BAB V
KESIMPULAN DAN SARAN

A. Kesimpulan

Pertama, ekstrak etanol buah tomat dapat di formulasikan menjadi sediaan krim dengan mutu fisik yang baik yang dilihat dari hasil uji organoleptik, homogenitas, pH, viskositas, daya lekat, daya sebar, dan tipe krim.

Kedua, sediaan krim ekstrak buah tomat memiliki potensi sebagai tabir surya yang baik dengan nilai SPF sediaan krim konsentrasi 2% 5%, dan 10% sebesar 6,60, 13,64 dan 29,64 dan skor eritema setelah 48 jam pemaparan sinar UV adalah 1.

B. Saran

Pertama, perlu dilakukan penelitian lebih lanjut terhadap probandus untuk pengembangan sediaan lebih lanjut.

Kedua, perlu dilakukan penelitian lebih lanjut tentang optimasi formula sediaan krim ekstrak etanol umb wortel dengan komposisi bahan dan metode pembuatan yang berbeda.

DAFTAR PUSTAKA

Afaq F & Mukhtsr M. 2001. Effects of Solar Radiation onCutaneous Detoxification Pathways. *Photochem Photobial J B36* .

Agarwal S & Rao AV. 2000. Tomato Lycopene and Its Role in uman Health and Chronic Disease. *Canadian Medical Assocciation J. Vol 163. No. 6* .

Agustina L, Mia Y, Fenita S & Indra FS. 2017. Formulasi dan Evaluasi Sabun Mandi Cair dengan Ekstrak Tomat *(Solanum lycopersicum L.)* sebagai Antioksidan. *Wiyata J. Vol 4. No 2*.

Akhlaghi M dan Bandy B. 2009. Review Article : Mechanism of Flavonoid Protection Against Myocardial Ischemia-reperfusion injury. *Molecullar and Celullar Cardiology J.*Vol 46.

Alatas H, Tambunan T & Partini P. 2004. *Buku Ajar Nefrologi Anak. Edisi 2.* Jakarta: Ikatan Dokter Anak Indonesia.

Anwar E. 2012. *Eksipien dalam Sediaan Farmasi (Karakterisasi dan Aplikasi).* Jakarta: Dian Rakyat.

Baade D Peter, Philippa H Youl,Dallas R English, Mark Elwood&Joanne F Aitken. 2007. Clinical Pathway to Diagnose Melanoma : a Population-Based Study. *Melanoma Research J. Vol. 7. No. 14* .

Betrisia N. 2017. Korelasi Pengukuran Kadar Asam, Gula dan pH pada Buah Belimbing, Jeruk, dan Tomat dengan Nilai Kapasitas Elektrik. *[SKRIPSI]* , Bogor: Institut Pertanian Bogor.

Bonda C. 2009. *Sunscreen Photostability 101.* New York: The HallStar Company.

Canene-Adams K, Campbell JK, Zaripheh S, Jeffery EH & Erdman Jr. 2005. Tomato As a Functional Food. *Nutrition of J*.

Carter J. 1975. *Dispensing for Pharmaceutical Student. Edisi 12.* London: Pitman Medical.

Daud NS, Musdalipah & Idayati. 2018. Optimasi Formula Lotion Tabir Surya Ekstrak Kulit Buah Naga Super Merah Menggunakan Metode Desain D-Optimal. *Sains dan Farmasi Klinis J. Vol 5. No 2.*

Depkes RI. 1995. *Farmakope Indonesia. Edisi IV.* Jakarta: Departemen Kesehatan Republik Indonesia.

Depkes RI. 1985. *Formularium Kosmetika Indonesia.* Jakarta: Direktorat Jenderal Pengawasan Obat dan Makanan.

Depkes RI. 2000. *Parameter Standar Umum Ekstrak Tumbuhan Obat.* Jakarta: Departemen Kesehatan Republik Indonesia.

Di Mascio P, Kaiser S &Sies H. 1989. *Lycopene as The Most Efficient Biological Carotenoid Singlet Oxygen Quencher.* Archives of Biochemistry and Biophysics.

Dutra EA. 2004. Determination of Sun Protection Factor (SPF) of Sunblock by Ultraviolet Spetrophotometry. *Brazilian Pharmaceutical Sciences J. Vol 40. No.3.*

Fadhly E, Dewi K &Enny F. 2015. Isolasi, Identifikasi Senyawa Alkaloid dari Daun Rivina humilis L. serta Uji Sitotoksik Menggunakan MEtode BSLT (Brine Shrimp Lethality Test). *Scientific and Applied Chemistri J. Vol 18. No 2.*

Faradiba AF & Ruhama M. 2013. Formulasi Krim Wajah dari Sari Buah Jeruk Lemon (Vitis vinifera L.) dengan Variasi Konsentrasi Emulgator. *Majalah Farmasi dan Farmakologi. Vol 17. No. 1.*

Gadri A, Darijono ST, Mauludin R &Immaculata M. 2012. Formulasi Sediaan Tabir Surya dengan Bahan Aktif Nanopartikel Cangkang Telur Ayam Broiler. *Matematika & Sains J. Vol 17. No 3.*

Garg A, Aggarwal D, Garg S & Singla. 2002. Spreading of Semisolid Formulations : an Update. *Pharmaceuticals Technology North America J. Vol 26.*

Giovannuci E. 1999. Tomatoes, Tomato-Based Product, Lycopene, and Cancer Review of the Epidemiology Literature. *National Cancer Institute J Vol 91. No 4* .

Grujil FR. 2000. *Photocarcinogenesis : UVA vs UVB* . Uthrecht Netherlands: Department of Dermatology University Medical Center.

Harbone JB. 1987. *Metode Fitokimia, Penuntun Cara Modern Menganalisis Tumbuhan. Edisi II.* Bandung: Penerbit ITB.

Harry RG. 1962. *Modern Cosmetology Vol 1.* New York: Chemical Publishing Co. Inc.

Hayes Dayle & Laudan R. 2008. *Food Nutrition.* Cavendish Square LLC.

Irsyad M. 2013. Standarisasi Ekstrak Etanol Tanaman Katumpangan Air *(Peperomia pellucida (L.) Kunth).* Jakarta: FKIK, UIN Syarif Hidayatullah.

Iswandari D. 2014. Formulasi dan Uji Aktivitas Antioksidan Krim Rice Brain Oil. *[SKRIPSI]* , Tangerang : Fakultas Kedokteran dan Ilmu Kesehatan Universitas Islam Negeri Syarif Hidayatullah.

Jones JB. 2008. *Tomato Plant Culture in the Field, Green House, and Home Garden.* New York: CRC Press : Taylor and Francis Group.

Kemenkes RI. 2013. *Suplemen III Farmakope Herbal Indonesia. Edisi 1.* Jakarta: Kementrian Kesehatan RI.

Kusantati H, Prihatin PT & Wiana W. 2008. *Tata Kecantikan Kulit untuk SMK. Jilid 3.* Jakarta: Direktorat Pembinaan Sekolah Menengah Kejuruan.

Lachman L. 2007. *Teori dan Praktek Farmasi Industri.* Jakarta: UI Press.

Lavi N. 2013. Tabir Surya Bagi Pelaku Wisata. *[SKRIPSI]*. Denpasar : Universitas Udayana.

