BAB V

KESIMPULAN DAN SARAN

A. Kesimpulan

Berdasarkan hasil pengamatan dapat disimpulkan bahwa :

Pertama, ditemukan perbandingan komposisi optimum krim sesuai dengan sifat yang dikehendaki yaitu sorbitan 60 dengan konsentrasi 1% dalam 100% krim dan polisorbat 60 dengan konsentrasi 3% dalam 100% krim.

Kedua, krim lendir bekicot mempunyai aktivitas antibakteri terhadap *Staphylococcus aureus* ATCC 25923 menggunakan metode difusi. Rata-rata luas daerah hambatnya yaitu formula I (3 cm), formula II (2,93 cm), formula III (2,97 cm).

B. Saran

Saran yang dapat disampaikan yaitu:

1. Perlu dilakukan penelitian lebih lanjut dalam optimasi krim lendir bekicot menggunakan basis yang lain.
2. Perlu dilakukan penelitian lebih lanjut dengan uji in vivo pada krim formula optimum.
3. Perlu dilakukan uji antibakteri dengan menggunakan metode yang lain yaitu metode dilusi.

DAFTAR PUSTAKA

Anief, M. 2006. *Ilmu Meracik Obat*. Cetakan Ketigabelas. Fakultas Farmasi Universitas Gadjah Mada. Yogyakarta. 71

Anonim. 1979. *Farmakope Indonesia*. Edisi III. Jakarta: Departemen Kesehatan Republik Indonesia. 57, 96, 474

Anonim. 1995. *Farmakope Indonesia*. Edisi IV. Jakarta: Departemen Kesehatan Republik Indonesia. 687, 796.

Ansel, H. C. 1989. *Pengantar Bentuk Sediaan Farmasi*. Diterjemahkan oleh Ibrahim F. Edisi IV, Universitas Indonesia. 47-50

Berniyanti, Suwarno. 2007. Karakteristik Protein Lendir Bekicot (Achasin) Isolat Lokal sebagai Faktor Antibakteri. *Media Kedokteran Hewan* Vol. 23.

Bolton, S. 1997. *Pharmaceutical Statistics Practical and Clinical Aplication*, 3rd edition, 610-613, Marcel Dekker Inc., New York. 610-613

Bonang, G., & Koeswardono, E.S. 1982. *Mikrobiologi Kedokteran Untuk Laboratorium & Klinik*. PT Gramedia. Jakarta. 77-78.

Dwidjoseputro. 1984. *Dasar-Dasar Mikrobiologi*. Surabaya : Penerbit Djambatan.

Ernawati I dan Sunari. 1994. *Pemisahan Lendir Bekicot Serta Uji Mikrobiologis Faktor Pemisahan Terhadap Eschericia coli, Streptococcus haemoliticus dan Candida albicans secara invitro* [Skripsi]. Jogjakarta: Fakultas Farmasi, Universitas Gadjah Mada.

Fatmawaty, Aisyah., Mufidah., Sartini dan Via D.H. 2009. Aktivitas Antibakteri Krim Ekstrak Daun Kakurang (*Stacytarpheta jamaicensis* (L) Vahl) Terhadap *Staphylococcus aureus* dan *Pseudomonas aeruginosa* Secara *in vitro*. *Majalah Farmasi dan Farmakologi* Vol. 13.

Ferdinand, Fiktor, P dan Aribowa, Moekti. 2007. *Praktis Belajar Biologi*. PT Grafindo Media Pratama. Jakarta. 136.

Ganiswara, S.G. 1995. *Farmakologi dan Terapi*. Edisi IV. Fakultas Kedokteran Universitas Indonesia. Jakarta. 571-572.

Iskandar, Cecep. 2012. *Efektifitas Pemberian Gel Lendir Bekicot (Achatina Fulica) Secara Topikal Terhadap Penyembuhan Luka Bakar Derajat II*

Pada Tikus Putih (Rattus Norvegicus) Melalui Pengamatan Makroskopis. http://digilib.fk.umy.ac.id/gdl.php?mod=browse&op=read&id=yoptumyfkpp-gdl-cecepiskan-580. [29Jan 2013].

Jasin, M. 1989. *Sistematik Hewan (Invertebrata dan Vertebrata)*. Sinar Wijaya. Surabaya. 10.

Jawetz, E., Melnick, J.L., Adelberg, E.A, 1986. *Mikrobiologi Untuk Profesi Kesehatan*. Edisi XVI. Penerjemah: Bonang, G. Jakarta : Penerbit Buku Kedokteran. 239, 241-241.

