata	SD
	Batch 1	**Batch 2**	**Batch 3**		
FI	6,8	6,5 cm	7,2	7,00	0,283
FII	5	5.3 cm	7,5	6,25	1,768
FIII	6,5	6.4 cm	6,8	6,65	0,212

Uji Viskositas

Formula	UJI VISKOSITAS			Rata-rata	SD
	Batch 1	**Batch 2**	**Batch 3**		
FI	8.320	7.573	9707	8533	1083
FII	13.333	12.409	11733	12492	803
FIII	7.680	7.787	8427	7964	404

Lampiran 12 data hasil evaluasi uji reproduksibilitas lotion

Uji pH

Hari	Uji pH			Rata-rata	SD
	Batch 1	**Batch 2**	**Batch 3**		
Hari 1	5,25	5,30	5,29	5,28	0,027
Hari 2	5,32	5,29	5,30	5,30	0,006
Hari 3	5,32	5,33	5,34	5,33	0,010

Uji daya sebar

Hari	Uji Daya Sebar			Rata-rata	SD
	Batch 1	**Batch 2**	**Batch 3**		
Hari 1	5,48	5,5	5,42	5,5	0,041
Hari 2	5,68	5,62	5,6	5,6	0,041
Hari 3	5,6	5,63	5,55	5,6	0,043

Uji Viskositas

Hari	Uji Viskositas			Rata-rata	SD
	Batch 1	**Batch 2**	**Batch 3**		
Hari 1	5656	5637	5810	5701	94,87
Hari 2	5440	5400	5390	5410	26,45
Hari 3	5495	5445	5345	5428	76,37

Lampiran 13 data hasil evaluasi uji stabilitas lotion

Uji pH

HARI KE	FORMULA	BATCH I	BATCH II	BATCH III	RATA-RATA	SD
1	FO	6,18	6,20	6,25	6,21	0,036
2		6,70	6,45	6,49	6,55	0,134
3		6,12	6,00	6,15	6,09	0,079
4		7,58	7,35	7,51	7,48	0,118
5		5,81	5,02	5,91	5,91	0,105
1	FI	5,28	5,30	5,32	5,30	0,020
2		5,90	5,68	5,74	5,77	0,114
3		5,86	5,76	5,66	5,76	0,100
4		6,82	6,90	7,04	6,92	0,111
5		5,34	5,62	5,46	5,47	0,140
1	FII	5,15	5,17	5,20	5,17	0,025
2		5,69	5,68	5,70	5,69	0,010
3		5,57	5,63	5,61	5,60	0,031
4		6,72	6,83	6,78	6,78	0,055
5		5,38	5,28	5,39	5,35	0,061
1	FIII	4,88	4,90	4,91	4,90	0,015
2		5,45	5,44	5,43	5,44	0,010
3		5,30	5,42	5,57	5,43	0,135
4		6,56	6,51	6,48	6,52	0,040
5		5,12	5,00	5,09	5,07	0,062

Uji daya sebar

HARI KE	FORMULA	BATCH I	BATCH II	BATCH III	RATA-RATA	SD
1	FO	6,8	6,9	7,0	6,9	0,100
2		6,9	6,7	6,8	6,8	0,100
3		6,8	6,5	6,7	6,7	0,153
4		7,1	7,2	7,0	7,1	0,076
5		6,8	6,8	6,9	6,8	0,050
1	FI	5,35	5,65	5,40	5,5	0,161
2		5,35	5,30	5,55	5,4	0,132
3		6,25	6,35	6,20	6,3	0,076
4		4,90	5,15	5,05	5,0	0,126
5		5,45	5,55	5,50	5,5	0,050
1	FII	5,79	5,85	5,75	5,8	0,050
2		5,60	5,45	5,75	5,6	0,150
3		5,75	5,60	6,15	5,8	0,284
4		6,05	5,95	6,00	6,0	0,050
5		5,70	5,85	6,05	5,9	0,176
1	FIII	7,0	6,9	6,9	6,9	0,046
2		5,5	5,5	5,6	5,5	0,032
3		6,0	6,0	6,0	6,0	0,000
4		5,5	5,6	5,8	5,6	0,153
5		5,8	5,9	5,9	5,9	0,058

Uji Viskositas

HARI KE	FORMULA	BATCH I	BATCH II	BATCH III	RATA-RATA	SD
1	FO	8427,0	8320,0	8217,0	8321,3	105,006
2		10133,0	9813,0	9600,0	9848,7	268,284
3		10133,0	9707,0	9060,0	9633,3	540,280
4		5547,0	5333,0	5127,0	5335,7	210,013
5		11090,0	10773,0	10667,0	10843,3	220,096
1	FI	5600,0	5493,0	5445,0	5512,7	79,349
2		5333,0	5227,0	5440,0	5333,3	106,500
3		7680,0	7467,0	7253,0	7466,7	213,500
4		4800,0	4693,0	4587,0	4693,3	106,500
5		5333,0	5227,0	5120,0	5226,7	106,500
1	FII	4257,0	4160,0	4383,0	4266,7	111,813
2		7020,0	6420,0	6827,0	6755,7	306,294
3		7250,0	7150,0	7040,0	7146,7	105,039
4		2425,0	2501,0	2433,0	2453,0	41,761
5		7140,0	7153,0	7040,0	7111,0	61,830
1	FIII	4897,0	4810,0	4693,0	4800,0	102,367
2		5300,0	4513,0	4160,0	4657,7	583,606
3		7253,0	7147,0	7040,0	7146,7	106,500
4		5013,0	4907,0	5120,0	5013,3	106,500
5		5898,0	5000,0	4154,0	5017,3	872,129

Lampiran 14 data hasil evaluasi uji aktivitas antioksidan

a. Vitamin C

Konsentrasi (nm/ml)	Abs Kontrol			% inhibisi			IC_{50}			Rata-rata	SD
	1	2	3	1	2	3	1	2	3		
7	0,844	0,826	0,837	4,236	6,278	5,030	10,816	9,8836	10,887	10,53	0,457
8	0,723	0,699	0,723	17,965	20,688	17,965					
9	0,626	0,601	0,622	28,971	31,808	29,425					
10	0,567	0,582	0,567	35,666	33,964	35,666					
11	0,414	0,499	0,414	53,026	43,381	53,026					
12	0,348	0,357	0,357	60,514	59,493	59,493					
13	0,275	0,275	0,254	68,797	71,180	71,180					

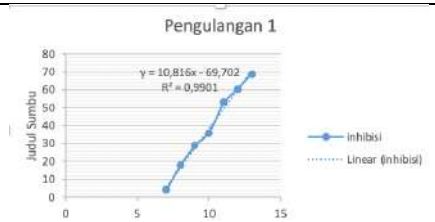
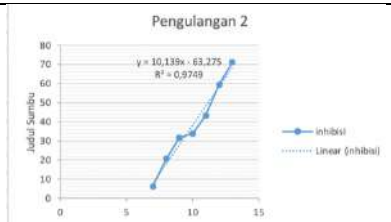
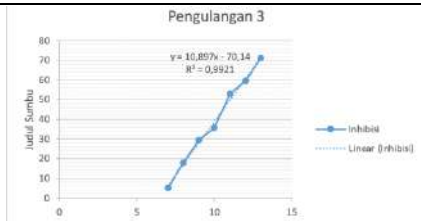
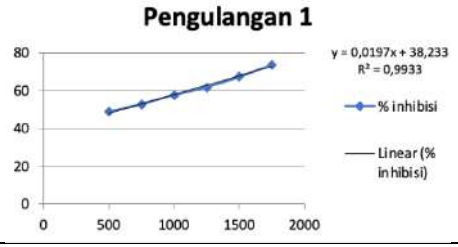
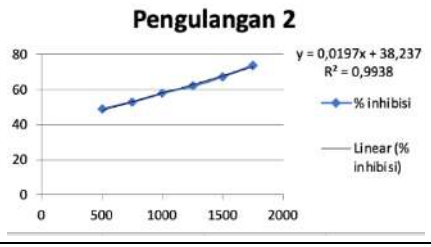
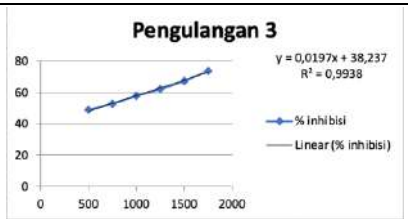
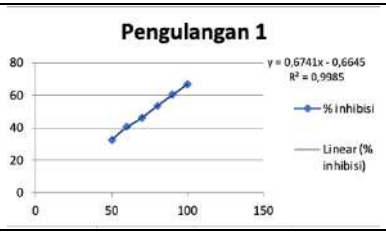
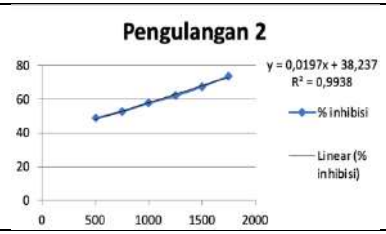
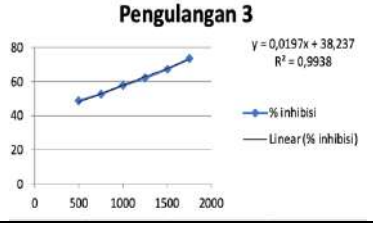
b. Sampel

