BAB V
KESIMPULAN DAN SARAN

A. Kesimpulan

Berdasarkan penelitian yang sudah dilakukan diperoleh kesimpulan bahwa:

Pertama, fraksi etil asetat daun sirih merah dapat diformulasikan dalam bentuk sediaan emulgel dan mempunyai aktivitas sebagai tabir surya pada pengujian secara *in vitro*.

Kedua, sediaan emulgel mengandung fraksi etil asetat daun sirih merah pada konsentrasi 0,04% dan 0,08% efektif sebagai tabir surya dengan nilai SPF 15,2 dan 17,9.

Ketiga, basis emulgel dan sediaan emulgel mengandung fraksi etil asetat daun sirih merah dengan konsentrasi 0,02%, 0,04% dan 0,08% stabil pada perubahan suhu.

B. Saran

Pertama, perlu dilakukan penelitian selanjutnya mengenai formulasi sediaan emulgel dengan bahan ekstrak atau fraksi dari daun sirih merah dalam bentuk sediaan topikal lain seperti gel, krim, atau losion.

Kedua, perlu dilakukan penelitian lebih lanjut sediaan emulgel dengan basis gel selain carbophol.

Ketiga, perlu dilakukan pengujian lebih lanjut mengenai formulasi dan penentuan SPF tabir surya menggunakan metode lain dan rumus perhitungan SPF selain rumus Mansur.

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LAMPIRAN

Lampiran 1. Hasil Determinasi tanaman sirih merah (Piper crocatum Ruiz d&Pav)

KEMENTERIAN KESEHATAN REPUBILIK INDONESIA
BADAN PENELITIAN DAN PENGEMBANGAN KESEHATAN
BALAI BESAR PENELITIAN DAN PENGEMBANGAN
TANAMAN OBAT DAN OBAT TRADISIONAL
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Laman www.b2p2toot.litbang.kemkes.go.id

Nomor : YK.01.03/2/ 866 /2019 19 Februari 2019
Hal : Keterangan Determinasi

Yth. Dekan Fakultas Farmasi
Universitas Setia Budi
Jalan Let. Jend. Sutoyo
Solo

Merujuk surat Saudara nomor: 4246/A10 – 4/21.12.2018 tanggal 21 Desember 2018 hal permohonan determinasi, dengan ini kami sampaikan bahwa hasil determinasi sampel tanaman sebagai berikut:

Nama Sampel	: Sirih Merah
Sampel	: Sampel segar
Spesies	: *Piper crocatum* Ruiz & Pav.
Sinonim	: *Steffensia crocata* (Ruiz & Pav.) Kunth
Familia	: Piperaceae
Nama Pemohon	: Susi Merdi Lestari
Penanggung Jawab Identifikasi	: Anshary Maruzy, S.Si.

Hasil determinasi tersebut hanya mencakup sampel tumbuhan yang telah dikirimkan ke B2P2TOOT.

Atas perhatian Saudara, kami sampaikan terima kasih.

Kepala Balai Besar Penelitian dan Pengembangan Tanaman Obat dan Obat Tradisional,

Akhmad Saikhu, M.Sc.PH.
NIP 196805251992031004

Lampiran 2. Perhitungan rendemen

a. Perhitungan rendemen daun kering terhadap basah

Berat daun basah (g)	Berat daun kering (g)	Rendemen (%)
7000	2800	40

Berat daun basah = 7000

Berat daun kering = 2800

Rendemen daun kering terhadap basah = (2800/4000) x100%= 40 %

b. Perhitungan rendemen ekstrak

Berat ekstrak(g)	Berat serbuk (g)	Rendemen (%)
188,6168	1000	18,86

Berat ekstrak = 188,6168

Berat serbuk = 1000

Rendemen ekstrak = (188,6168/1000) x100% = 18,86 %

c. Perhitungan rendemen fraksi

	Berat fraksi gram)	Berat ekstrak(gram)	Rendemen fraksi (%)	±SD
Replikas1 1	1.616	10	16.16	
Replikasi 2	1.706	10	17.06	
Replikasi 3	1.544	10	15.44	
Total berat	4.866	30	16.22	0.812

Rendemen fraksi = (berat fraksi/berat ekstrak) x 100%

Lampiran 3. Susut pengeringan dan kadar air

a. Susut pengeringan ekstrak

Replikasi	Susut pengeringan	Rata rata	SD
1	10	9.76	±0,3214
2	9,4		
3	9,9		



b. Kadar air ekstrak

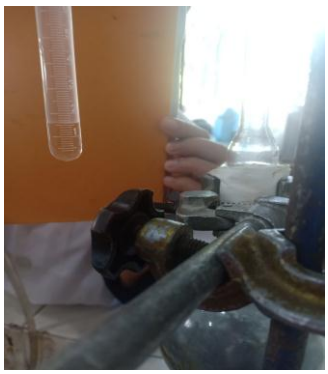
Bobot ekstrak (g)	Volume air (ml)	kadar air (%)	rata-rata (%)	SD
20	1,5	7,5	8	±0,5
20	1,6	8		
20	1,7	8,5		