Kathleen. 2002. *Foundation in Microbiology*. Edisi ke-6, New York : The Megraw Hill Companies. 116-122

Lachman L., Lieberman H.A., Kanig J.L., 1986. *The Theory and Practice of Industrial Phamacy*, 3rd Ed, Lea and Febriger, Philadelphia. 1091-1111

Lachman L., Lieberman, H.A dan Kanig, J.L., 1994. *Teori dan Praktek Farmasi Industri 2*. Diterjemahkan oleh Suyatmi, S. Edisi III. Universitas Indonesia Press. Jakarta. 1095, 1117.

Martin, A., Swarbrick, J., Commarata, A. 1993. *Farmasi Fisik II*. Edisi Ketiga. Jakarta: Universitas Indonesia press. 997, 1124-1126

Murti TK & Poerba AP. 2010. *101 Ramuan Tradisional Untuk Mengatasi Berbagai Penyakit*. Insani. Yogyakarta. 2

Naryo Sadhori S. 1997. *Teknik Budidaya Bekicot*. Balai Pustaka. Jakarta. 8-10,15-16

Priyambodo, bambang. 2007. *Manajemen Farmasi Industri*. Global Pustaka Utama. Yogyakarta. 57-58.

Rowe, RC., Sheskey, PJ., and Welker PJ. 2003. *Hand Book of Pharmaceutical Excipient 4th Edition*. London: Pharmaceutical Press and American Pharmaceutical Association. 120-123, 301-303, 630-631, 794.

Santoso, H.B., 2005, *Budidaya Bekicot*, Cetakan ke-15, Kanisius, Yogyakarta. 14

Shek Wp, Schultz RD, Appel MJG. 1989. Natural and Immune Cytolysis of Canine Distemper Virus Infected Target Cekks. 28:724-734 [medline]

Sulaiman, T.N.S. dan Dhadang. 2009. *Teknologi & Formulasi Sediaan Semipadat*. Yogyakarta: Laboratorium Teknologi Farmasi Fakultas Farmasi Universitas Gadjah Mada. 92.

Sulaiman, T. N. dan Kuswahyuning R. 2008. *Teknologi & Formulasi Sediaan Semipadat*, Yogyakarta: Laboratorium Teknologi Farmasi Fakultas Farmasi Universitas Gadjah Mada. 73-79.

Voigt, R. 1994. *Buku Pelajaran Teknologi Farmasi*, Diterjemahkan oleh Soendani Noerrono, Edisi V, Cetakan Kedua, Universitas Gadjah Mada Press, Yogyakarta. 150-152, 566-567.

Voigt, R, 1995, *Buku Pelajaran Teknologi Farmasi*, Diterjemahkan oleh Soendani Noerrono, Edisi V, Cetakan Kedua, Universitas Gadjah Mada Press, Yogyakarta. 328, 366, 401-431.

Wyatt, E., Sutter, S.H., dan Drake, L.A., 2001, Dermatologi Pharmacology, in *Goodman and Gilman's The Pharmacological Basis of Therapeutics*, Hardman, J.G., Limbird, L.E., Gilman, A.G., (Editor), 10th edition, 1801-1803, McGraw-Hill, New York.

LAMPIRAN

Lampiran 1. Foto bekicot (*Achatina fulica* Ferr.)

Bekicot (*Achatina fulica* Ferr.)

Menampung lendir bekicot

Lendir bekicot

Lampiran 2. Alat yang digunakan

Alat uji viskositas

Alat uji daya sebar

Timbangan elektrik

Mortir dan stamfer

Lampiran 3. Krim lendir bekicot

Formula I

Formula II

Formula III

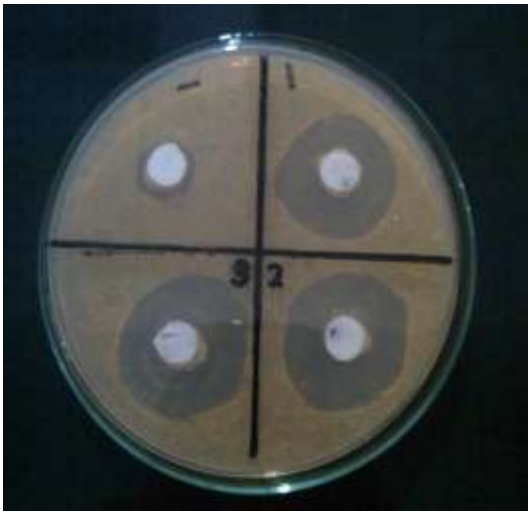
Lampiran 4. Uji tipe krim lendir bekicot