Lolo WA., Sri S & Hosea JE. 2017. Penentuan Nilai Sun Protection Factor (SPF) Herba Krokot *(Portulaca oleracea L.) . Pharmaceutical Science and Clinical Research J. Vol 2.*

Maryani PE, Evi UU &Ema R. 2016. Pengaruh Ekstrak Metanol Daun Kayu Kuning (*Arcangelisia flava (L.) Merr.*) terhadap Kadar Kolesterol Total dan Trigliserida Tikus Hiperlipidemia. *Pustaka Kesehatan J. Vol 4.*

Maulida D &Naufal Z. 2010. Ekstraksi Antioksidan (Likopen) dari Buah Tomat dengan Menggunakan Solven Campuran n-Heksana, Aseton, dan Etanol. *[SKRIPSI]*. Semarang : Fakultas Teknik Universitas Diponegoro.

Monica E & Rollando R. 2019. Identifikasi dan Isolasi Senyawa Likopen dari Semangka *(Citrullus lanatus)*. *Ilmu Farmasi dan Farmasi Klinik J. Vol 16. No 1* .

Mubarak F, Sartini S &Dia P. 2018. Effect of Ethanol Concentration on Antibacterial Activity of Bligo Fruit Extract *(Benincasa hispada Thump)* to *Salmonella Typhi*. *Indonesian Pharmaceutical Science and Technology J. Vol 5. No 3.*

Mutschler E. 1991. *Dinamika Obat Edisi V.* Bandung: Penerbit ITB.

Myong Kyun R, Min Hee J, Jin Nam M, Woi Sook M, Sun Mee P & Jae Suk C. 2013. A Simple Method for the Isolation of Lycopene from Lycopersicon esculentum. *Botanical Sciences. Vol. 91. No. 2*.

Nurlina M, Tomagola I & Anggraini R. 2018. Formulasi dan Uji Aktivitas Antioksidan Losio Ekstrak Metanol Alga Hijau *(Caulerpa racemosa)*. *As-Syifaa J. Vol 10. No 1.*

Pakki E, Sartini RT&Maisarah NI. 2009. Formulasi dan Evaluasi Kestabilan Fisik Krim Antioksidan Ekstrak Biji Kakao (*Theobroma cacao L.*) . *Majalah Farmasi dan Farmakologi. Vol 13. No 2.*

Park HM. 2010. Extract of Punicagranatum Inhibits Skin Photoaging Induced by UVB Irradiation. *International Dermatology J. Vol 49* .

Parrot E. 1970. *Pharmaceutical Technology Fundamental Pharmaceutics. Edisi 3.* Mineapolis: Burgess Pub.

Pathak MA&Boston MA. 1982. Sunblock : Topical and Systemic Approaches for Protection of Human Skin Against Harmful Effects of Solar Radiation. *American Academy of Dermatology J. Vol. 7. No. 3* .

Polsjak B & Dahmane R. 2012. Free Radicals and Extrinsic Skin Aging. *Dermatology Research and Practice Vol 2012*.

Pratiwi E. 2010. Perbandingan Metode Maserasi, Remaserasi, Perkolasi dan Reperkolasi dalam Ekstraksi Senyawa Aktif Andrographolide dari Tanaman Sambiloto (Andrographidis paniculata (Burm. f) Nees). *[SKRIPSI]*. Bogor : Fakultas Teknologi Pertanian Institut Pertanian Bogor.

Puspitasari DP, Mulangsari DAK & Herlina. 2018. Formulasi Krim Tabir Surya Ekstrak Etanol Daun Kersen (Muntingia calabura L.) untuk Kesehatan Kulit. *Media Litbangkes.*

Safitri NA, Oktavia EP &Valentina Y. 2014. Optimasi Formula Sediaan Krim Ekstrak Stroberi (Fragaria x ananassa) sebagai Krim Anti Penuaan. *Majalah Kesehatan FKUB. Vol 1. No 4.*

Septiningsih E. 2008. Efek Penyembuhan Luka Bakar Ekstrak Etanol 70% Daun Pepaya (Carica papaya) dalam Sediaan Gel pada Kulit Punggung Kelinci (New Zealand). *[SKRIPSI]*. Surakarta : Universitas Muhammadiyah Surakarta.

ShovyanaH, & Zulkarnain AK. 2013. Stabilitas Fisik dan Aktivitas Krim W/O Ekstrak Etanolik Buah Mahkota Dewa (Phaleria macrocarph (scheff.) Boerl.) sebagai Tabir Surya. *Majalah Obat Tradisional. Vol 8. No 2.*

Stanfield JW. 2003. *Sun Protectans : Enhancing Product Functionality with Sunscreen.* New York: Marcell Dekker Inc.

Thompson KA, Marshall MA, Sims CA, Wei CI, Sargent SA, & Scott JW. 2000. Cultivar, Maturity, and Heat Treatment on Lycopene Content in Tomatoes. *Food Science J Vol. 65 No. 5* .

Tranggono IR. 2007. *Buku Pegangan Ilmu Pengetahuan Kosmetik.* Jakarta: PT Gramedia Pustaka Utama.

Triputra J. 2016. Uji Sitotoksik Ekstrak Etanol Daun Sirih MErah (Piper crocatum Ruiz dan Pav) pada Sel Kanker Kolon WiDr. *[SKRIPSI]*. Surakarta : Fakultas Farmasi Universitas Setia Budi.

Voigt R. 1994. *Buku Pelajaran Teknologi Farmasi.* Yogyakarta: Gadjah Mada University Press.

Warsito AP, & Soebiantoro. 1998. Uji Efektivitas Pemanfaatan Beberapa Minyak Atsiri sebagai Tabir Surya. *Universitas Brawijaya J. Vol 7. No 1.*

Wenli Y, Yaping Z, Zhen X, Hui J, & Wang D. 2001. The Antioxidant Properties of Lycopene Concentrate Extracted from Tomato Paste. *American Oil Chemist Society J. Vol 78. No 7* .

Whfoods. 2019. *The World's Healthiest Foods*. Retrieved Agustus 27, 2019, from Whfoods: Whfoods.org

Wihelmina CE. 2011. *Pembuatan dan Penentuan Nilai SPF Nanoemulsi Tabir Surya Menggunakan Minyak Kencur (Kaempferia galanga L.) sebagai Fase Minyak.* Depok: UI Press.

Wilkinson JB, Moore RJ, &Ralph GH. 1982. *Harry's Cosmetology Edisi 7.* New York: Chemical Publishing Company.

Wiryanta, B. 2002. *Bertanam Tomat.* Jakarta: Agro Media Pustaka.

Wood C, & Murphy E. 2000. *Sunscreen Efficacy. Edisi V.* Ind: Glob Cosmet.

Yuliastuti I, Iqmal T, & Jumina. 2002. Analisis Aktivitas Perlindungan Sinar UV Secara In Vitro dan In Vivo dari Beberapa Senyawa Ester Sinamat Produk Reaksi Kondensasi Benzaldehida Tersubstitusi dan Alkil Asetat. *[Makalah pada Seminar Nasional Kimia XI]*. Jurusan Kimia FMIPA UGM.

Zats JL& Gregory PK. 1996. *Pharmaceutical Dosage Forms : Disperse System. Vol II.* New York: Marcell Dekker Inc.