Kadar air replikasi 1 = (1,6ml /20gram) x 100% = 8 %

Kadar air replikasi 2 = (1,5 ml/20 gram) x 100% = 7,5 %

Kadar air replikasi 3 = (1,7ml/20 gram) x100 % = 8,5 %

Kadar air rata rata = (8% +7,5% + 8,5 %) /3 = 8 %



Lampiran 4. Perhitungan bobot jenis

Pikno + ekstrak (g)	pikno + air (g)	pikno (g)	ekstrak (g)	air (g)	BJ ekstrak 5%
49,9620	53,1980	26,8936	23,0684	26,3044	0,8769

Bobot piknometer kosong = 26,8936

Bobot piknometer + air = 53,1980

Bobot air = 53,1980-26,8936 = 26,3044

Bobot piknometer + ekstrak 5% = 49,9620

Bobot ekstrak 5 % = 49,9620-26,8936 = 23,0684

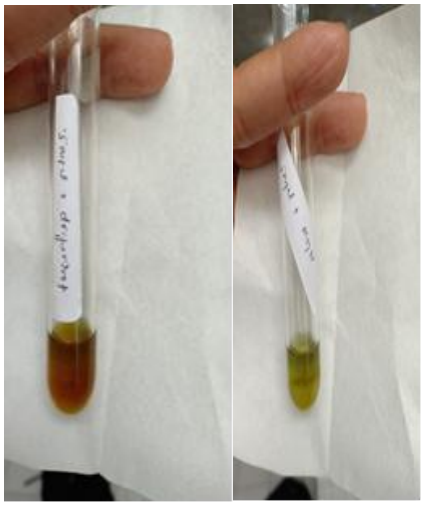
Bj ekstrak 5 % = 23,0684/26,3044 = 0,8769

Lampiran 5. Uji Identifikasi senyawa kimia ekstrak dan fraksi etil asetat daun sirih merah

Ekstrak

Uji Alkaloid +

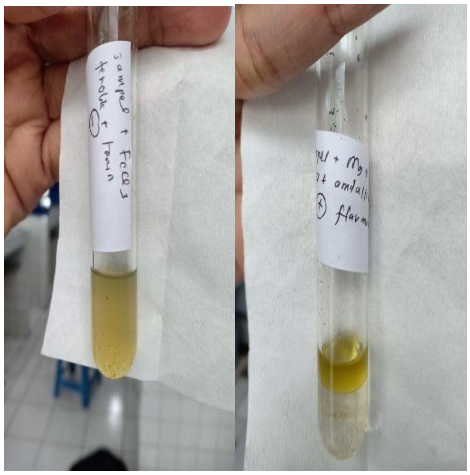
Fraksi



Uji Alkaloid -

Uji tanin +

Uji flavonoid +



Uji tanin -

Uji Flavonoid +

Lampiran 6. Gambar Pengujian Mutu Fisik Emulgel

a. Gambar formula

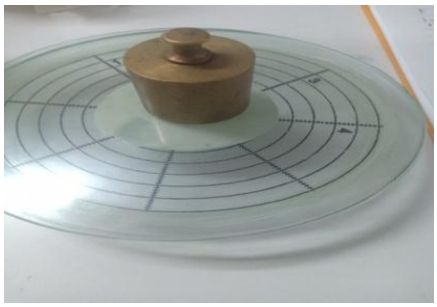
Kontrol basis F1 F2 F3

b. Uji homogenitas

c. Uji Viskositas

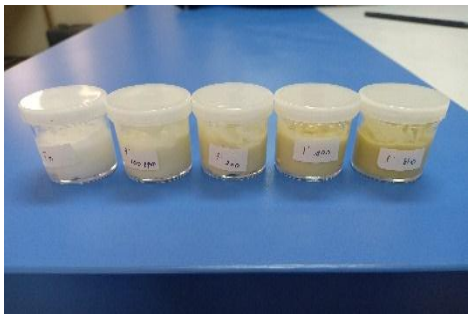
d. Uji daya lekat

d. Uji Daya Sebar



f. Uji pH

g. Uji Stabilitas *cycling test*



Sebelum

sesudah

Lampiran 7. Data hasil uji mutu sediaan emulgel dan perhitungan SPF

a. Data mutu fisik sediaan emulgel

Viskositas hari ke 1-21

Formula	Hari ke 1					Hari ke 7				
	1	2	3	rata-rata	± SD	**1**	**2**	**3**	rata-rata	± SD
F1	190	200	180	190	10	180	200	190	190	10
F2	200	190	210	200	10	200	190	210	200	10
F3	200	200	200	200	0	200	200	200	200	0
Basis	190	180	200	190	10	190	200	180	190	10
Kontrol	150	160	140	150	10	150	160	140	150	10

Formula	hari ke 14					hari ke 21				
	1	2	3	rata-rata	± SD	1	2	3	rata-rata	± SD
F1	190	200	180	190	10	180	190	170	180	10
F2	200	210	190	200	10	190	200	180	190	10
F3	190	180	200	190	10	180	190	200	190	10
Basis	190	200	180	190	10	190	170	180	180	10
Kontrol	150	140	160	150	10	150	140	130	140	10