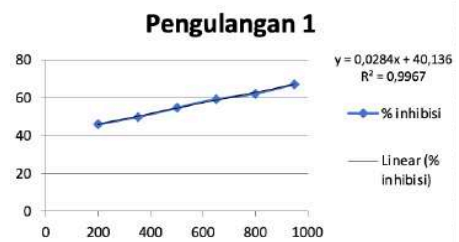
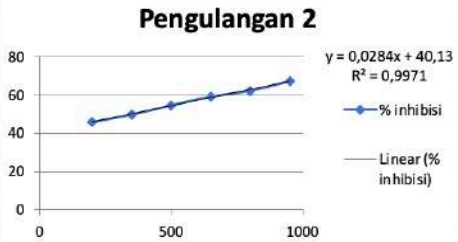
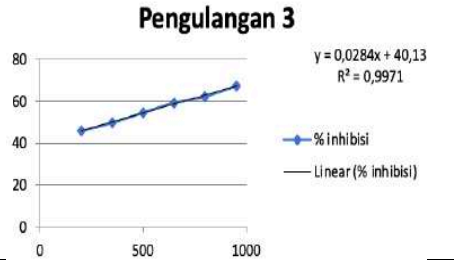
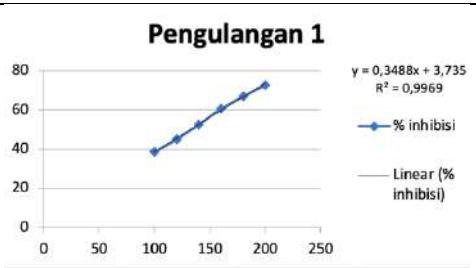
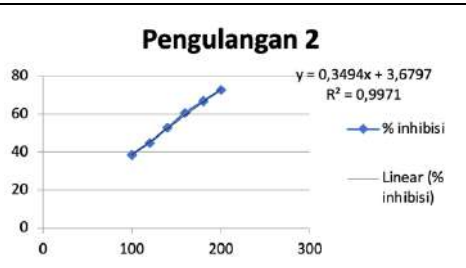
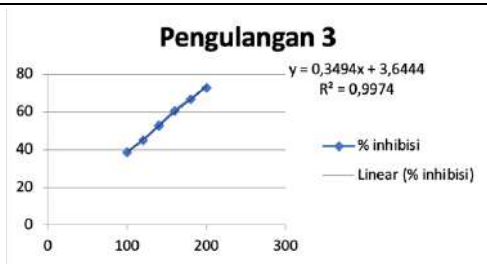
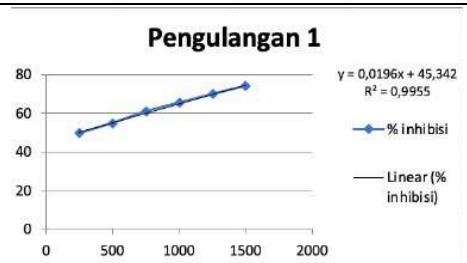
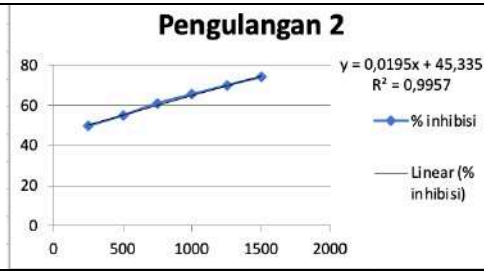
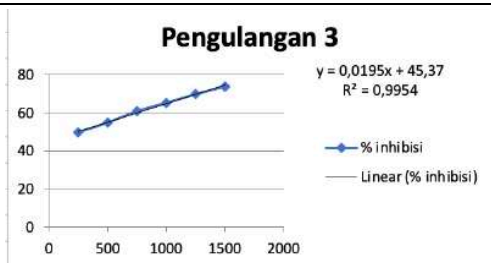
FORMULA	KONSENTRASI (NM/ML)	ABS KONTROL	ABS SAMPEL			INHIBISI %			IC_{50}			RATA-RATA IC50	SD
			1	2	3	1	2	3	1	2	3		
sari buah belimbing wuluh	500	0,946	0,484	0,484	0,484	48,837	48,837	48,837	597,310	597,107	597,107	597,174	0,117
	750	0,946	0,447	0,447	0,447	52,748	52,748	52,748					
	1000	0,946	0,400	0,400	0,400	57,717	57,717	57,717					
	1250	0,946	0,361	0,360	0,360	61,839	61,839	61,945					
	1500	0,946	0,309	0,309	0,309	67,336	67,336	67,336					
	1750	0,946	0,249	0,249	0,249	73,679	73,679	73,679					
Kombucha	50	0,946	0,638	0,638	0,638	32,558	32,558	32,558	75,159	75,210	75,236	75,201	0,039
	60	0,946	0,562	0,562	0,562	40,592	40,592	40,592					
	70	0,946	0,510	0,510	0,510	46,089	46,089	46,089					
	80	0,946	0,441	0,441	0,441	53,383	53,383	53,383					
	90	0,946	0,376	0,377	0,378	60,254	60,148	60,042					
	100	0,946	0,317	0,318	0,318	66,490	66,385	66,385					