LAMPIRAN

Lampiran 1 Hasil determinasi buah tomat

KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
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Nomor : 226/UN27.9.6.4/Lab/2019
Hal : Hasil Determinasi Tumbuhan
Lampiran : -

Nama Pemesan : Angelina Tamara Wijaya
NIM : 22164974A
Alamat : Program Studi S1 Farmasi Fakultas Farmasi Universitas Setia Budi Surakarta

HASIL DETERMINASI TUMBUHAN

Nama Sampel : *Solanum lycopersicum* L.
Familia : Solanaceae

Hasil Determinasi menurut C.G.G.J. van Steenis (2006) :
1b-2b-3b-4b-6b-7b-8b-10b-11b-12b-13b-14a-15a-108b-119b-120b-124b-129b-135b-136b-139b-140b-142b-143b-146b-154b-156b-162b-163b-167b-169b-171b177b-179b-187b-189b-190b-191b-192b-193a-194a ..... **179. Solanaceae**
3b-3b-5b-6a ..... **6. Solanum**
1a ..... ***Solanum lycopersicum* L.**

Deskripsi Tumbuhan :
Habitus : terna, semusim, tumbuh tegak tapi kemudian naik pelan-pelan atau bersandar pada tanaman lain, tinggi ± 5-3 m, berbau menyengat. Akar : tunggang, bercabang, putih kotor atau putih kekuningan. Batang : bulat, sedikit berkayu, buku-bukunya menebal, sering bercabang, percabangan simpodial, permukaan berambut berupa rambut biasa dan rambut kelenjar yang lunglot, sedikit berduri, hijau hingga putih kotor. Daun : majemuk menyirip, terletak spiral, kebanyakan anak daun tidak berpasangan, helaian anak daun helai ichir memanjang, panjang 0.25-10 cm, lebar 0.25-5 cm, pangkal daun runcing hingga tumpul, ujung daun runcing, tepi daun berbagi menyirip atau bercangap menyirip, dagang daun tipis seperti kertas, permukaan daun berambut halus dan lebat, permukaan atas hijau, permukaan bawah hijau muda, pertulangan menyirip, tulang daun berambut, tangkai anak daun bulat, hijau, berambut. Bunga : majemuk, dalam karangan sederhana, terdiri atas 5 bunga hingga banyak, letak di ketiak daun, tangkai bunga pendek dan berambut, panjang 7-15 mm, kelopak bunga berupa 5, ujungnya runcing, panjang 7-15 mm, permukaan luar berambut, hijau muda, mahkota bunga berbentuk bintang, berupa 5, ujung tajo mahkota runcing, warna kuning belerang, permukaan luar berambut, benangsari 7, panjang kepala sari 5-10 mm, kuning, tangkai putik seperti benang, panghal tangkai putik berambut, bakal buah menonjang, berbuk bila atau jorong melintang, gundul. Buah : buni, bulat, diameter 1-15 cm, masih muda hijau dan ketika masak kuning terang hingga jingga-merah atau merah, permukaan licin dan mengkilat, sisa kelopak bunga masih melekat pada panghal buah. Biji : pipih, kecil, licin, kuning pucat.

Surakarta, 31 Desember 2019

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Lampiran 2 Surat keterangan *Ethical Clearance*

HEALTH RESEARCH ETHICS COMITTE
KOMISI ETIK PENELITIAN KESEHATAN

Dr. Moewardi General Hospital
RSUD Dr. Moewardi

ETHICAL CLEARANCE
KELAIKAN ETIK

Nomor : 354 / II / HREC / 2020

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

UJI AKTIVITAS PERLINDUNGAN TABIR SURYA KRIM EKSTRAK ETANOL BUAH TOMAT (Lycopersicum esculentum L.) SECARA IN VITRO DAN IN VIVO

Principal investigator : Angeline Tamara Wijaya
Peneliti Utama 22164974A

Location of research : Universitas Setia Budi Surakarta
Lokasi Tempat Penelitian

Is ethically approved
Dinyatakan layak etik

Issued on : 27 Februari 2020
Chairman
Ketua

KOMISI ETIK PENELITIAN KESEHATAN RSUD Dr. MOEWARDI KEPK

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

Lampiran 3 COA *Lycopene*

SIGMA-ALDRICH

sigma-aldrich.com

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

Certificate of Analysis

Product Name:
Lycopene – ≥90%, from tomato

Product Number:	**L9870**
Batch Number:	**SLCD8929**
Brand:	SIGMA
CAS Number:	502-65-8
MDL Number:	MFCD00017350
Formula Weight:	536.87 g/mol
Storage Temperature:	Store at -70 °C
Quality Release Date:	06 NOV 2019

Test	Specification	Result
Appearance (Color)	Red to Very Dark Red and Red-Brown and Very Dark Red-Brown	Very Dark Red-Brown
Appearance (Form)	Powder	Powder
Solubility (Color)	Orange to Red	Orange-Red
Solubility (Turbidity) 1 mg/mL, CHCl3	Clear	Clear
UV-Vis Spectrum based on E1% = 3450 at 471-472 nm in hexane	≥ 90 %	96 %
Purity (HPLC)	≥ 90 %	96 %

Carolyn Baird, Supervisor
Quality Assurance
St. Louis, Missouri US

Lampiran 4 Hasil uji daya sebar hari ke-1

Formula	Beban (gram)	Diameter (cm)			Rata-rata ± SD
		Replikasi 1	Replikasi 2	Replikasi 3	
Basis	43,9536	2,43	2,25	2,00	2,23 ± 0,28
	93,9536	2,68	2,73	2,40	2,60 ± 0,25
	143,9536	3,03	3,18	2,75	2,98 ± 0,28
	193,9536	3,25	3,48	2,95	3,23 ± 0,28
	243,9536	3,43	3,78	3,20	3,47 ± 0,34
F1	43,9536	1,70	1,40	1,56	1,56 ± 0,20
	93,9536	1,98	1,68	1,95	1,87 ± 0,24
	143,9536	2,25	1,95	2,05	2,10 ± 0,24
	193,9536	2,48	2,15	2,20	2,28 ± 0,24
	243,9536	2,63	2,28	2,33	2,41 ± 0,24
F2	43,9536	1,50	1,43	1,55	1,49 ± 0,13
	93,9536	1,80	1,78	1,85	1,81 ± 0,14
	143,9536	2,03	2,10	2,10	2,08 ± 0,16
	193,9536	2,25	2,28	2,30	2,28 ± 0,14
	243,9536	2,43	2,48	2,45	2,45 ± 0.12
F3	43,9536	1,43	1,48	1,65	1,52 ± 0,26
	93,9536	1,85	1,70	2,00	1,85 ± 0,31
	143,9536	2,03	1,90	2,13	2,02 ± 0,34
	193,9536	2,20	2,10	2,30	2,20 ± 0,32
	243,9536	2,30	2,28	2,45	2,34 ± 0,31

Lampiran 5 Data uji statistik daya sebar formulasi krim ekstrak buah tomat

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		DayaSebar
N		20
Normal Parameters[a,,b]	Mean	2.2358
	Std. Deviation	.53169
Most Extreme Differences	Absolute	.144
	Positive	.144
	Negative	-.081
Kolmogorov-Smirnov Z		.642
Asymp. Sig. (2-tailed)		.804

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Test of Homogeneity of Variances

DayaSebar

Levene Statistic	df1	df2	Sig.
.587	3	16	.632

ANOVA

DayaSebar

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	2.948	3	.983	6.489	.004
Within Groups	2.423	16	.151		
Total	5.371	19			

Post Hoc Tests

Multiple Comparisons

DayaSebar

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Basis	tomat 2%	.86167*	.24612	.014	.1575	1.5658
	tomat 5%	.88000*	.24612	.012	.1758	1.5842
	tomat 10%	.91500*	.24612	.009	.2108	1.6192
tomat 2%	basis	-.86167*	.24612	.014	-1.5658	-.1575
	tomat 5%	.01833	.24612	1.000	-.6858	.7225
	tomat 10%	.05333	.24612	.996	-.6508	.7575
tomat 5%	basis	-.88000*	.24612	.012	-1.5842	-.1758
	tomat 2%	-.01833	.24612	1.000	-.7225	.6858
	tomat 10%	.03500	.24612	.999	-.6692	.7392
tomat 10%	basis	-.91500*	.24612	.009	-1.6192	-.2108
	tomat 2%	-.05333	.24612	.996	-.7575	.6508
	tomat 5%	-.03500	.24612	.999	-.7392	.6692

Homogeneous Subsets

DayaSebar

Tukey HSDa

Formula	N	Subset for alpha = 0.05	
		1	2
tomat 10%	5	1.9850	
tomat 5%	5	2.0200	
tomat 2%	5	2.0383	
basis	5		2.9000
Sig.		.996	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5.000.