Pengujian pH hari ke 1-21

	pH hari ke 1					pH hari ke 7				
Formula	1	2	3	rata-rata	SD	1	2	3	rata-rata	SD
F1	5.7	5.8	5.8	5.78	0.04	5.7	5.8	5.8	5.75	0.04
F2	5.9	5.9	5.9	5.88	0.01	5.7	5.8	5.8	5.77	0.05
F3	5.9	5.9	5.9	5.89	0.02	5.8	5.8	5.8	5.79	0.03
Basis	5.7	5.7	5.7	5.71	0.03	5.7	5.6	5.5	5.61	0.07
Kotrol	5.7	5.7	5.7	5.67	0.02	5.4	5.4	5.5	5.46	0.06

	pH hari ke 14					pH hari ke 21				
Formula	1	2	3	rata-rata	SD	1	2	3	rata-rata	SD
F1	5.7	5.7	5.8	5.73	0.07	5.7	5.7	5.8	5.74	0.07
F2	5.6	5.7	5.7	5.67	0.06	5.8	5.7	5.6	5.69	0.09
F3	5.7	5.6	5.7	5.67	0.06	5.8	5.7	5.6	5.70	0.09
Basis	5.6	5.7	5.5	5.60	0.10	5.6	5.6	5.6	5.59	0.03
Kotrol	5.4	5.3	5.5	5.40	0.10	5.4	5.3	5.4	5.35	0.02

Pengujian daya lekat hari ke 1-hari ke 21

Formula	Waktu lekat (detik)									
	Hari ke 1					Hari ke 7				
	1	2	3	rata-rata	SD	`1	2	3	rata-rata	± SD
F1	3	3	3	3.0	0.0	3	2	3	2.7	0.6
F2	3	3	3	3	0.0	3	4	2	3.0	1.0
F3	4	3	2	3	1.0	3	4	3	3.3	0.6
Basis	3	3	2	2.7	0.6	3	2	3	2.7	0.6
Kotrol	3	3	3	3.0	0.0	3	3	3	3.0	0.0

Formula	Waktu lekat (detik)									
	Hari ke 14					Hari ke 21				
	1	2	3	rata-rata	SD	1	2	3	rata-rata	± SD
F1	3	2	2	2.3	0.6	3	3	2	2.7	0.6
F2	3	3	3	3.0	0.0	3	4	2	3.0	1.0
F3	4	3	2	3.0	1.0	3	3	2	2.7	0.6
Basis	3	3	3	3.0	0.0	3	2	3	2.7	0.6
Kotrol	3	2	4	3.0	1.0	3	3	2	2.7	0.6

Pengujian diameter daya sebar hari ke 1-hari ke 21

Daya Sebar Formula 1										
Beban (g)	hari ke 1					hari ke 7				
	1	2	3	rata-rata	SD	1	2	3	rata-rata	SD
0	3.9	4.1	4.1	4.03	0.12	3.9	4	4.2	4.03	0.15
50	4.2	4.4	4.4	4.33	0.12	4.3	4.4	4.4	4.37	0.06
100	4.6	4.5	4.6	4.57	0.06	4.6	4.7	4.6	4.63	0.06
150	4.8	4.9	4.7	4.80	0.10	4.8	4.9	4.8	4.83	0.06

Beban(g)	Hari ke 14					Hari ke 21				
	1	2	3	rata-rata	SD	1	2	3	rata-rata	SD
0	4	4.1	4.1	4.07	0.06	4.2	4.3	4.2	4.23	0.06
50	4.4	4.5	4.5	4.47	0.06	4.5	4.5	4.6	4.53	0.06
100	4.7	4.8	4.7	4.73	0.06	4.8	4.9	4.9	4.87	0.06
150	4.9	5	5	4.97	0.06	5.1	5	5.2	5.10	0.10

Daya sebar formula 2

Beban (g)	hari ke 1					hari ke 7				
	1	2	3	rata-rata	SD	1	2	3	rata-rata	SD
0	4	4.1	4.1	4.07	0.06	4.2	4.2	4.1	4.17	0.06
50	4.3	4.5	4.4	4.40	0.10	4.4	4.4	4.5	4.43	0.06
100	4.7	4.6	4.6	4.63	0.06	4.7	4.8	4.8	4.77	0.06
150	4.9	4.9	4.8	4.87	0.06	4.9	5	5	4.97	0.06

Beban(g)	Hari ke 14					Hari ke 21				
	1	2	3	rata-rata	SD	1	2	3	rata-rata	SD
0	4.3	4.5	4.4	4.40	0.10	4.4	4.5	4.5	4.47	0.06
50	4.6	4.7	4.6	4.63	0.06	4.7	4.7	4.8	4.73	0.06
100	4.9	4.9	4.9	4.90	0.00	5	5.1	5.1	5.07	0.06
150	5	5.1	5.1	5.1	0.06	5.2	5.3	5.2	5.23	0.06

Daya sebar formula 3

Beban (g)	hari ke 1					hari ke 7				
	1	2	3	rata-rata	SD	1	2	3	rata-rata	SD
0	4.1	4.1	4	4.07	0.06	4.2	4.3	4.3	4.27	0.06
50	4.4	4.5	4.4	4.43	0.06	4.4	4.5	4.5	4.47	0.06
100	4.8	4.8	4.8	4.80	0.00	4.9	4.8	4.9	4.87	0.06
150	5.1	5	5	5.03	0.06	5	5.1	5.1	5.07	0.06

Beban(g)	Hari ke 14					Hari ke 21				
	1	2	3	rata-rata	SD	1	2	3	rata-rata	SD
0	4.2	4.3	4.3	4.27	0.06	4.3	4.4	4.4	4.37	0.06
50	4.5	4.5	4.6	4.53	0.06	4.6	4.5	4.6	4.57	0.06
100	4.7	4.8	4.9	4.80	0.10	4.7	4.8	4.9	4.80	0.10
150	4.9	5	5.1	5.00	0.10	5	5.1	5.2	5.10	0.10