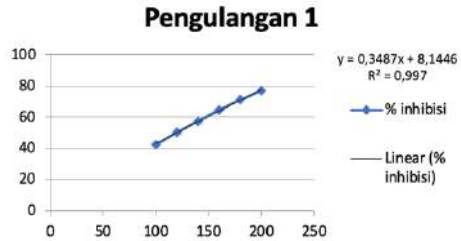
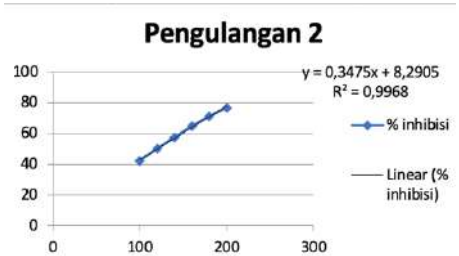
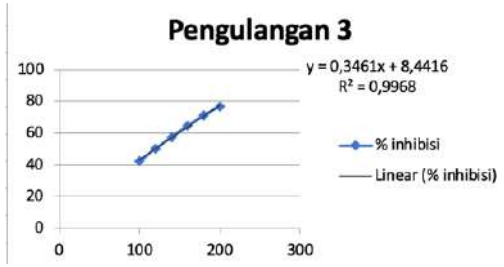
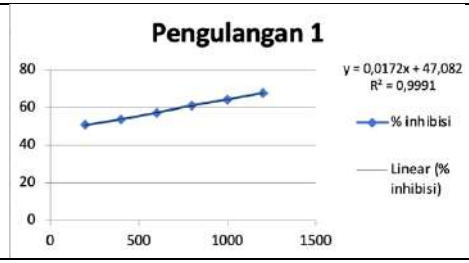
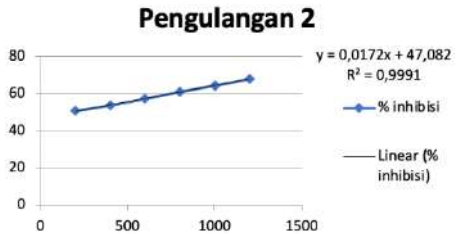
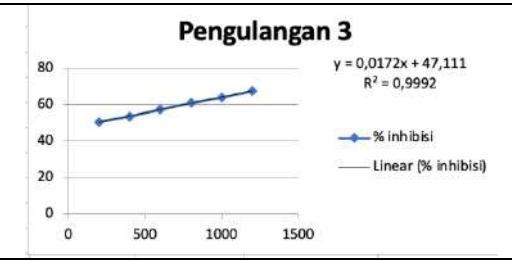
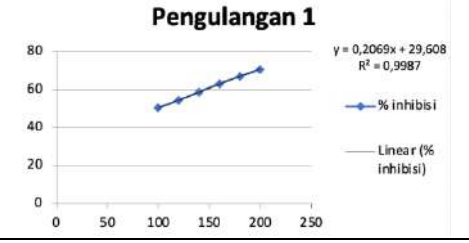
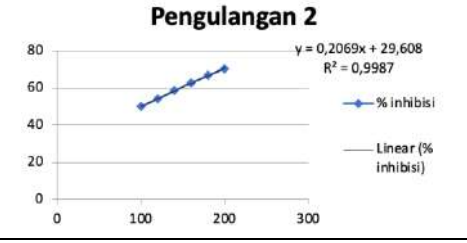
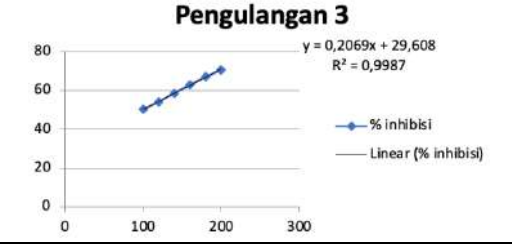
10 % 100 %	200	0,946	0,512	0,512	0,512	45,877	45,877	45,877	347,324	347,535	347,535	347,465	0,122
	350	0,946	0,476	0,476	0,476	49,683	49,683	49,683					
	500	0,946	0,430	0,430	0,430	54,545	54,545	54,545					
	650	0,946	0,385	0,386	0,386	59,302	59,197	59,197					
	800	0,946	0,357	0,357	0,357	62,262	62,262	62,262					
	950	0,946	0,310	0,310	0,310	67,230	67,230	67,230					
15% 100 %	250	0,946	0,476	0,476	0,476	49,683	49,683	49,683	237,653	239,231	237,436	238,107	0,980
	500	0,946	0,427	0,427	0,427	54,863	54,863	54,863					
	750	0,946	0,370	0,370	0,370	60,888	60,888	60,888					
	1000	0,946	0,327	0,328	0,328	65,433	65,328	65,328					
	1250	0,946	0,285	0,285	0,285	69,873	69,873	69,873					
	1500	0,946	0,246	0,246	0,247	73,996	73,996	73,890					
20 % 100 %	200	0,946	0,466	0,466	0,466	50,740	50,740	50,740	169,651	169,651	167,965	169,089	0,973
	400	0,946	0,438	0,438	0,438	53,700	53,700	53,700					
	600	0,946	0,404	0,404	0,403	57,294	57,294	57,400					
	800	0,946	0,368	0,368	0,368	61,099	61,099	61,099					
	1000	0,946	0,338	0,338	0,338	64,271	64,271	64,271					
	1200	0,946	0,305	0,305	0,305	67,759	67,759	67,759					
10 % 50 %	100	0,946	0,581	0,581	0,581	38,584	38,584	38,584	134,179	132,571	132,672	133,141	0,901
	120	0,946	0,521	0,521	0,521	44,926	44,926	44,926					
	140	0,946	0,448	0,447	0,448	52,643	52,748	52,643					
	160	0,946	0,372	0,372	0,373	60,677	60,677	60,571					
	180	0,946	0,313	0,313	0,313	66,913	66,913	66,913					
	200	0,946	0,259	0,258	0,258	72,622	72,727	72,727					
15% 50 %	100	0,946	0,547	0,547	0,547	42,178	42,178	42,178	120,033	120,027	120,076	120,045	0,027
	120	0,946	0,471	0,471	0,471	50,211	50,211	50,211					
	140	0,946	0,403	0,403	0,403	57,400	57,400	57,400					
	160	0,946	0,333	0,333	0,334	64,799	64,799	64,693					
	180	0,946	0,273	0,274	0,275	71,142	71,036	70,930					
	200	0,946	0,218	0,219	0,220	76,956	76,850	76,744					
20 % 50 %	100	0,946	0,471	0,471	0,471	50,211	50,211	50,211	98,560	98,560	98,560	98,560	0,000

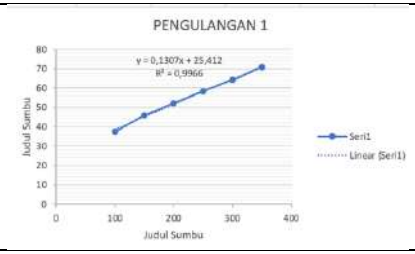
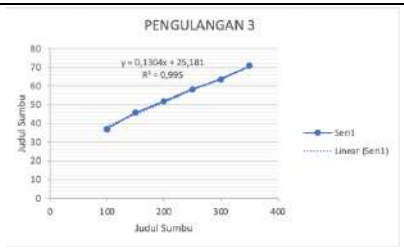
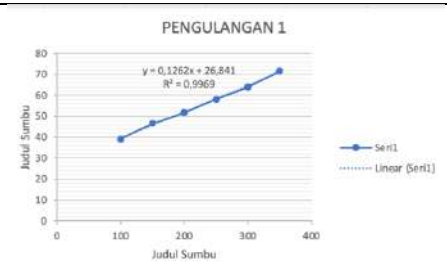
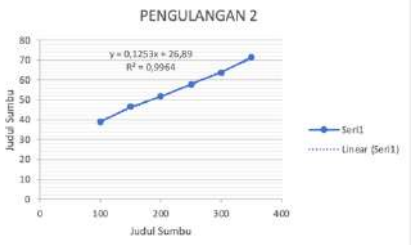
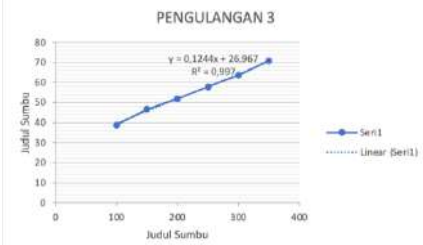
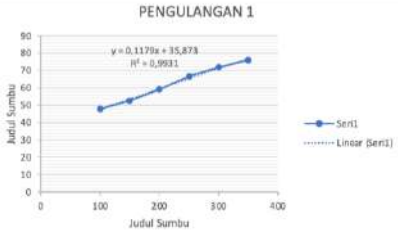
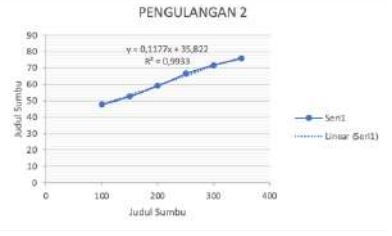
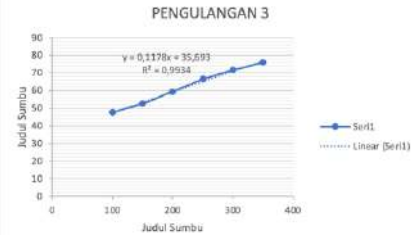
	120	0,946	0,433	0,433	0,433	54,228	54,228	54,228					
	140	0,946	0,391	0,391	0,391	58,668	58,668	58,668					
	160	0,946	0,349	0,349	0,349	63,108	63,108	63,108					
	180	0,946	0,312	0,312	0,312	67,019	67,019	67,019					
	200	0,946	0,278	0,278	0,278	70,613	70,613	70,613					
FI	100	0,946	0,592	0,594	0,596	37,421	37,209	36,998	188,125	189,218	190,330	189,224	1,102
	150	0,946	0,512	0,512	0,513	45,877	45,877	45,772					
	200	0,946	0,453	0,454	0,455	52,114	52,008	51,903					
	250	0,946	0,394	0,395	0,396	58,351	58,245	58,140					
	300	0,946	0,339	0,342	0,345	64,165	63,848	63,531					
	350	0,946	0,275	0,276	0,277	70,930	70,825	70,719					
FII	100	0,946	0,576	0,577	0,579	39,112	39,006	38,795	183,510	184,437	185,153	184,367	0,823
	150	0,946	0,504	0,504	0,505	46,723	46,723	46,617					
	200	0,946	0,456	0,456	0,455	51,797	51,797	51,903					
	250	0,946	0,396	0,399	0,399	58,140	57,822	57,822					
	300	0,946	0,341	0,343	0,344	63,953	63,742	63,636					
	350	0,946	0,268	0,270	0,275	71,670	71,459	70,930					
FIII	100	0,946	0,493	0,494	0,496	47,886	47,780	47,569	119,822	120,459	121,452	120,577	0,821
	150	0,946	0,448	0,449	0,450	52,643	52,537	52,431					
	200	0,946	0,386	0,386	0,385	59,197	59,197	59,302					
	250	0,946	0,315	0,316	0,317	66,702	66,596	66,490					
	300	0,946	0,266	0,268	0,269	71,882	71,670	71,564					
	350	0,946	0,226	0,227	0,228	76,110	76,004	75,899					