Lampiran 6 Hasil uji daya lekat hari ke-1

Waktu	Daya lekat (detik)			
	Basis	**F1**	**F2**	**F3**
Hari ke 1	1,3	1,8	2,1	2,5
	1,2	1,6	2,0	2,3
	1,4	1,7	2,2	2,5
Rata-rata ± SD	1,3 ± 0,10	1,7 ± 0,10	2,1 ± 0,10	2,4 ± 0,12

Lampiran 7 Data uji statistik daya lekat formulasi krim ekstrak buah tomat

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		DayaLekat
N		12
Normal Parameters[a,,b]	Mean	1.8833
	Std. Deviation	.45294
Most Extreme Differences	Absolute	.107
	Positive	.107
	Negative	-.102
Kolmogorov-Smirnov Z		.371
Asymp. Sig. (2-tailed)		.999

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Test of Homogeneity of Variances

DayaLekat

Levene Statistic	df1	df2	Sig.
.129	3	8	.940

ANOVA

DayaLekat

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	2.170	3	.723	66.769	.000
Within Groups	.087	8	.011		
Total	2.257	11			

Post Hoc Tests

Multiple Comparisons

DayaLekat

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
basis	tomat 2%	-.40000*	.08498	.007	-.6721	-.1279
	tomat 5%	-.80000*	.08498	.000	-1.0721	-.5279
	tomat 10%	-1.13333*	.08498	.000	-1.4055	-.8612
tomat 2%	basis	.40000*	.08498	.007	.1279	.6721
	tomat 5%	-.40000*	.08498	.007	-.6721	-.1279
	tomat 10%	-.73333*	.08498	.000	-1.0055	-.4612
tomat 5%	basis	.80000*	.08498	.000	.5279	1.0721
	tomat 2%	.40000*	.08498	.007	.1279	.6721
	tomat 10%	-.33333*	.08498	.018	-.6055	-.0612
tomat 10%	basis	1.13333*	.08498	.000	.8612	1.4055
	tomat 2%	.73333*	.08498	.000	.4612	1.0055
	tomat 5%	.33333*	.08498	.018	.0612	.6055

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

Homogeneous Subsets

DayaLekat

Tukey HSD[a]

Formula	N	Subset for alpha = 0.05			
		1	2	3	4
Basis	3	1.3000			
tomat 2%	3		1.7000		
tomat 5%	3			2.1000	
tomat 10%	3				2.4333
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Lampiran 8 Hasil uji viskositas hari ke-1

Waktu	Viskositas (dPas)			
	Basis	**F1**	**F2**	**F3**
Hari ke 1	100	120	130	150
	110	100	120	140
	90	110	140	160
Rata-rata ± SD	100 ± 0,10	110 ± 10	130 ± 10	150 ± 10

Lampiran 9 Data uji statistik viskositas formulasi krim ekstrak buah tomat

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		Viskositas
N		12
Normal Parameters[a,,b]	Mean	122.5000
	Std. Deviation	21.79449
Most Extreme Differences	Absolute	.134
	Positive	.134
	Negative	-.122
Kolmogorov-Smirnov Z		.463
Asymp. Sig. (2-tailed)		.983

a. Test distribution is Normal.

One-Sample Kolmogorov-Smirnov Test

		Viskositas
N		12
Normal Parameters[a,,b]	Mean	122.5000
	Std. Deviation	21.79449
Most Extreme Differences	Absolute	.134
	Positive	.134
	Negative	-.122
Kolmogorov-Smirnov Z		.463
Asymp. Sig. (2-tailed)		.983

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Test of Homogeneity of Variances

Viskositas

Levene Statistic	df1	df2	Sig.
.000	3	8	1.000

ANOVA

Viskositas

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	4425.000	3	1475.000	14.750	.001
Within Groups	800.000	8	100.000		
Total	5225.000	11			

Post Hoc Tests

Multiple Comparisons

Viskositas

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
basis	tomat 2%	-10.00000	8.16497	.630	-36.1471	16.1471
	tomat 5%	-30.00000*	8.16497	.026	-56.1471	-3.8529
	tomat 10%	-50.00000*	8.16497	.001	-76.1471	-23.8529
tomat 2%	basis	10.00000	8.16497	.630	-16.1471	36.1471
	tomat 5%	-20.00000	8.16497	.144	-46.1471	6.1471
	tomat 10%	-40.00000*	8.16497	.005	-66.1471	-13.8529
tomat 5%	basis	30.00000*	8.16497	.026	3.8529	56.1471
	tomat 2%	20.00000	8.16497	.144	-6.1471	46.1471
	tomat 10%	-20.00000	8.16497	.144	-46.1471	6.1471
tomat 10%	basis	50.00000*	8.16497	.001	23.8529	76.1471
	tomat 2%	40.00000*	8.16497	.005	13.8529	66.1471
	tomat 5%	20.00000	8.16497	.144	-6.1471	46.1471

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

Homogeneous Subsets

Viskositas

Tukey HSD[a]

Formula	N	Subset for alpha = 0.05		
		1	2	3
Basis	3	100.0000		
tomat 2%	3	110.0000	110.0000	
tomat 5%	3		130.0000	130.0000
tomat 10%	3			150.0000
Sig.		.630	.144	.144

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 10 Hasil uji pH hari ke-1

Waktu	pH			
	Basis	**F1**	**F2**	**F3**
Hari ke 1	6,42	6,21	5,85	5,26
	6,38	6,14	5,94	5,34
	6,47	6,30	6,00	5,40
Rata-rata ± SD	6,42 ± 0,04	6,22 ± 0,08	5,93 ± 0,07	5,33 ± 0,07

Lampiran 11 Data uji statistik pH formulasi krim ekstrak buah tomat

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		pH
N		12
Normal Parameters[a,,b]	Mean	5.9758
	Std. Deviation	.43251
Most Extreme Differences	Absolute	.158
	Positive	.158
	Negative	-.148
Kolmogorov-Smirnov Z		.549
Asymp. Sig. (2-tailed)		.924

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

pH

Levene Statistic	df1	df2	Sig.
.286	3	8	.834

ANOVA

Ph

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.019	3	.673	140.977	.000
Within Groups	.038	8	.005		
Total	2.058	11			

Post Hoc Tests

Multiple Comparisons

pH

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
basis	tomat 2%	.20667*	.05642	.026	.0260	.3873
	tomat 5%	.49333*	.05642	.000	.3127	.6740
	tomat 10%	1.09000*	.05642	.000	.9093	1.2707
tomat 2%	basis	-.20667*	.05642	.026	-.3873	-.0260
	tomat 5%	.28667*	.05642	.004	.1060	.4673
	tomat 10%	.88333*	.05642	.000	.7027	1.0640
tomat 5%	basis	-.49333*	.05642	.000	-.6740	-.3127
	tomat 2%	-.28667*	.05642	.004	-.4673	-.1060
	tomat 10%	.59667*	.05642	.000	.4160	.7773
tomat 10%	basis	-1.09000*	.05642	.000	-1.2707	-.9093
	tomat 2%	-.88333*	.05642	.000	-1.0640	-.7027
	tomat 5%	-.59667*	.05642	.000	-.7773	-.4160