Basis

Beban (g)	hari ke 1					hari ke 7				
	1	2	3	rata-rata	SD	1	2	3	rata-rata	± SD
0	4	4.1	4.1	4.07	0.06	4.2	4.2	4.1	4.17	0.06
50	4.3	4.5	4.4	4.40	0.10	4.4	4.4	4.5	4.43	0.06
100	4.7	4.6	4.6	4.63	0.06	4.7	4.7	4.7	4.70	0.00
150	4.9	4.9	4.8	4.87	0.06	4.9	5	5.1	5.00	0.10

Beban(g)	Hari ke 14					Hari ke 21				
	1	2	3	rata-rata	SD	1	2	3	rata-rata	SD
0	4.3	4.5	4.4	4.40	0.10	4.4	4.5	4.5	4.47	0.06
50	4.6	4.7	4.6	4.63	0.06	4.7	4.7	4.8	4.73	0.06
100	4.9	4.9	4.9	4.90	0.00	5	5.1	5.1	5.07	0.06
150	5	5.1	5.2	5.10	0.10	5.2	5.3	5.3	5.27	0.06

Kontrol

Beban (g)	hari ke 1					hari ke 7				
	1	2	3	rata-rata	SD	1	2	3	rata-rata	SD
0	4	4.1	4.1	4.07	0.06	4.2	4.2	4.1	4.17	0.06
50	4.3	4.5	4.4	4.40	0.10	4.4	4.4	4.5	4.43	0.06
100	4.7	4.7	4.6	4.67	0.06	4.7	4.8	4.8	4.77	0.06
150	4.9	4.9	4.8	4.87	0.06	4.9	5	5	4.97	0.06

Beban(g)	Hari ke 14					Hari ke 21				
	1	2	3	rata-rata	SD	1	2	3	rata-rata	SD
0	4.3	4.5	4.4	4.40	0.10	4.4	4.5	4.5	4.47	0.06
50	4.6	4.7	4.6	4.63	0.06	4.7	4.7	4.8	4.73	0.06
100	4.9	4.8	4.9	4.87	0.06	5	5.1	5.1	5.07	0.06
150	5	5.1	5.1	5.07	0.06	5.2	5.3	5.2	5.23	0.06

Lampiran 8. Perhitungan SPF

a. SPF fraksi etil asetat daun sirih merah

SPF= CF ∑ EE (λ) x I (λ) x Abs (λ)

Konsentrasi 200 ppm

Replikasi 1

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.3655	0.0055	10	0.3064	5	15.32
295	0.0187	0.343	0.0064				
300	0.2874	0.3281	0.0943				
305	0.3278	0.3227	0.1058				
310	0.1864	0.3254	0.0607				
315	0.0839	0.3314	0.0278				
320	0.018	0.3297	0.0059				
			0.3064				

Replikasi 2

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.3635	0.0055	10	0.3054	5	15.27
295	0.0187	0.3419	0.0064				
300	0.2874	0.327	0.0940				
305	0.3278	0.3215	0.1054				
310	0.1864	0.3248	0.0605				
315	0.0839	0.3307	0.0277				
320	0.018	0.3284	0.0059				
			0.3054				

Replikasi 3

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.3644	0.0055	10	0.3064	5	15.32
295	0.0187	0.343	0.0064				
300	0.2874	0.328	0.0943				
305	0.3278	0.3225	0.1057				
310	0.1864	0.3259	0.0607				
315	0.0839	0.3317	0.0278				
320	0.018	0.33	0.0059				
			0.3064				

Rata -rata SPF konsentrasi 200 ppm = **15.3**

Konsentrasi 400 ppm

Replikasi 1

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.7246	0.0109	10	0.6117	5	30.59
295	0.0187	0.682	0.0128				
300	0.2874	0.6542	0.1880				
305	0.3278	0.6441	0.2111				
310	0.1864	0.6512	0.1214				
315	0.0839	0.6632	0.0556				
320	0.018	0.6586	0.0119				
			0.6117				

Replikasi 2

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.7246	0.0109	10	0.6114	5	30.57
295	0.0187	0.6821	0.0128				
300	0.2874	0.6538	0.1879				
305	0.3278	0.6435	0.2109				
310	0.1864	0.6514	0.1214				
315	0.0839	0.663	0.0556				
320	0.018	0.659	0.0119				
			0.6114				

Replikasi 3

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.7247	0.0109	10	0.6116	5	30.58
295	0.0187	0.682	0.0128				
300	0.2874	0.6534	0.1878				
305	0.3278	0.644	0.2111				
310	0.1864	0.6519	0.1215				
315	0.0839	0.6635	0.0557				
320	0.018	0.6598	0.0119				
			0.6116				

Rata-rata SPF konsentrasi 400 ppm= **30.6**

Konsentrasi 800 ppm

Replikasi 1

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	1.1902	0.0179	10	1.102	5	55.31
295	0.0187	1.188	0.0222				
300	0.2874	1.1824	0.3398				
305	0.3278	1.1645	0.3817				
310	0.1864	1.1789	0.2197				
315	0.0839	1.1815	0.0991				
320	0.018	1.1931	0.0215				
			1.1020				