Lampiran 15 Kurva Hubungan Konsentrasi dengan % inhibisi

Vitamin C		
Batch 1	Batch 2	Batch 3
		
Sari Buah Belimbing Wuluh		
Batch 1	Batch 2	Batch 3
		
Fermentasi Kombucha		
Batch 1	Batch 2	Batch 3
		
Kombucha 10 % Sari Belimbing Wuluh 100 %		

Batch 1	Batch 2	Batch 3
		
Kombucha 10 % Sari Belimbing wuluh 50 %		
Batch 1	Batch 2	Batch 3
		
Kombucha 15 % Sari Belimbing Wuluh 100 %		
Batch 1	Batch 2	Batch 3
		
Kombucha 15 % Sari Belimbing Wuluh 50 %		

Batch 1	Batch 2	Batch 3
		
Kombucha 20 % Sari belimbing Wuluh 100 %		
Batch 1	Batch 2	Batch 3
		
Kombucha 20 % Sari Belimbing Wuluh 50 %		
Batch 1	Batch 2	Batch 3
		
Formula I		

Batch 1	Batch 2	Batch 3
		
Formula II		
Batch 1	Batch 2	Batch 3
		
Formula III		
Batch 1	Batch 2	Batch 3
		

Lampiran 16 Hasil statistik evaluasi fermentasi terhadap pH

Uji Normalitas

	FORMULA	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
PH	FI	.182	3	.	.999	3	.935
	FII	.253	3	.	.964	3	.637
	FIII	.292	3	.	.923	3	.463
	F4	.253	3	.	.964	3	.637
	F5	.219	3	.	.987	3	.780
	F6	.204	3	.	.993	3	.843
	F7	.292	3	.	.923	3	.463
	F8	.219	3	.	.987	3	.780

a. Lilliefors Significance Correction

Uji Homogenitas

		Levene Statistic	df1	df2	Sig.
PH	Based on Mean	1.802	7	16	.156
	Based on Median	1.429	7	16	.261
	Based on Median and with adjusted df	1.429	7	5.042	.358
	Based on trimmed mean	1.782	7	16	.160

Uji Anova

PH

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.734	7	.248	179.118	.000
Within Groups	.022	16	.001		
Total	1.757	23			

Lampiran 17 hasil statistik evaluasi fermentasi terhadap aktivitas antioksidan

Uji Normalitas

	Formula_Antioksi	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
IC50	Formula 1	.199	3	.	.995	3	.864
	Formula 2	.346	3	.	.837	3	.205
	Formula 3	.291	3	.	.925	3	.471
	Formula 4	.365	3	.	.796	3	.106
	Formula 5	.177	3	.	1.000	3	.973
	Formula 6	.175	3	.	1.000	3	1.000
	Sari Belimbing Wuluh	.219	3	.	.987	3	.780
	Kombucha	.232	3	.	.980	3	.726

a. Lilliefors Significance Correction

Uji Homogenitas

		Levene Statistic	df1	df2	Sig.
IC50	Based on Mean	1.136	7	16	.390
	Based on Median	.388	7	16	.896
	Based on Median and with adjusted df	.388	7	11.343	.891
	Based on trimmed mean	1.071	7	16	.425

Uji Anova

IC50

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	643903.837	7	91986.262	97161.745	.000
Within Groups	15.148	16	.947		
Total	643918.984	23			

Lampiran 18 hasil statistik evaluasi basis lotion formula A

a. pH

Uji Normalitas

Tests of Normality

	BASIS	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
PH	FI	.376	3	.	.772	3	.050
	FII	.385	3	.	.750	3	.000
	FIII	.240	3	.	.975	3	.694

Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
PH	Based on Mean	15.188	2	6	.004
	Based on Median	1.041	2	6	.409
	Based on Median and with adjusted df	1.041	2	2.003	.490
	Based on trimmed mean	12.101	2	6	.008

Uji Post Hoc Test

Multiple Comparisons

Dependent Variable		(I) BASIS	(J) BASIS	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
PH	Games-Howell	FI	FII	-22.266.667	23.360.246	.667	-15.981.592	11.528.259
			FIII	-22.333.333	23.369.306	.666	-15.970.706	11.504.039
		FII	FI	22.266.667	23.360.246	.667	-11.528.259	15.981.592
			FIII	-.66667	803.465	.996	-358.854	345.521
		FIII	FI	22.333.333	23.369.306	.666	-11.504.039	15.970.706
			FII	.66667	803.465	.996	-345.521	358.854

* The mean difference is significant at the 0.05 level.

Uji Tukey Duncan

PH

	BASIS	N	Subset for alpha = 0.05 1
Tukey HSD[a]	FI	3	545.0000
	FII	3	767.6667
	FIII	3	768.3333
	Sig.		.511
Duncan[a]	FI	3	545.0000
	FII	3	767.6667
	FIII	3	768.3333
	Sig.		.301

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

Uji Kruskal Wallis Test

Ranks

	BASIS	N	Mean Rank
PH	FI	3	05.00
	FII	3	05.33
	FIII	3	0,21319444
	Total	9	

Test Statisticsa[a,b]

	PH
Kruskal-Wallis H	.090
df	2
Asymp. Sig.	.956

a Kruskal Wallis Test

b Grouping Variable: BASIS

b. Daya sebar

Uji Normalitas

Tests of Normality

	BASIS	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
DAYASEBAR	FI	.	3	.	.	3	.
	FII	.385	3	.	.750	3	.000
	FIII	.385	3	.	.750	3	.000

Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
DAYASEBAR	Based on Mean	8.000	2	6	.020
	Based on Median	.500	2	6	.630
	Based on Median and with adjusted df	.500	2	4.000	.640
	Based on trimmed mean	6.301	2	6	.034

Uji Post Hoc Test

Multiple Comparisons

Dependent Variable		(I) BASIS	(J) BASIS	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
DAYA SEBAR	Games-Howell	FI	FII	-.33333	.33333	.645	-22.969	16.303
			FIII	-133.333	.33333	.102	-32.969	.6303
		FII	FI	.33333	.33333	.645	-16.303	22.969
			FIII	-100.000	.47140	.201	-26.801	.6801
		FIII	FI	133.333	.33333	.102	-.6303	32.969
			FII	100.000	.47140	.201	-.6801	26.801

* The mean difference is significant at the 0.05 level.