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

Homogeneous Subsets

pH

Tukey HSD[a]

Formula	N	Subset for alpha = 0.05			
		1	2	3	4
tomat 10%	3	5.3333			
tomat 5%	3		5.9300		
tomat 2%	3			6.2167	
basis	3				6.4233
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Lampiran 12 Perhitungan rendemen ekstrak kental buah tomat

% rendemen : $\frac{\text{Bobotekstrak (g)}}{\text{Bobotbuahtomat (g)}}$ x100%

% rendemen : $\frac{142\ \text{g}}{2000\ g}\ x\ 100\%$

%rendemen : 7,1%

Lampiran 13 Perhitungan luas eritema

Kelompok perlakuan	Luas eritema (mm)			Rata-rata ± SD
	Replikasi 1	Replikasi 2	Replikasi 3	
Basis	9	3	5	7,11 ± 2,86
	5	7	8	
	12	4	6	
	10	10		
Formula 1	4	6	8	5,67 ± 2,00
	5	5	4	
	7	9	3	
Formula 2	5	5	6	4,33 ± 1,49
	3	3	4	
		2	2	
Formula 3	4	2	5	2,83 ± 1,13
	2	3	3	
	2		2	
Kontrol positif	3	3	4	3,17 ± 0,71
	3	2		
Ekstrak	2	2	3	2,67 ± 0,89
	4		2	

Lampiran 14 Data uji statistik eritema formulasi krim ekstrak buah tomat

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		Eritemajamke48
N		18
Normal Parameters[a,,b]	Mean	4.2406
	Std. Deviation	1.89431
Most Extreme Differences	Absolute	.162
	Positive	.162
	Negative	-.118
Kolmogorov-Smirnov Z		.686
Asymp. Sig. (2-tailed)		.735

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Test of Homogeneity of Variances

Eritemajamke48

Levene Statistic	df1	df2	Sig.
3.069	5	12	.052

ANOVA

Eritemajamke48

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	51.141	5	10.228	12.446	.000
Within Groups	9.862	12	.822		
Total	61.003	17			

Post Hoc Tests

Multiple Comparisons

Eritemajamke48

Tukey HSD

(I) Fomula	(J) Fomula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
basis krim	ekstrak 2%	1.44333	.74018	.420	-1.0429	3.9295
	ekstrak 5%	2.77667*	.74018	.026	.2905	5.2629
	ekstrak 10%	4.27667*	.74018	.001	1.7905	6.7629
	nivea	3.94333*	.74018	.002	1.4571	6.4295
	ekstrak	4.77667*	.74018	.000	2.2905	7.2629
ekstrak 2%	basis krim	-1.44333	.74018	.420	-3.9295	1.0429
	ekstrak 5%	1.33333	.74018	.499	-1.1529	3.8195
	ekstrak 10%	2.83333*	.74018	.023	.3471	5.3195
	nivea	2.50000*	.74018	.048	.0138	4.9862
	ekstrak	3.33333*	.74018	.007	.8471	5.8195
ekstrak 5%	basis krim	-2.77667*	.74018	.026	-5.2629	-.2905
	ekstrak 2%	-1.33333	.74018	.499	-3.8195	1.1529
	ekstrak 10%	1.50000	.74018	.383	-.9862	3.9862
	nivea	1.16667	.74018	.627	-1.3195	3.6529
	ekstrak	2.00000	.74018	.146	-.4862	4.4862
ekstrak 10%	basis krim	-4.27667*	.74018	.001	-6.7629	-1.7905
	ekstrak 2%	-2.83333*	.74018	.023	-5.3195	-.3471
	ekstrak 5%	-1.50000	.74018	.383	-3.9862	.9862
	nivea	-.33333	.74018	.997	-2.8195	2.1529
	ekstrak	.50000	.74018	.981	-1.9862	2.9862
Nivea	basis krim	-3.94333*	.74018	.002	-6.4295	-1.4571
	ekstrak 2%	-2.50000*	.74018	.048	-4.9862	-.0138
	ekstrak 5%	-1.16667	.74018	.627	-3.6529	1.3195
	ekstrak 10%	.33333	.74018	.997	-2.1529	2.8195
	ekstrak	.83333	.74018	.862	-1.6529	3.3195
Ekstrak	basis krim	-4.77667*	.74018	.000	-7.2629	-2.2905
	ekstrak 2%	-3.33333*	.74018	.007	-5.8195	-.8471
	ekstrak 5%	-2.00000	.74018	.146	-4.4862	.4862
	ekstrak 10%	-.50000	.74018	.981	-2.9862	1.9862
	nivea	-.83333	.74018	.862	-3.3195	1.6529

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

Homogeneous Subsets

Eritemajamke48

TukeyHSD[a]

Fomula	N	Subset for alpha = 0.05		
		1	2	3
Ekstrak	3	2.3333		
ekstrak 10%	3	2.8333		
nivea	3	3.1667		
ekstrak 5%	3	4.3333	4.3333	
ekstrak 2%	3		5.6667	5.6667
basis krim	3			7.1100
Sig.		.146	.499	.420

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 15 Perhitungan nilai SPF

Formula	Panjang gelombang	Absorbansi			Rata-rata ± SD
		Replikasi 1	Replikasi 2	Replikasi 3	
Basis	**290**	0,1288	0,1259	0,1280	0,6327 ±
	295	0,0629	0,0628	0,0887	0,1766
	300	0,0535	0,0520	0,0836	
	305	0,0519	0,0510	0,0841	
	310	0,0483	0,0458	0,0784	
	315	0,0448	0,0414	0,0726	
	320	0,0427	0,0391	0,0710	

290 nm = Replikasi 1 = 10 x 0,0150 x 0,1288 = 0,0193

Replikasi 2 = 10 x 0,0150 x 0,1259 = 0,0189

Replikasi 3 = 10 x 0,0150 x 0,1280 = 0,0192

295 nm = Replikasi 1 = 10 x 0,0817 x 0,0629 = 0,0514

Replikasi 2 = 10 x 0,0817 x 0,0628 = 0,0513

Replikasi 3 = 10 x 0,0817 x 0,0887 = 0,0725

300 nm = Replikasi 1 = 10 x 0,2874 x 0,0535 = 0,1538

Replikasi 2 = 10 x 0,2874 x 0,0520 = 0,1494

Replikasi 3 = 10 x 0,2874 x 0,0836 = 0,2403

305 nm = Replikasi 1 = 10 x 0,3278 x 0,0519 = 0,1701

Replikasi 2 = 10 x 0,3278 x 0,0510 = 0,1672

Replikasi 3 = 10 x 0,3278 x 0,0841 = 0,2757

310 nm = Replikasi 1 = 10 x 0,1864 x 0,0483 = 0,0900

Replikasi 2 = 10 x 0,1864 x 0,0458 = 0,0854

Replikasi 3 = 10 x 0,1864 x 0,0784 = 0,1461

315 nm = Replikasi 1 = 10 x 0,0839 x 0,0448 = 0,0376

Replikasi 2 = 10 x 0,0839 x 0,0414 = 0,0347

Replikasi 3 = 10 x 0,0839 x 0,0726 = 0,0609

320 nm = Replikasi 1 = 10 x 0,0180 x 0,0427 = 0,0077

Replikasi 2 = 10 x 0,0180 x 0,0391 = 0,0070

Replikasi 3 = 10 x 0,0180 x 0,0710 = 0,0128

Total nilai SPF replikasi 1 = 0,5299

Total nilai SPF replikasi 2 = 0,5140

Total nilai SPF replikasi 3 = 0,8274

Rata-rata nilai SPF basis krim = $\frac{\text{total milai SPF replikai 1+ replikasi 2+ replikasi 3}}{3}$