Replikasi 2

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	1.1965	0.0179	10	1.1016	5	55.29
295	0.0187	1.1934	0.0223				
300	0.2874	1.1806	0.3393				
305	0.3278	1.1646	0.3818				
310	0.1864	1.1807	0.2201				
315	0.0839	1.1792	0.0989				
320	0.018	1.1831	0.0213				
			1.1016				

Replikasi 3

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	1.1965	0.0179	10	1.105	5	55.37
295	0.0187	1.1908	0.0223				
300	0.2874	1.1823	0.3398				
305	0.3278	1.1658	0.3821				
310	0.1864	1.1834	0.2206				
315	0.0839	1.1913	0.1000				
320	0.018	1.1914	0.0214				
			1.1041				

Rata-rata SPF konsentrasi 800 ppm= **55.3**

b. SPF emulgel mengandung fraksi daun sirih merah

SPF= CF ∑ EE (λ) x I (λ) x Abs (λ)

Konsentrasi 0.02% (F1)

Replikasi 1

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.3737	0.0056	10	0.2931	5	14.7
295	0.0187	0.3419	0.0064				
300	0.2874	0.3233	0.0929				
305	0.3278	0.3107	0.1018				
310	0.1864	0.3019	0.0563				
315	0.0839	0.295	0.0248				
320	0.018	0.29502	0.0053				

Replikasi 2

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.3626	0.0054	10	0.2917	5	14.6
295	0.0187	0.3408	0.0064				
300	0.2874	0.3232	0.0929				
305	0.3278	0.3105	0.1018				
310	0.1864	0.3008	0.0561				
315	0.0839	0.284	0.0238				
320	0.018	0.294	0.0053				
			0.2917				

Replikasi 3

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.3525	0.0053	10	0.2844	5	14.2
295	0.0187	0.3207	0.0060				
300	0.2874	0.3121	0.0897				
305	0.3278	0.3024	0.0991				
310	0.1864	0.3019	0.0563				
315	0.0839	0.274	0.0230				
320	0.018	0.2783	0.0050				
			0.2844				

Rata-rata SPF F1 **14.5**

Konsentrasi 0,04% (F2)

Replikasi 1

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.3903	0.0059	10	0.3082	5	15.41
295	0.0187	0.3525	0.0066				
300	0.2874	0.3376	0.0970				
305	0.3278	0.3272	0.1073				
310	0.1864	0.3194	0.0595				
315	0.0839	0.3142	0.0264				
320	0.018	0.3085	0.0056				
			0.3082				

Replikasi 2

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.3914	0.0059	10	0.2952	5	14.76
295	0.0187	0.3636	0.0068				
300	0.2874	0.3264	0.0938				
305	0.3278	0.3105	0.1018				
310	0.1864	0.3008	0.0561				
315	0.0839	0.3031	0.0254				
320	0.018	0.2996	0.0054				
			0.2952				

Replikasi 3

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.3889	0.0058	10	0.3069	5	15.35
295	0.0187	0.3607	0.0067				
300	0.2874	0.3411	0.0980				
305	0.3278	0.3269	0.1072				
310	0.1864	0.3114	0.0580				
315	0.0839	0.3040	0.0255				
320	0.018	0.3083	0.0055				
			0.3069				

Rata-rata SPF F2 =**15.2**

Konsentrasi 0,08% (F3)

Replikasi 1

	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.3664	0.0055	10	0.3613	5	18.07
295	0.0187	0.3701	0.0069				
300	0.2874	0.3755	0.1079				
305	0.3278	0.3832	0.1256				
310	0.1864	0.3928	0.0732				
315	0.0839	0.4073	0.0342				
320	0.018	0.4434	0.0080				
			0.3613				

Replikasi 2

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.3653	0.0055	10	0.3556	5	17.78
295	0.0187	0.3669	0.0069				
300	0.2874	0.3643	0.1047				
305	0.3278	0.3789	0.1242				
310	0.1864	0.3938	0.0734				
315	0.0839	0.3996	0.0335				
320	0.018	0.4123	0.0074				
			0.3556				

Replikasi 3

λ	EExI	Abs	EExIxAbs	CF =10	∑ EExIxAbs	FP	SPF
290	0.015	0.3664	0.0055	10	0.3586	5	17.93
295	0.0187	0.3698	0.0069				
300	0.2874	0.3709	0.1066				
305	0.3278	0.3849	0.1262				
310	0.1864	0.3908	0.0728				
315	0.0839	0.3978	0.0334				
320	0.018	0.4004	0.0072				
			0.3586				

Rata-rata SPF F3 = **17.9**

Lampiran 9. Analisis statistik

SPSS *one way anova* viskositas hari ke 1

Tests of Normality[b]

Kolmogorov-Smirnov[a]			Shapiro-Wilk		
Statistic	df	Sig.	Statistic	df	Sig.
.175	3	.	1.000	3	1.000
.175	3	.	1.000	3	1.000
.175	3	.	1.000	3	1.000
.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

b. Viskositas is constant when Formula = Formula 3. It has been omitted.