Uji Tukey Duncan

DAYASEBAR

	BASIS	N	Subset for alpha = 0.05 1	2
Tukey HSD[a]	FI	3	5.0000	
	FII	3	5.3333	5.3333
	FIII	3		6.3333
	Sig.		.679	.090
Duncan[a]	FI	3	5.0000	
	FII	3	5.3333	
	FIII	3		6.3333
	Sig.		.420	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 3.000.

Uji Kruskal Wallis Test

Ranks

	BASIS	N	Mean Rank
DAYA SEBAR	FI	3	03.00
	FII	3	04.33
	FIII	3	0,33819444
	Total	9	

Test Statisticsa[a,b]

	DAYA SEBAR
Kruskal-Wallis H	5.778
df	2
Asymp. Sig.	.056

a Kruskal Wallis Test
b Grouping Variable: BASIS

c. Viskositas

Uji Normalitas

Tests of Normality

	BASIS	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
VISKOSITAS	FI	.366	3	.	.796	3	.105
	FII	.256	3	.	.962	3	.624
	FIII	.210	3	.	.991	3	.818

Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
VISKOSITAS	Based on Mean	4.109	2	6	.075
	Based on Median	.367	2	6	.708
	Based on Median and with adjusted df	.367	2	2.607	.724
	Based on trimmed mean	3.482	2	6	.099

Uji Post Hoc Test

Multiple Comparisons

Dependent Variable		(I) BASIS	(J) BASIS	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
VISKOSITAS	Bonferroni	FI	FII	-17.866.667	104.369.206	1.000	-36.097.575	32.524.242
			FIII	52.033.333	104.369.206	1.000	-29.107.575	39.514.242
		FII	FI	17.866.667	104.369.206	1.000	-32.524.242	36.097.575
			FIII	69.900.000	104.369.206	1.000	-27.320.908	41.300.908
		FIII	FI	-52.033.333	104.369.206	1.000	-39.514.242	29.107.575
			FII	-69.900.000	104.369.206	1.000	-41.300.908	27.320.908

* The mean difference is significant at the 0.05 level.

Uji Tukey Duncan

VISKOSITAS

	BASIS	N	Subset for alpha = 0.05 1
Tukey HSD[a]	FIII	3	5001.3333
	FI	3	5521.6667
	FII	3	5700.3333
	Sig.		.789
Duncan[a]	FIII	3	5001.3333
	FI	3	5521.6667
	FII	3	5700.3333
	Sig.		.540

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 3.000.

Uji Anova

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
VISKOSITAS	Between Groups	791.269.556	2	395.634.778	.242	.792
	Within Groups	9.803.638.000	6	1.633.939.667		
	Total	10.594.907.556	8			

Lampiran 19 hasil statistik evaluasi basis lotion formula B

a. Uji pH

Uji Normalitas

Tests of Normality							
	BASIS	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
PH	FI	.260	3	.	.958	3	.605
	FII	.328	3	.	.871	3	.298
	FIII	.204	3	.	.993	3	.843
a Lilliefors Significance Correction							

Uji Homogenitas

Tests of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
PH	Based on Mean	.759	2	6	.508
	Based on Median	.275	2	6	.768
	Based on Median and with adjusted df	.275	2	4.855	.770
	Based on trimmed mean	.716	2	6	.526

Uji Post Hoc Test

Multiple Comparisons								
Dependent Variable		(I) BASIS	(J) BASIS	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
PH	Bonferroni	FI	FII	-833.333	694.422	.826	-311.622	144.955
			FIII	-70.33333*	694.422	.000	-931.622	-475.045
		FII	FI	833.333	694.422	.826	-144.955	311.622
			FIII	-62.00000*	694.422	.000	-848.288	-391.712
		FIII	FI	70.33333*	694.422	.000	475.045	931.622
			FII	62.00000*	694.422	.000	391.712	848.288
* The mean difference is significant at the 0.05 level.								

Uji Anova

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
PH	Between Groups	8.860.222	2	4.430.111	61.246	.000
	Within Groups	434.000	6	72.333		
	Total	9.294.222	8			

b. Uji daya sebar

Uji Normalitas

Tests of Normality

	BASIS	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
DAYASEBAR	FI	.204	3	.	.993	3	.843
	FII	.358	3	.	.812	3	.144
	FIII	.204	3	.	.993	3	.843

a Lilliefors Significance Correction

Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
DAYA SEBAR	Based on Mean	1.794	2	6	.245
	Based on Median	.182	2	6	.838
	Based on Median and with adjusted df	.182	2	2.965	.842
	Based on trimmed mean	1.577	2	6	.282

Uji Post Hoc Test

Multiple Comparisons

Dependent Variable		(I) BASIS	(J) BASIS	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
DAYA SEBAR	Bonferroni	FI	FII	766.667	391.578	.294	-52.063	205.396
			FIII	-333.333	391.578	1.000	-162.063	95.396
		FII	FI	-766.667	391.578	.294	-205.396	52.063
			FIII	-1.100.000	391.578	.092	-238.730	18.730
		FIII	FI	333.333	391.578	1.000	-95.396	162.063
			FII	1.100.000	391.578	.092	-18.730	238.730

*** The mean difference is significant at the 0.05 level.**

Uji Anova

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
DAYASEBAR	Between Groups	190.889	2	95.444	4.150	.074
	Within Groups	138.000	6	23.000		
	Total	328.889	8			

c. Uji Viskositas

Uji Normalitas

Tests of Normality

	BASIS	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
VISKOSITAS	FI	.245	3	.	.971	3	.673
	FII	.208	3	.	.992	3	.830
	FIII	.337	3	.	.855	3	.254

a Lilliefors Significance Correction

Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
VISKOSITAS	Based on Mean	1.131	2	6	.383
	Based on Median	.591	2	6	.583
	Based on Median and with adjusted df	.591	2	4.597	.591
	Based on trimmed mean	1.091	2	6	.394

Uji Post Hoc Test

Multiple Comparisons

Dependent Variable		(I) BASIS	(J) BASIS	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
VISKOSITAS	Bonferroni	FI	FII	-3958.33333*	66.347.972	.003	-61.394.931	-17.771.735
			FIII	56.866.667	66.347.972	1.000	-16.124.931	27.498.265
		FII	FI	3958.33333*	66.347.972	.003	17.771.735	61.394.931
			FIII	4527.00000*	66.347.972	.001	23.458.402	67.081.598
		FIII	FI	-56.866.667	66.347.972	1.000	-27.498.265	16.124.931
			FII	-4527.00000*	66.347.972	.001	-67.081.598	-23.458.402

*** The mean difference is significant at the 0.05 level.**

Uji Anova

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
VISKOSITAS	Between Groups	36.485.513.556	2	18.242.756.778	27.628	.001
	Within Groups	3.961.848.000	6	660.308.000		
	Total	40.447.361.556	8			

Lampiran 20 hasil statistik evaluasi uji reproduksibilitas lotion

a. pH

Uji Normalitas

Tests of Normality

	HARI	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
PH	Hari Ke 1	.314	3	.	.893	3	.363
	Hari Ke 2	.253	3	.	.964	3	.637
	Hari Ke 3	.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