$= \frac{0,5299+ 0,5140+ 0,8274}{3}$

= 0,6237

Formula	Panjang gelombang	Absorbansi			Rata-rata ± SD
		Replikasi 1	Replikasi 2	Replikasi 3	
Formula 1	**290**	0,8687	0,8349	0,7606	6,6005 ±
	295	0,7708	0,8437	0,6337	0,8727
	300	0,7379	0,7129	0,5888	
	305	0,6166	0,7926	0,5598	
	310	0,6974	0,6738	0,5288	
	315	0,5783	0,6546	0,4993	
	320	0,5628	0,5399	0,4751	

290 nm = Replikasi 1 = 10 x 0,0150 x 0,8687 = 0,1303

Replikasi 2 = 10 x 0,0150 x 0,8349 = 0,1252

Replikasi 3 = 10 x 0,0150 x 0,7606 = 0,1141

295 nm = Replikasi 1 = 10 x 0,0817 x 0,7708 = 0,6297

Replikasi 2 = 10 x 0,0817 x 0,8437 = 0,6893

Replikasi 3 = 10 x 0,0817 x 0,6337 = 0,5177

300 nm = Replikasi 1 = 10 x 0,2874 x 0,7379 = 2,1207

Replikasi 2 = 10 x 0,2874 x 0,7129 = 2,0489

Replikasi 3 = 10 x 0,2874 x 0,5888 = 1,6922

305 nm = Replikasi 1 = 10 x 0,3278 x 0,6166 = 2,0212

Replikasi 2 = 10 x 0,3278 x 0,7926 = 2,5981

Replikasi 3 = 10 x 0,3278 x 0,5598 = 1,8350

310 nm = Replikasi 1 = 10 x 0,1864 x 0,6974 = 1,2999

Replikasi 2 = 10 x 0,1864 x 0,6738 = 1,2560

Replikasi 3 = 10 x 0,1864 x 0,5288 = 0,9857

315 nm = Replikasi 1 = 10 x 0,0839 x 0,5783 = 0,4852

Replikasi 2 = 10 x 0,0839 x 0,6546 = 0,5492

Replikasi 3 = 10 x 0,0839 x 0,4993 = 0,4189

320 nm = Replikasi 1 = 10 x 0,0180 x 0,5628 = 0,1013

Replikasi 2 = 10 x 0,0180 x 0,5399 = 0,0972

Replikasi 3 = 10 x 0,0180 x 0,4751 = 0,0855

Total nilai SPF replikasi 1 = 6,7884

Total nilai SPF replikasi 2 = 7,3639

Total nilai SPF replikasi 3 = 5,6492

$$\text{Rata-rata nilai SPF basis krim} = \frac{\text{total milai SPF replikai 1+ replikasi 2+ replikasi 3}}{3}$$

$$= \frac{6,7884+ 7,3639+ 5,6492}{3}$$

$$= 6,6005$$

Formula	Panjang gelombang	Absorbansi			Rata-rata ± SD
		Replikasi 1	Replikasi 2	Replikasi 3	
Formula 2	**290**	1,5056	1,6380	1,4380	13,4744 ± 1,2493
	295	1,5043	1,5556	1,3556	
	300	1,3499	1,5119	1,2119	
	305	1,3035	1,4748	1,2748	
	310	1,3598	1,4296	1,1296	
	315	1,2134	1,3906	1,1906	
	320	1,1771	1,3557	1,0557	

290 nm = Replikasi 1 = 10 x 0,0150 x 1,5056 = 0,2258
Replikasi 2 = 10 x 0,0150 x 1,6380 = 0,2457
Replikasi 3 = 10 x 0,0150 x 1,4380 = 0,2157
295 nm = Replikasi 1 = 10 x 0,0817 x 1,5043 = 1,2290
Replikasi 2 = 10 x 0,0817 x 1,5556 = 1,2709
Replikasi 3 = 10 x 0,0817 x 1,3556 = 1,1075
300 nm = Replikasi 1 = 10 x 0,2874 x 1,3499 = 3,8796
Replikasi 2 = 10 x 0,2874 x 1,5119 = 4,3452
Replikasi 3 = 10 x 0,2874 x 1,2119 = 3,4830
305 nm = Replikasi 1 = 10 x 0,3278 x 1,3055 = 4,2729
Replikasi 2 = 10 x 0,3278 x 1,4748 = 4,8344
Replikasi 3 = 10 x 0,3278 x 1,2748 = 4,1788
310 nm = Replikasi 1 = 10 x 0,1864 x 1,3598 = 2,5347
Replikasi 2 = 10 x 0,1864 x 1,4296 = 2,6648
Replikasi 3 = 10 x 0,1864 x 1,1296 = 2,1056
315 nm = Replikasi 1 = 10 x 0,0839 x 1,2134 = 1,0180
Replikasi 2 = 10 x 0,0839 x 1,3906 = 1,1667
Replikasi 3 = 10 x 0,0839 x 1,1906 = 0,9989
320 nm = Replikasi 1 = 10 x 0,0180 x 1,1771 = 0,2119
Replikasi 2 = 10 x 0,0180 x 1,3557 = 0,2440
Replikasi 3 = 10 x 0,0180 x 1,0557 = 0,1900

Total nilai SPF replikasi 1 = 13,3719

Total nilai SPF replikasi 2 = 14,7717

Total nilai SPF replikasi 3 = 12,2795

Rata-rata nilai SPF basis krim = $\frac{\text{total milai SPF replikai 1+ replikasi 2+ replikasi 3}}{3}$

$= \frac{13{,}3719 + 14{,}7717 + 12{,}2795}{3}$

= 13,4744

Formula	Panjang gelombang	Absorbansi			Rata-rata ± SD
		Replikasi 1	Replikasi 2	Replikasi 3	
Formula 3	**290**	3,4426	3,5955	3,2162	29,5141 ± 0,7656
	295	3,3087	3,3642	3,0540	
	300	3,0176	3,1083	2,9690	
	305	2,9446	2,9411	2,8962	
	310	2,8775	2,8881	2,6186	
	315	2,8179	2,8316	2,7466	
	320	2,7408	2,7833	2,5819	

290 nm = Replikasi 1 = 10 x 0,0150 x 3,4426 = 0,5164

Replikasi 2 = 10 x 0,0150 x 3,5955 = 0,5393

Replikasi 3 = 10 x 0,0150 x 3,2162 = 0,4824

295 nm = Replikasi 1 = 10 x 0,0817 x 3,3087 = 2,7032

Replikasi 2 = 10 x 0,0817 x 3,3642 = 2,7486

Replikasi 3 = 10 x 0,0817 x 3,0540 = 2,4951

300 nm = Replikasi 1 = 10 x 0,2874 x 3,0176 = 8,6726

Replikasi 2 = 10 x 0,2874 x 3,1083 = 8,9333

Replikasi 3 = 10 x 0,2874 x 2,9690 = 8,5329

305 nm = Replikasi 1 = 10 x 0,3278 x 2,9446 = 9,6524

Replikasi 2 = 10 x 0,3278 x 2,9411 = 9,6409

Replikasi 3 = 10 x 0,3278 x 2,8962 = 9,4937

310 nm = Replikasi 1 = 10 x 0,1864 x 2,8775 = 5,3637

Replikasi 2 = 10 x 0,1864 x 2,8881 = 5,3834

Replikasi 3 = 10 x 0,1864 x 2,6186 = 4,8811

315 nm = Replikasi 1 = 10 x 0,0839 x 2,8179 = 2,3642

Replikasi 2 = 10 x 0,0839 x 2,8316 = 2,3757

Replikasi 3 = 10 x 0,0839 x 2,7466 = 2,3044

320 nm = Replikasi 1 = 10 x 0,0180 x 2,7408 = 0,4933

Replikasi 2 = 10 x 0,0180 x 2,7833 = 0,5010

Replikasi 3 = 10 x 0,0180 x 2,5819 = 0,4647

Total nilai SPF replikasi 1 = 29,7658

Total nilai SPF replikasi 2 = 30,1222

Total nilai SPF replikasi 3 = 28,6544

Rata-rata nilai SPF basis krim = $\frac{\text{total milai SPF repliki 1+ replikasi 2+ replikasi 3}}{3}$