Test of Homogeneity of Variances

Viskositas

df1	df2	Sig.
4	10	.452

ANOVA

Viskositas

Sum of Squares	df	Mean Square	F	Sig.
5160.000	4	1290.000	16.125	.000
800.000	10	80.000		
5960.000	14			

Viskositas

Tukey HSD[a]

Subset for alpha = 0.05	
1	2
150.0000	
	190.0000
	190.0000
	200.0000
	200.0000
1.000	.658

SPSS *one way anova* viskositas hari ke 21

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Viskositas	Formula 1	.175	3	.	1.000	3	1.000
	Formula 2	.175	3	.	1.000	3	1.000
	Formula 3	.175	3	.	1.000	3	1.000
	Basis	.175	3	.	1.000	3	1.000
	Kontrol	.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Viskositas

Levene Statistic	df1	df2	Sig.
.000	4	10	1.000

ANOVA

Viskositas

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5160.000	4	1290.000	12.900	.001
Within Groups	1000.000	10	100.000		
Total	6160.000	14			

Viskositas

Tukey HSD[a]

		Subset for alpha = 0.05	
Formula	N	1	2
Kontrol	3	140.0000	
Formula 1	3		180.0000
Basis	3		180.0000
Formula 2	3		190.0000
Formula 3	3		190.0000
Sig.		1.000	.738

SPSS *one way anova* pH hari ke 1

One-Sample Kolmogorov-Smirnov Test

		Formula	pH
N		15	15
Normal Parameters[a,,b]	Mean	3.00	5.7800
	Std. Deviation	1.464	.09411
Most Extreme Differences	Absolute	.153	.202
	Positive	.153	.202
	Negative	-.153	-.184
Kolmogorov-Smirnov Z		.592	.784
Asymp. Sig. (2-tailed)		.875	.571

Test of Homogeneity of Variances

pH

Levene Statistic	df1	df2	Sig.
.000	4	10	1.000

ANOVA

pH

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.091	4	.023	6.800	.007
Within Groups	.033	10	.003		
Total	.124	14			

pH

Tukey HSD[a]

		Subset for alpha = 0.05	
Formula	N	1	2
Kontrol	3	5.6667	
Basis	3	5.7333	5.7333
Formula 1	3	5.7667	5.7667
Formula 2	3		5.8667
Formula 3	3		5.8667
Sig.		.283	.102

SPSS *one way anova* pH hari ke 21

One-Sample Kolmogorov-Smirnov Test

		Formula	pH
N		15	15
Normal Parameters[a,,b]	Mean	3.00	5.6200
	Std. Deviation	1.464	.15213
Most Extreme Differences	Absolute	.153	.248
	Positive	.153	.126
	Negative	-.153	-.248
Kolmogorov-Smirnov Z		.592	.959
Asymp. Sig. (2-tailed)		.875	.316

Test of Homogeneity of Variances

pH

Levene Statistic	df1	df2	Sig.
1.500	4	10	.274

ANOVA

pH

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.271	4	.068	12.687	.001
Within Groups	.053	10	.005		
Total	.324	14			

Tukey HSD[a]

		Subset for alpha = 0.05	
Formula	N	1	2
Kontrol	3	5.3667	
Basis	3		5.6000
Formula 2	3		5.7000
Formula 3	3		5.7000
Formula 1	3		5.7333
Sig.		1.000	.242

SPSS one way anova daya lekat hari ke 1

One-Sample Kolmogorov-Smirnov Test

		Formula	Daya lekat
N		15	15
Normal Parameters[a,,b]	Mean	3.00	2.73
	Std. Deviation	1.464	.594
Most Extreme Differences	Absolute	.153	.340
	Positive	.153	.260
	Negative	-.153	-.340
Kolmogorov-Smirnov Z		.592	1.317
Asymp. Sig. (2-tailed)		.875	.062

Test of Homogeneity of Variances

Daya lekat

Levene Statistic	df1	df2	Sig.
.308	4	10	.866

ANOVA

Daya lekat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.267	4	.067	.250	.903
Within Groups	2.667	10	.267		
Total	2.933	14			

Daya lekat

Tukey HSD[a]

Formula	N	Subset for alpha = 0.05
		1
Basis	3	2.67
Formula 1	3	3.00
Formula 2	3	3.00
Formula 3	3	3.00
Kontrol	3	3.00
Sig.		.928

SPSS One way anova daya lekat hari ke 21

One-Sample Kolmogorov-Smirnov Test

		Formula	Daya lekat
N		15	15
Normal Parameters[a,,b]	Mean	3.00	2.73
	Std. Deviation	1.464	.594
Most Extreme Differences	Absolute	.153	.340
	Positive	.153	.260
	Negative	-.153	-.340
Kolmogorov-Smirnov Z		.592	1.317
Asymp. Sig. (2-tailed)		.875	.062

Test of Homogeneity of Variances

Daya lekat

Levene Statistic	df1	df2	Sig.
.308	4	10	.866

ANOVA

Daya lekat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.267	4	.067	.143	.962
Within Groups	4.667	10	.467		
Total	4.933	14			

Daya lekat

Tukey HSD[a]

Formula	N	Subset for alpha = 0.05
		1
Formula 1	3	2.67
Formula 3	3	2.67
Basis	3	2.67
Kontrol	3	2.67
Formula 2	3	3.00
Sig.		.972