Uji Homogenitas

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
PH	Based on Mean	2.286	2	6	.183
	Based on Median	.412	2	6	.680
	Based on Median and with adjusted df	.412	2	3.229	.693
	Based on trimmed mean	2.067	2	6	.207

Uji Anova

ANOVA

PH

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.004	2	.002	5.452	.045
Within Groups	.002	6	.000		
Total	.006	8			

b. Daya Sebar

Uji Normalitas

Tests of Normality

	HARI	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
DAYA SEBAR	Hari Ke 1	.292	3	.	.923	3	.463
	Hari Ke 2	.292	3	.	.923	3	.463
	Hari Ke 3	.343	3	.	.842	3	.220

a. Lilliefors Significance Correction

Uji Homogenitas

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
DAYA SEBAR	Based on Mean	.019	2	6	.982
	Based on Median	.000	2	6	1.000
	Based on Median and with adjusted df	.000	2	5.737	1.000
	Based on trimmed mean	.015	2	6	.985

Uji Anova

ANOVA

DAYA SEBAR

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.047	2	.023	13.043	.007
Within Groups	.011	6	.002		
Total	.057	8			

c. Viskositas

Uji Normalitas

Tests of Normality

	HARI	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
VISKOSITAS	Hari Ke 1	.349	3	.	.831	3	.192
	Hari Ke 2	.314	3	.	.893	3	.363
	Hari Ke 3	.253	3	.	.964	3	.637

a. Lilliefors Significance Correction

Uji Homogenitas

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
VISKOSITAS	Based on Mean	2.725	2	6	.144
	Based on Median	.428	2	6	.670
	Based on Median and with adjusted df	.428	2	3.651	.681
	Based on trimmed mean	2.409	2	6	.171

Uji Anova

ANOVA

VISKOSITAS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	159364.222	2	79682.111	15.388	.004
Within Groups	31068.667	6	5178.111		
Total	190432.889	8			

Lampiran 21 hasil statistik evaluasi uji stabilitas lotion

a. pH

Uji Normalitas

Tests of Normality

	HARI KE	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
PHF0	Hari Ke 1	.276	3	.	.942	3	.537
	Hari Ke 2	.330	3	.	.866	3	.286
	Hari Ke 3	.314	3	.	.893	3	.363
	Hari Ke 4	.267	3	.	.951	3	.576
	Hari Ke 5	.179	3	.	.999	3	.948
PHFI	Hari Ke 1	.175	3	.	1.000	3	1.000
	Hari Ke 2	.282	3	.	.936	3	.510
	Hari Ke 3	.175	3	.	1.000	3	1.000
	Hari Ke 4	.238	3	.	.976	3	.702
	Hari Ke 5	.204	3	.	.993	3	.843
PHFII	Hari Ke 1	.219	3	.	.987	3	.780
	Hari Ke 2	.175	3	.	1.000	3	1.000
	Hari Ke 3	.253	3	.	.964	3	.637
	Hari Ke 4	.191	3	.	.997	3	.900
	Hari Ke 5	.356	3	.	.818	3	.157
PHFIII	Hari Ke 1	.253	3	.	.964	3	.637
	Hari Ke 2	.175	3	.	1.000	3	1.000
	Hari Ke 3	.196	3	.	.996	3	.878
	Hari Ke 4	.232	3	.	.980	3	.726
	Hari Ke 5	.292	3	.	.923	3	.463

a. Lilliefors Significance Correction

Uji Homogenitas

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
PHF0	Based on Mean	1.290	4	10	.337
	Based on Median	.327	4	10	.854
	Based on Median and with adjusted df	.327	4	6.520	.851
	Based on trimmed mean	1.189	4	10	.373
PHFI	Based on Mean	1.158	4	10	.385
	Based on Median	.619	4	10	.659
	Based on Median and with adjusted df	.619	4	7.576	.662
	Based on trimmed mean	1.120	4	10	.400
PHFII	Based on Mean	2.238	4	10	.137
	Based on Median	.546	4	10	.706
	Based on Median and with adjusted df	.546	4	4.274	.713
	Based on trimmed mean	2.069	4	10	.160
PHFIII	Based on Mean	2.916	4	10	.077
	Based on Median	1.860	4	10	.194
	Based on Median and with adjusted df	1.860	4	3.775	.266
	Based on trimmed mean	2.850	4	10	.082

Uji Anova

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
PHF0	Between Groups	4.636	4	1.159	114.609	.000
	Within Groups	.101	10	.010		
	Total	4.737	14			
PHFI	Between Groups	4.809	4	1.202	108.386	.000
	Within Groups	.111	10	.011		
	Total	4.920	14			
PHFII	Between Groups	4.700	4	1.175	699.460	.000
	Within Groups	.017	10	.002		
	Total	4.717	14			
PHFIII	Between Groups	4.760	4	1.190	246.215	.000
	Within Groups	.048	10	.005		
	Total	4.808	14			

b. Daya Sebar

Uji Normalitas

Tests of Normality

	HARI KE	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
DAYASEBARF0	Hari Ke 1	.175	3	.	1.000	3	1.000
	Hari Ke 2	.175	3	.	1.000	3	1.000
	Hari Ke 3	.253	3	.	.964	3	.637
	Hari Ke 4	.253	3	.	.964	3	.637
	Hari Ke 5	.175	3	.	1.000	3	1.000
DAYASEBARFI	Hari Ke 1	.328	3	.	.871	3	.298
	Hari Ke 2	.314	3	.	.893	3	.363
	Hari Ke 3	.253	3	.	.964	3	.637
	Hari Ke 4	.219	3	.	.987	3	.780
	Hari Ke 5	.175	3	.	1.000	3	1.000
DAYASEBARFII	Hari Ke 1	.219	3	.	.987	3	.780
	Hari Ke 2	.175	3	.	1.000	3	1.000
	Hari Ke 3	.337	3	.	.855	3	.253
	Hari Ke 4	.175	3	.	1.000	3	1.000
	Hari Ke 5	.204	3	.	.993	3	.843
DAYASEBARFIII	Hari Ke 1	.299	3	.	.916	3	.433
	Hari Ke 2	.253	3	.	.964	3	.637
	Hari Ke 3	.175	3	.	1.000	3	1.000
	Hari Ke 4	.292	3	.	.923	3	.463
	Hari Ke 5	.337	3	.	.855	3	.253

a. Lilliefors Significance Correction

Uji Homogenitas

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
DAYASEBARF0	Based on Mean	.890	4	10	.504
	Based on Median	.458	4	10	.765
	Based on Median and with adjusted df	.458	4	6.194	.765
	Based on trimmed mean	.860	4	10	.520
DAYASEBARFI	Based on Mean	1.581	4	10	.253
	Based on Median	.300	4	10	.871
	Based on Median and with adjusted df	.300	4	6.054	.868
	Based on trimmed mean	1.433	4	10	.293
DAYASEBARFII	Based on Mean	1.750	4	10	.215
	Based on Median	.608	4	10	.666
	Based on Median and with adjusted df	.608	4	5.008	.675
	Based on trimmed mean	1.656	4	10	.236
DAYASEBARFIII	Based on Mean	1.141	4	10	.392
	Based on Median	.272	4	10	.889
	Based on Median and with adjusted df	.272	4	5.425	.885
	Based on trimmed mean	1.050	4	10	.430