$=\frac{29,7658 + 30,1222 + 28,6544}{3}$

= 29,5141

Formula	Panjang gelombang	Absorbansi			Rata-rata ± SD
		Replikasi 1	Replikasi 2	Replikasi 3	
Kontrol positif	**290**	3,6891	3,8941	3,7891	37,7987 ± 0,5201
	295	3,8131	3,8816	3,9023	
	300	3,8893	3,7727	3,7921	
	305	3,8194	3,7340	3,8566	
	310	3,6659	3,4803	3,8077	
	315	3,6949	3,7849	3,6889	
	320	3,8983	3,9296	3,8735	

290 nm = Replikasi 1 = 10 x 0,0150 x 3,6891 = 0,5534

Replikasi 2 = 10 x 0,0150 x 3,8941 = 0,5841

Replikasi 3 = 10 x 0,0150 x 3,7891 = 0,5684

295 nm = Replikasi 1 = 10 x 0,0817 x 3,8131 = 3,1153

Replikasi 2 = 10 x 0,0817 x 3,8816 = 3,1713

Replikasi 3 = 10 x 0,0817 x 3,9023 = 3,1882

300 nm = Replikasi 1 = 10 x 0,2874 x 3,8893 = 11,1778

Replikasi 2 = 10 x 0,2874 x 3,7727 = 10,8427

Replikasi 3 = 10 x 0,2874 x 3,7921 = 10,8985

305 nm = Replikasi 1 = 10 x 0,3278 x 3,8194 = 12,5199

Replikasi 2 = 10 x 0,3278 x 3,7340 = 12,2401

Replikasi 3 = 10 x 0,3278 x 3,8566 = 12,6419

310 nm = Replikasi 1 = 10 x 0,1864 x 3,6659 = 6,8332

Replikasi 2 = 10 x 0,1864 x 3,4803 = 6,4872

Replikasi 3 = 10 x 0,1864 x 3,8077 = 7,0976

315 nm = Replikasi 1 = 10 x 0,0839 x 3,6949 = 3,1000

Replikasi 2 = 10 x 0,0839 x 3,7849 = 3,1755

Replikasi 3 = 10 x 0,0839 x 3,6889 = 3,0950

320 nm = Replikasi 1 = 10 x 0,0180 x 3,8983 = 0,7017

Replikasi 2 = 10 x 0,0180 x 3,9296 = 0,7073

Replikasi 3 = 10 x 0,0180 x 3,8735 = 0,6972

Total nilai SPF replikasi 1 = 38,0015

Total nilai SPF replikasi 2 = 37,2078

Total nilai SPF replikasi 3 = 38,1867

$$\text{Rata-rata nilai SPF basis krim} = \frac{\text{total milai SPF replikai 1+ replikasi 2+ replikasi 3}}{3}$$

$$= \frac{38{,}0015 + 37{,}2078 + 38{,}1867}{3}$$

$$= 37{,}7987$$

Formula	Panjang gelombang	Absorbansi			Rata-rata ± SD
		Replikasi 1	Replikasi 2	Replikasi 3	
Ekstrak buah tomat	**290**	3,9077	3,8061	3,9667	38,7234 ± 0,2884
	295	3,9480	3,7784	3,9208	
	300	3,8709	3,9753	3,8648	
	305	3,8448	3,6347	3,8262	
	310	3,8694	3,8837	3,8583	
	315	3,8997	3,8212	3,6733	
	320	3,8836	3,9124	3,8735	

290 nm = Replikasi 1 = 10 x 0,0150 x 3,9077 = 0,5862
Replikasi 2 = 10 x 0,0150 x 3,8061 = 0,5709
Replikasi 3 = 10 x 0,0150 x 3,9667 = 0,5950
295 nm = Replikasi 1 = 10 x 0,0817 x 3,9480 = 3,2255
Replikasi 2 = 10 x 0,0817 x 3,7784 = 3,0869
Replikasi 3 = 10 x 0,0817 x 3,9208 = 3,2033
300 nm = Replikasi 1 = 10 x 0,2874 x 3,8709 = 11,1250
Replikasi 2 = 10 x 0,2874 x 3,9753 = 11,4250
Replikasi 3 = 10 x 0,2874 x 3,8648 = 11,1074
305 nm = Replikasi 1 = 10 x 0,3278 x 3,8448 = 12,6033
Replikasi 2 = 10 x 0,3278 x 3,6347 = 11,9145
Replikasi 3 = 10 x 0,3278 x 3,8262 = 12,5423
310 nm = Replikasi 1 = 10 x 0,1864 x 3,8694 = 7,2126
Replikasi 2 = 10 x 0,1864 x 3,8837 = 7,2392
Replikasi 3 = 10 x 0,1864 x 3,8583 = 7,1919
315 nm = Replikasi 1 = 10 x 0,0839 x 3,8997 = 3,2718
Replikasi 2 = 10 x 0,0839 x 3,8212 = 3,2060
Replikasi 3 = 10 x 0,0839 x 3,6733 = 3,0819
320 nm = Replikasi 1 = 10 x 0,0180 x 3,8836 = 0,6990
Replikasi 2 = 10 x 0,0180 x 3,9124 = 0,7042
Replikasi 3 = 10 x 0,0180 x 3,8735 = 0,6972

Total nilai SPF replikasi 1 = 38,7234

Total nilai SPF replikasi 2 = 38,1469

Total nilai SPF replikasi 3 = 38,4190

$$\text{Rata-rata nilai SPF basis krim} = \frac{\text{total milai SPF replikai 1+ replikasi 2+ replikasi 3}}{3}$$

$$= \frac{38{,}7234 + 38{,}1469 + 38{,}4190}{3}$$

$$= 38{,}4297$$

Lampiran 16 Data uji statistik nilai SPF formulasi krim ekstrak buah tomat

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		SPF
N		18
Normal Parameters[a,,b]	Mean	21.0733
	Std. Deviation	15.37639
Most Extreme Differences	Absolute	.189
	Positive	.159
	Negative	-.189
Kolmogorov-Smirnov Z		.801
Asymp. Sig. (2-tailed)		.542

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Test of Homogeneity of Variances

SPF

Levene Statistic	df1	df2	Sig.
1.838	5	12	.180

ANOVA

SPF

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	4012.777	5	802.555	1460.812	.000
Within Groups	6.593	12	.549		
Total	4019.370	17			