SPSS *One way anova* daya sebar hari ke 1

One-Sample Kolmogorov-Smirnov Test

		Formula	Daya Sebar
N		15	15
Normal Parameters[a,,b]	Mean	3.00	4.887
	Std. Deviation	1.464	.0990
Most Extreme Differences	Absolute	.153	.246
	Positive	.153	.246
	Negative	-.153	-.220
Kolmogorov-Smirnov Z		.592	.955
Asymp. Sig. (2-tailed)		.875	.322

Test of Homogeneity of Variances

Daya Sebar

Levene Statistic	df1	df2	Sig.
.308	4	10	.866

ANOVA

Daya Sebar

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.091	4	.023	4.857	.019
Within Groups	.047	10	.005		
Total	.137	14			

Daya Sebar

Tukey HSD[a]

		Subset for alpha = 0.05	
Formula	N	1	2
Formula 1	3	4.800	
Formula 2	3	4.867	4.867
Basis	3	4.867	4.867
Kontrol	3	4.867	4.867
Formula 3	3		5.033
Sig.		.754	.080

SPSS *One way anova* daya sebar hari ke 21

One-Sample Kolmogorov-Smirnov Test

		Formula	Daya Sebar
N		15	15
Normal Parameters[a,,b]	Mean	3.00	5.187
	Std. Deviation	1.464	.0990
Most Extreme Differences	Absolute	.153	.287
	Positive	.153	.180
	Negative	-.153	-.287
Kolmogorov-Smirnov Z		.592	1.111
Asymp. Sig. (2-tailed)		.875	.169

Test of Homogeneity of Variances

Daya Sebar

Levene Statistic	df1	df2	Sig.
.286	4	10	.881

ANOVA

Daya Sebar

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.077	4	.019	3.222	.061
Within Groups	.060	10	.006		
Total	.137	14			

Daya Sebar

Tukey HSD[a]

Formula	N	Subset for alpha = 0.05
		1
Formula 1	3	5.100
Formula 3	3	5.100
Formula 2	3	5.233
Kontrol	3	5.233
Basis	3	5.267
Sig.		.136

SPSS *Paired t* test viskositas hari ke 1 dan ke 21

One-Sample Kolmogorov-Smirnov Test

		Sebelum	Sesudah
N		5	5
Normal Parameters[a,,b]	Mean	186.0000	179.3320
	Std. Deviation	20.73644	20.46781
Most Extreme Differences	Absolute	.376	.377
	Positive	.250	.247
	Negative	-.376	-.377
Kolmogorov-Smirnov Z		.842	.844
Asymp. Sig. (2-tailed)		.478	.475

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Sebelum	185.334	5	18.3507	8.2067
	Sesudah	183.334	5	19.0032	8.4985

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Sebelum & Sesudah	5	.996	.000

Paired Samples Test

Paired Differences

95% Confidence Interval of the Difference Mean Std. Deviation Std. Error MeanLower Upper t df **Sig. (2-tailed)**

Sebelum - Sesudah2.00001.8257.8165-.26704.26702.449 4 **.070**

SPSS *Paired t test* pH hari ke 1 dan ke 21

One-Sample Kolmogorov-Smirnov Test

		Sebelum	Sesudah
N		5	5
Normal Parameters[a,,b]	Mean	5.800	5.700
	Std. Deviation	.1000	.1000
Most Extreme Differences	Absolute	.241	.241
	Positive	.241	.241
	Negative	-.241	-.241
Kolmogorov-Smirnov Z		.540	.540
Asymp. Sig. (2-tailed)		.933	.933

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	pH sebelum	5.8000	5	.10000	.04472
	pH sesudah	5.7400	5	.08944	.04000

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	pH sebelum & pH sesudah	5	.839	.076

Paired Samples Test

Paired Differences

95% Confidence Interval of the Difference			Mean	Std. Deviation	Std. Error Mean	t	df	**Sig. (2-tailed)**
Lower	Upper							
.06000	.05477	.02449	-.00801	.12801	2.449	4	**.070**	

SPF EMULGEL

One-Sample Kolmogorov-Smirnov Test

		Formula	SPF
N		12	12
Normal Parameters[a,,b]	Mean	2.50	13.6750
	Std. Deviation	1.168	4.18465
Most Extreme Differences	Absolute	.166	.307
	Positive	.166	.189
	Negative	-.166	-.307
Kolmogorov-Smirnov Z		.574	1.065
Asymp. Sig. (2-tailed)		.897	.207

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

SPF

Levene Statistic	df1	df2	Sig.
.323	3	8	.809

ANOVA

SPF

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	192.409	3	64.136	2384.991	.000
Within Groups	.215	8	.027		
Total	192.624	11			

Lampiran 10. Kuisioner uji iritasi emulgel

Kuisioner

Nama sukarelawan :