Uji Anova

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
DAYASEBARF0	Between Groups	.264	4	.066	6.387	.008
	Within Groups	.103	10	.010		
	Total	.367	14			
DAYASEBARFI	Between Groups	2.433	4	.608	45.062	.000
	Within Groups	.135	10	.014		
	Total	2.568	14			
DAYASEBARFII	Between Groups	.283	4	.071	3.762	.041
	Within Groups	.188	10	.019		
	Total	.472	14			
DAYASEBARFIII	Between Groups	4.109	4	1.027	61.962	.000
	Within Groups	.166	10	.017		
	Total	4.275	14			

c. Viskositas

Uji Normalitas

Tests of Normality

	HARI KE	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
VISKOSITASF0	Hari Ke 1	.176	3	.	1.000	3	.979
	Hari Ke 2	.220	3	.	.987	3	.780
	Hari Ke 3	.221	3	.	.986	3	.774
	Hari Ke 4	.176	3	.	1.000	3	.979
	Hari Ke 5	.292	3	.	.923	3	.464
VISKOSITASFI	Hari Ke 1	.265	3	.	.954	3	.587
	Hari Ke 2	.175	3	.	1.000	3	.995
	Hari Ke 3	.175	3	.	1.000	3	.997
	Hari Ke 4	.175	3	.	1.000	3	.995
	Hari Ke 5	.175	3	.	1.000	3	.995
VISKOSITASFII	Hari Ke 1	.201	3	.	.994	3	.857
	Hari Ke 2	.259	3	.	.959	3	.812
	Hari Ke 3	.179	3	.	.999	3	.948
	Hari Ke 4	.351	3	.	.828	3	.183
	Hari Ke 5	.347	3	.	.835	3	.201
VISKOSITASFIII	Hari Ke 1	.206	3	.	.993	3	.939
	Hari Ke 2	.265	3	.	.954	3	.587
	Hari Ke 3	.175	3	.	1.000	3	.995
	Hari Ke 4	.175	3	.	1.000	3	.995
	Hari Ke 5	.177	3	.	1.000	3	.967

a. Lilliefors Significance Correction

Uji Homogenitas

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
VISKOSITASF0	Based on Mean	1.746	4	10	.216
	Based on Median	.979	4	10	.461
	Based on Median and with adjusted df	.979	4	4.821	.496
	Based on trimmed mean	1.693	4	10	.227
VISKOSITASFI	Based on Mean	.620	4	10	.658
	Based on Median	.628	4	10	.654
	Based on Median and with adjusted df	.628	4	6.134	.660
	Based on trimmed mean	.621	4	10	.658
VISKOSITASFII	Based on Mean	3.364	4	10	.054
	Based on Median	1.344	4	10	.320
	Based on Median and with adjusted df	1.344	4	3.292	.411
	Based on trimmed mean	3.196	4	10	.062
VISKOSITASFIII	Based on Mean	2.832	4	10	.083
	Based on Median	1.984	4	10	.173
	Based on Median and with adjusted df	1.984	4	3.989	.262
	Based on trimmed mean	2.783	4	10	.086

Uji Anova

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
VISKOSITASF0	Between Groups	54600066.40	4	13650016.60	146.004	.000
	Within Groups	934905.333	10	93490.533		
	Total	55534971.73	14			
VISKOSITASFI	Between Groups	13541334.40	4	3385333.600	197.038	.000
	Within Groups	171811.333	10	17181.133		
	Total	13713145.73	14			
VISKOSITASFII	Between Groups	53033979.60	4	13258494.90	539.318	.000
	Within Groups	245838.000	10	24583.800		
	Total	53279817.60	14			
VISKOSITASFIII	Between Groups	12693609.33	4	3173402.333	13.988	.000
	Within Groups	2268738.667	10	226873.867		
	Total	14962348.00	14			

Lampiran 22 hasil statistik evaluasi uji aktivitas antioksidan lotion

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Zat Aktif	98.5600	3	.00000	.00000
	Formula 1	189.2243	3	1.10251	.63654
Pair 2	Zat Aktif	98.5600	3	.00000	.00000
	Formula 2	120.5777	3	.82145	.47427
Pair 3	Zat Aktif	98.5600	3	.00000	.00000
	Formula 3	184.3667	3	.82376	.47560

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	Zat Aktif - Formula 1	-90.66433	1.10251	.63654	-93.40313	-87.92554	-142.434	2	.000
Pair 2	Zat Aktif - Formula 2	-22.01767	.82145	.47427	-24.05827	-19.97706	-46.425	2	.000
Pair 3	Zat Aktif - Formula 3	-85.80667	.82376	.47560	-87.85299	-83.76035	-180.420	2	.000

‘

Lampiran 23 Hasil Cek Turnitin

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Lampiran 24 Kartu Bimbingan

Fakultas Farmasi
Universitas
Bhakti Kencana

No. Dok. 02.64.00/FRM-03/AKD-SPMI

KARTU BIMBINGAN TUGAS AKHIR I/TUGAS AKHIR II

Pembimbing Utama	: Soni Muhsinin,M.Si
Nama Mahasiswa	: Diva febiola
NPM	: 201FF03068
Bidang Ilmu	: Farmasetika Teknologi Farmasi

No	Hari/Tanggal	Waktu	Tempat	Materi	Paraf Dosen
1	Rabu, 07-02-2024	11:00	Kampus	Diskusi Posedur pelaksanaan TA II	
2	Jumat, 09-02-2024	09:00	Online	Diskusi Prosedur Pelaksanaan TA II	
3	Rabu, 06-03-2024	11:00	Kampus	Diskusi Prosedur Pelaksanaan TA II	
4	Jum'at, 08-03-2024	16:00	Online	Melampirkan Hasil Fermentasi Base 1	
5	Senin, 18-03-2024	11:00	Kampus	Diskusi Prosedur Pelaksanaan TA II	
6	Kamis, 21-03-2024	13:00	Kampus	Diskusi Prosedur Pelaksanaan TA II	
7	Senin, 29-04-2024	12:00	Kampus	Diskusi Prosedur Pelaksanaan TA II	
8	Senin, 20-05-2024	13:00	Kampus	Diskusi Prosedur Pelaksanaan TA II	
9	Kamis, 23-Mei-2024	16:15	Zoom	Presentasi Seminar KK.	
10	Senin, 03 Juni 2024	11:00	Kampus	Diskusi Hasil TA II	
11	Jum'at 21 Juni 2024	08:00	Kampus	Diskusi Hasil TA II	
12	Jum'at 28 Juni 2024	11.15	Kampus	Diskusi Hasil TA II	
13	Selasa, 02 Juli 2024	13:30	Kampus	Diskusi Hasil TA II	
14	Rabu, 03 Juli 2024	14:00	Kampus	Diskusi Hasil TA II	
15	Kamis, 04 Juli 2024	15:00	Kampus	Diskusi Hasil TA II	
16	Kamis, 11 Juli 2024	15:00	Kampus	Tanda tangan lembar persetujuan	
	Jl. Soekarno Hatta No 754 Bandung 022 7830788, 022 7830789				

Catatan : Kartu ini harus dibawa setiap kali melakukan bimbingan dan harus diisi oleh dosen pembimbing.

Fakultas Farmasi
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No. Dok. 02.64.00/FRM-03/AKD-SPMI

KARTU BIMBINGAN TUGAS AKHIR I/TUGAS AKHIR II

Pembimbing Serta	: Dr.apt.Dadih Supriadi,M.Si
Nama Mahasiswa	: Diva Febiola
NPM	: 201FF03068
Bidang Ilmu	: Farmasetika Teknologi Farmasi

No	Hari/Tanggal	Waktu	Tempat	Materi	Paraf Dosen
1	Selasa, 19-03-2024	16:00	Online	Diskusi Posedur pelaksanaan TA II	
2	Rabu, 20-03-2024	15:00	Kampus	Diskusi Posedur pelaksanaan TA II	
3	Rabu 20-05-2024	11:30	Kampus	Diskusi Hasil TA II	
4	Selasa 28-05-2024	10:00	Online	Diskusi Hasil TA II	
5	Kamis 30-05-2024	15:00	online	Diskusi Hasil TA II	
6	Jumat 07-06-2024	11:00	Online	Diskusi Hasil TA II	
7	Rabu 19-06-2024	15:30	Kampus	Diskusi Hasil TA II	
8	Kamis 11-07-2024	15:30	Kampus	Diskusi Hasil TA II	

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Lampiran 25 CV

DIVA FEBIOLA

MAHASISWA

DATA PRIBADI

Nama	:	Diva Febiola
Alamat	:	Jl. Ekatama RT.012/RW. 003 Mulya Bhakti Kec.Pelepat
Email	:	divafebiola2@gmail.com
No. HP	:	081283210462
Profil	:	Saya adalah lulusan S1 Farmasi dengan fokus pada teknologi pembuatan sediaan topikal. Berpengalaman dalam penelitian pengembangan formula lotion yang efektif dan stabil, dengan pemahaman mendalam mengenai pemilihan bahan, metode pembuatan, serta evaluasi mutu sediaan. Siap berkontribusi dalam pengembangan produk farmasi inovatif dengan pendekatan yang ilmiah dan berbasis teknologi terbaru.