Post Hoc Tests

Multiple Comparisons

SPF
Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
basis	tomat 2%	-5.97674*	.60519	.000	-8.0095	-3.9439
	tomat 5%	-12.85078*	.60519	.000	-14.8836	-10.8180
	tomat 10%	-28.88889*	.60519	.000	-30.9217	-26.8561
	nivea SPF 50	-37.17488*	.60519	.000	-39.2077	-35.1421
	ekstrak tomat	-37.80597*	.60519	.000	-39.8388	-35.7732
tomat 2%	basis	5.97674*	.60519	.000	3.9439	8.0095
	tomat 5%	-6.87405*	.60519	.000	-8.9068	-4.8412
	tomat 10%	-22.91215*	.60519	.000	-24.9450	-20.8794
	nivea SPF 50	-31.19814*	.60519	.000	-33.2309	-29.1653
	ekstrak tomat	-31.82924*	.60519	.000	-33.8620	-29.7964
tomat 5%	basis	12.85078*	.60519	.000	10.8180	14.8836
	tomat 2%	6.87405*	.60519	.000	4.8412	8.9068
	tomat 10%	-16.03811*	.60519	.000	-18.0709	-14.0053
	nivea SPF 50	-24.32410*	.60519	.000	-26.3569	-22.2913
	ekstrak tomat	-24.95519*	.60519	.000	-26.9880	-22.9224
tomat 10%	basis	28.88889*	.60519	.000	26.8561	30.9217
	tomat 2%	22.91215*	.60519	.000	20.8794	24.9450
	tomat 5%	16.03811*	.60519	.000	14.0053	18.0709
	nivea SPF 50	-8.28599*	.60519	.000	-10.3188	-6.2532
	ekstrak tomat	-8.91708*	.60519	.000	-10.9499	-6.8843
nivea SPF 50	basis	37.17488*	.60519	.000	35.1421	39.2077
	tomat 2%	31.19814*	.60519	.000	29.1653	33.2309
	tomat 5%	24.32410*	.60519	.000	22.2913	26.3569
	tomat 10%	8.28599*	.60519	.000	6.2532	10.3188
	ekstrak tomat	-.63109	.60519	.894	-2.6639	1.4017
ekstrak tomat	basis	37.80597*	.60519	.000	35.7732	39.8388
	tomat 2%	31.82924*	.60519	.000	29.7964	33.8620

	tomat 5%	24.95519*	.60519	.000	22.9224	26.9880
	tomat 10%	8.91708*	.60519	.000	6.8843	10.9499
	nivea SPF 50	.63109	.60519	.894	-1.4017	2.6639

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

Homogeneous Subsets

SPF

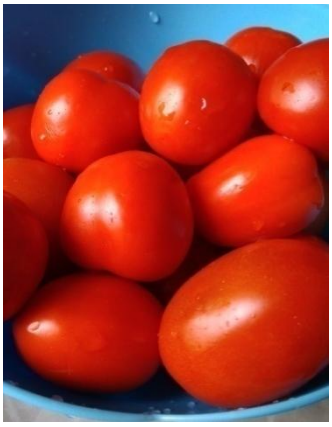
Tukey HSD[a]

Formula	N	Subset for alpha = 0.05				
		1	2	3	4	5
basis	3	.6238				
tomat 2%	3		6.6005			
tomat 5%	3			13.4746		
tomat 10%	3				29.5127	
nivea SPF 50	3					37.7987
ekstrak tomat	3					38.4297
Sig.		1.000	1.000	1.000	1.000	.894

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 17 Buah tomat dan proses ekstraksi

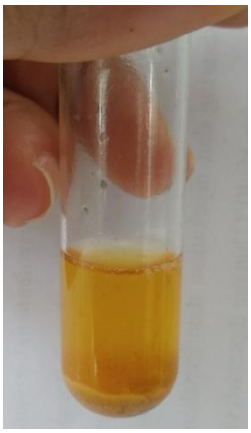


Buah tomat segar

Proses pemekatan ekstrak

Lampiran 18 Hasil uji identifikasi kandungan kimia ekstrak buah tomat

Uji Flavonoid



Uji Alkaloid

Uji Saponin

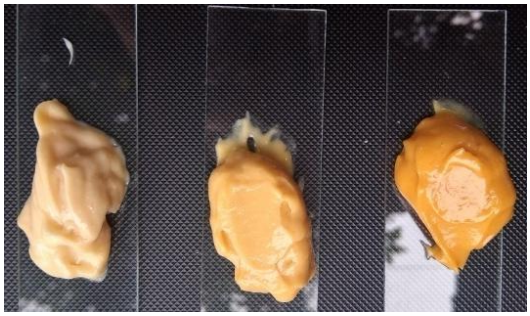
Uji bebas etanol

Uji kadar air

KLT

KLT

Lampiran 19 Pengujian mutu fisik krim ekstrak buah tomat



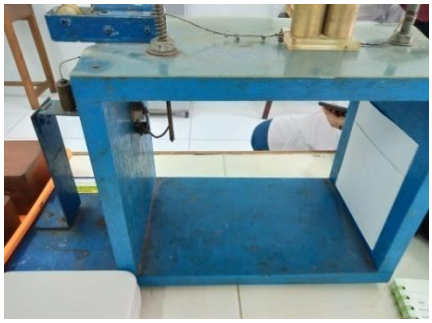
Formula krim ekstrak buah tomat

Uji daya hantar listrik

Uji tipe krim metode pengenceran dengan air

Uji Viskositas

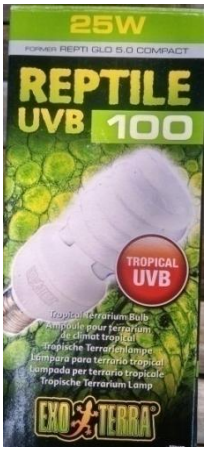
Uji Daya Sebar



Uji Daya Lekat

Uji Homogenitas Krim

Lampiran 20 Pengujian aktivitas tabir surya secara in vivo



Lampu exoterra UV-B

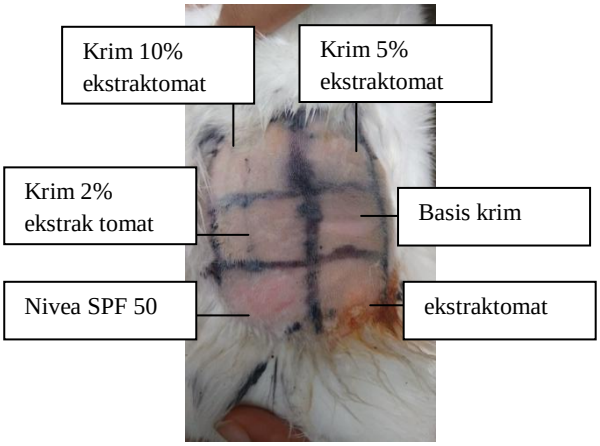
Tabir surya Nivea SPF 50

Kelinci jantan galur New Zealand usia 2 bulan

Proses pencukuran bulu kelinci

Punggung kelinci sebelum perlakuan

Kontrol normal 24 jam pemaparan UV-B



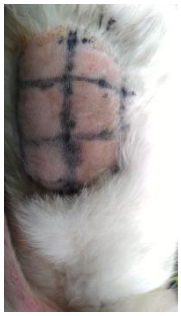
Hasil penyinaran 24 jam

Hasil penyinaran 48 jam

Replikasi 2 penyinaran 24 jam

Replikasi 2 penyinaran 48 jam

Replikasi 3 penyinaran 24 jam



Replikasi 3 penyinaran 48 jam

Proses pencukuran bulu kelinci

Punggung kelinci sebelum perlakuan

Hasil penyinaran 24 jam

Hasil penyinaran 48 jam