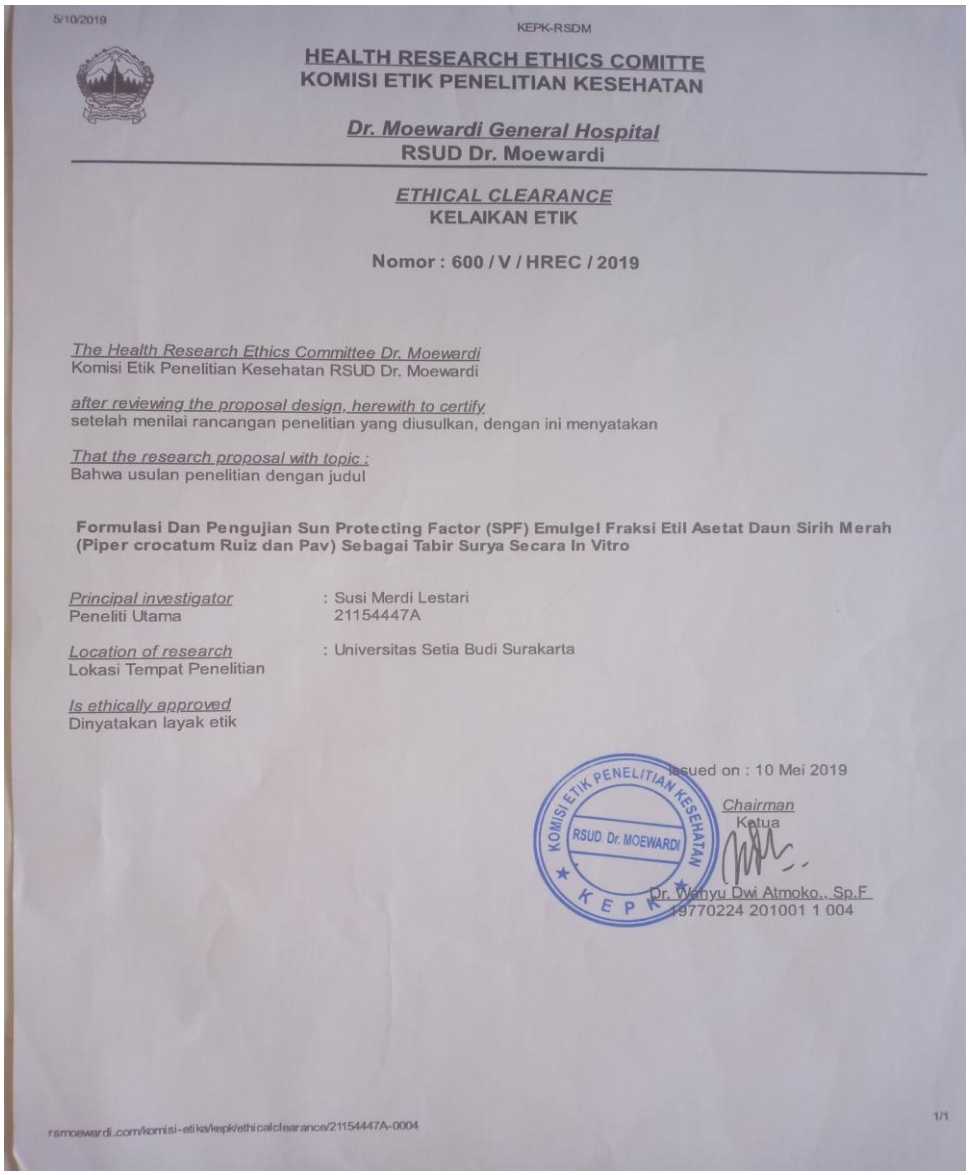
Lingkari lah jawaban di bawah berikut ini sesuai hasil !

Formula	Tanda iritasi			
	Kemerahan (eritema)		Bengkak (edema)	
Formula 1	1. Ya	2. Tidak	1. Ya	2. tidak
Formula 2	1. Ya	2. Tidak	1. Ya	2. tidak
Formula 3	1. Ya	2. Tidak	1. Ya	2. tidak
Basis	1. Ya	2. Tidak	1. Ya	2. tidak

Cara pemakaian emulgel:

1. Oleskan emulgel masing-masing formula pada lengan bagian bawah. Oleskan secukupnya sebanyak 3 kali sehari selama 3 hari (72 jam) berturut-turut.
2. Didiamkan dan jangan langsung mencuci gel yang dioleskan. Jika timbul reaksi segera tandai formula yang menimbulkan reaksi pada lembar kuisioner ini

Lampiran 11. *Ethical clearance* dari Komisi Etik RS Dr Moewardi Surakarta



5/10/2019 KEPK-RSDM

HEALTH RESEARCH ETHICS COMITTE
KOMISI ETIK PENELITIAN KESEHATAN

Dr. Moewardi General Hospital
RSUD Dr. Moewardi

ETHICAL CLEARANCE
KELAIKAN ETIK

Nomor : 600 / V / HREC / 2019

The Health Research Ethics Committee Dr. Moewardi
Komisi Etik Penelitian Kesehatan RSUD Dr. Moewardi

after reviewing the proposal design, herewith to certify
setelah menilai rancangan penelitian yang diusulkan, dengan ini menyatakan

That the research proposal with topic :
Bahwa usulan penelitian dengan judul

Formulasi Dan Pengujian Sun Protecting Factor (SPF) Emulgel Fraksi Etil Asetat Daun Sirih Merah (Piper crocatum Ruiz dan Pav) Sebagai Tabir Surya Secara In Vitro

Principal investigator : Susi Merdi Lestari
Peneliti Utama 21154447A

Location of research : Universitas Setia Budi Surakarta
Lokasi Tempat Penelitian

Is ethically approved
Dinyatakan layak etik

Issued on : 10 Mei 2019

Chairman
Ketua

Dr. Wahyu Dwi Atmoko,, Sp.F
19770224 201001 1 004

KOMISI ETIK PENELITIAN KESEHATAN
RSUD. Dr. MOEWARDI
KEPK

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