PENDIDIKAN

- 2017 - 2020 | MAN 1 KOTA BUKITTINGGI
- 2020 - 2024 | UNIVERSITAS BHAKTI KENCANA BANDUNG (FARMASI)

KEMAMPUAN

- Mudah berkomunikasi dan bekerja dalam tim.
- Ahli dalam formulasi sediaan farmasi topikal.
- Terampil dalam pengujian dan evaluasi mutu obat.
- Mampu menganalisis data penelitian farmasi.

Lampiran 26 Poster

FORMULASI DAN EVALUASI SEDIAAN LOTION DARI FERMENTASI KOMBUCHA SARI BUAH BELIMBING WULUH (*Averrhoa blimbi L*) SEBAGAI ANTIOKSIDAN

Penyusun
Diva Febiola

Dosen Pembimbing I (Utama)
Soni Muhsinin, M.Si

Dosen Pembimbing II (Serta)
Dr. apt. Dadih Supriadi, M.Si

AFILIASI
Kelompok Keilmuan Farmasetika dan Teknologi Farmasi
Universitas Bhakti Kencana
Email: 201FF03068@bku.ac.id

1 PENDAHULUAN

Radikal bebas sangat reaktif dan dapat merusak DNA serta mempercepat penuaan (Jamilatun et al., 2023) . Antioksidan menstabilkannya dan mencegah kerusakan (Rahmatullah et al., 2019). Antioksidan alami, seperti dari ekstrak tumbuhan, lebih ekonomis dibandingkan sintetik (Addin Akbar, 2020). Contohnya adalah fermentasi teh kombucha dengan sari buah belimbing wuluh. Kombucha, minuman beralkohol rendah dari fermentasi teh dengan bakteri dan ragi, mengandung senyawa bioaktif dan mendukung regenerasi sel. Belimbing wuluh mengandung flavonoid yang menangkap radikal bebas dan memiliki manfaat kesehatan, serta bisa digunakan dalam kosmetik (Martina et al., 2019). Kosmetik, termasuk lotion, digunakan untuk pembersihan dan perlindungan kulit. Lotion adalah cairan semi padat untuk perawatan harian (Baisyir, 2021). Penelitian ini bertujuan meningkatkan aktivitas antioksidan sari buah belimbing wuluh yang difermentasi dengan kombucha untuk lotion.

2 METODOLOGI

Penelitian ini adalah eksperimen laboratorium mengenai pembuatan lotion dari fermentasi kombucha sari belimbing wuluh (*Averrhoa bilimbi L.*) sebagai alternatif antioksidan, dilakukan di Fakultas Farmasi Universitas Bhakti Kencana dari Februari hingga Juni 2024. Proses penelitian mencakup sterilisasi alat, penggunaan bahan seperti air, cuka kombucha, gula, dan belimbing wuluh, serta pembuatan fermentasi kombucha dan filtrat belimbing wuluh. Kombucha dan sari belimbing wuluh dikombinasikan dalam berbagai formula untuk fermentasi, yang kemudian digunakan dalam pembuatan lotion. Lotion dievaluasi melalui uji organoleptik, homogenitas, pH, daya sebar, viskositas, dan aktivitas antioksidan menggunakan metode DPPH. Data dianalisis menggunakan One Way ANOVA dan Uji Paired Simple T Test dengan tingkat signifikansi $p<0,05$

3 HASIL DAN PEMBAHASAN

Uji organoleptik menunjukkan bahwa semua formula fermentasi memiliki aroma, warna, dan rasa yang khas, menandakan fermentasi yang berhasil. Uji pH menunjukkan variasi kecil antara formula, dengan semua hasil pH konsisten dan berbeda signifikan di antara formula. Uji antioksidan menggunakan metode DPPH menunjukkan bahwa fermentasi kombucha sari belimbing wuluh meningkatkan aktivitas antioksidan, dengan formula F menunjukkan aktivitas tertinggi. Formulasi lotion dilakukan dengan menggunakan Lanolin atau Asam Stearat sebagai pengemulsi. Fermentasi kombucha dari sari buah belimbing wuluh menunjukkan hasil yang signifikan dalam uji aktivitas antioksidan, ditandai dengan nilai IC50 yang mencerminkan kemampuan tinggi dalam menetralkan radikal bebas. Formula F dari fermentasi ini memiliki nilai IC50 sebesar 98,56 µg/mL, yang menunjukkan efektivitas tinggi dalam menangkal radikal bebas. Penelitian lebih lanjut dilakukan pada sediaan lotion dengan variasi konsentrasi zat aktif masing-masing 3%, 4%, dan 5%. Evaluasi dilakukan untuk menilai sifat fisik, stabilitas fisik, dan kimia dari lotion tersebut. Dalam evaluasi sifat fisik, lotion menunjukkan karakteristik yang baik seperti organoleptik, yang mencakup warna, aroma, dan tekstur yang menarik. Homogenitas dari sediaan juga terjaga dengan baik, menunjukkan tidak adanya pemisahan fase yang terlihat. Daya sebar lotion dinilai cukup baik, yang berarti lotion dapat tersebar merata di permukaan kulit, meningkatkan kenyamanan penggunaannya. Pengukuran pH menunjukkan bahwa lotion memiliki nilai pH yang sesuai dengan persyaratan pH kulit, yaitu antara 4,5 dan 6,5. Ini penting untuk memastikan bahwa produk tidak menyebabkan iritasi kulit. Viskositas lotion juga diukur dan menunjukkan nilai yang tepat, yang berarti konsistensi lotion cukup tebal untuk dioleskan tanpa menetes, tetapi cukup ringan untuk menyebar dengan mudah. Dari segi stabilitas kimia, lotion menunjukkan ketahanan yang baik terhadap perubahan selama penyimpanan. Nilai pH tetap konsisten dalam batas yang ditentukan selama periode pengujian, menunjukkan bahwa produk tidak mengalami degradasi kimia yang signifikan. Di antara formula yang diuji, Formula III menonjol dengan menunjukkan aktivitas antioksidan terbaik, dengan nilai IC50 sebesar 120,577 µg/mL. Meskipun nilai IC50 ini lebih tinggi dibandingkan dengan Formula F, Formula III tetap menunjukkan kemampuan yang kuat dalam menetralisir radikal bebas. Aktivitas antioksidan ini menjadikan Formula III sebagai kandidat yang potensial untuk produk perawatan kulit dengan manfaat perlindungan terhadap kerusakan akibat oksidasi.

4 KESIMPULAN

Hasil penelitian menunjukkan bahwa fermentasi kombucha dengan sari buah belimbing wuluh secara signifikan meningkatkan aktivitas antioksidan, dengan Formula F memiliki IC50 sebesar 98,56 µg/mL. Konsentrasi kombucha 20% dan sari buah belimbing wuluh 100% memberikan potensi antioksidan terbaik. Semua formulasi lotion menunjukkan stabilitas yang baik dalam uji organoleptik, homogenitas, pH, daya sebar, dan viskositas, dengan Formula III memiliki konsistensi terbaik. Penambahan fermentasi kombucha pada lotion juga meningkatkan aktivitas antioksidan, dengan IC50 terendah pada Formula III sebesar 120,577 µg/mL.

5 DAFTAR PUSTAKA

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