Krim + air

Krim + air + metilen blue

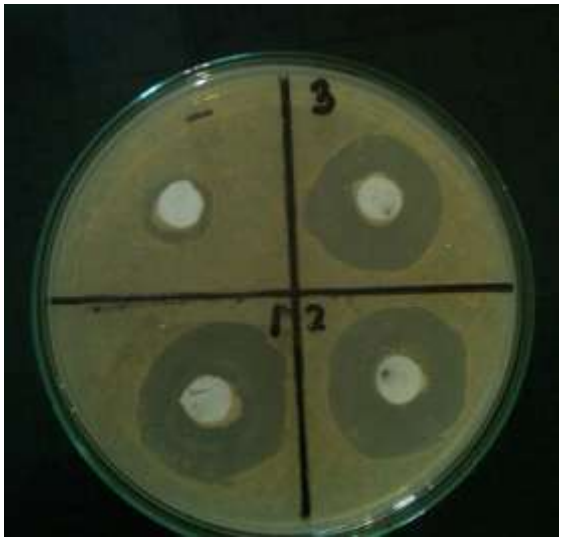
Krim + metilen blue

Lampiran 5. Hasil uji daya hambat antibakteri krim lendir bekicot



Replkasi 1

Replikasi 2



Replikasi 3

Lampiran 6. Data uji viskositas krim lendir bekicot

Minggu ke-	Viskositas (dPas)								
	Formula I			Formula II			Formula III		
	a	b	c	a	b	c	a	b	c
0	170	170	160	160	160	170	160	150	150
1	175	170	190	170	170	180	170	160	150
2	180	190	200	180	200	180	180	160	160
3	220	210	200	200	190	195	160	180	180
4	240	220	250	220	210	220	170	190	190

Rata-rata ± SD uji viskositas

Pemeriksaan waktu	Formula I (d Pas)	Formula II (d Pas)	Formula III (d Pas)
Minggu 0	166,67 ± 5,77	163,33 ± 5,77	153,33 ± 5,77
Minggu 1	178,33 ± 10,41	173,33 ± 5,77	160 ± 10
Minggu 2	190 ± 10	186,67 ± 11,55	166,67 ± 11,55
Minggu 3	210 ± 10	195 ± 5	173,33 ± 11,55
Minggu 4	240 ± 10	216,67 ± 5,77	183,33 ± 11,55

Lampiran 7. Data uji daya sebar krim lendir bekicot

a. Data pengujian minggu ke-0

Formula	Beban	Luas penyebaran (cm)		
		1	2	3
Formula I	55,46	2,55	2,55	2,58
	105,46	2,875	2,9	2,875
	155,46	3,225	3,175	3,2
	205,46	3,55	3,5	3,53
Formula II	55,46	2,725	2,55	2,475
	105,46	2,975	2,95	2,925
	155,46	3,225	3,3	3,325
	205,46	3,475	3,6	3,6
Formula III	55,46	3	3	2,9
	105,46	3,45	3,475	3,4
	155,46	3,88	3,93	3,88
	205,46	4,2	4,23	4,13

b. Data pengujian minggu pertama

Formula	Beban	Luas penyebaran (cm)		
		1	2	3
Formula I	55,46	2,53	2,53	2,5
	105,46	2,93	2,95	2,93
	155,46	3,05	3,15	3,18
	205,46	3,35	3,43	3,45
Formula II	55,46	2,55	2,6	2,53
	105,46	2,95	2,9	2,93
	155,46	3,15	3,2	3,28
	205,46	3,35	3,43	3,48
Formula III	55,46	2,95	2,93	2,9
	105,46	3,33	3,28	3,3
	155,46	3,58	3,63	3,6
	205,46	3,85	3,9	3,9

c. Pengujian minggu ke-2

Formula	Beban	Luas penyebaran (cm)		
		1	2	3
Formula I	55,46	2,48	2,48	2,5
	105,46	2,88	2,9	2,8
	155,46	3,13	3,08	3,03
	205,46	3,38	3,4	3,35
Formula II	55,46	2,48	2,53	2,58
	105,46	2,95	2,8	2,78
	155,46	3,23	3,1	3,08
	205,46	3,43	3,45	3,38
Formula III	55,46	2,68	2,63	2,7
	105,46	3,03	3	3,05
	155,46	3,45	3,33	3,38
	205,46	3,73	3,7	3,73

d. Pengujian minggu ke-3

Formula	Beban	Luas penyebaran (cm)		
		1	2	3
Formula I	55,46	2,45	2,43	2,48
	105,46	2,83	2,75	2,78
	155,46	3,03	3	3,03
	205,46	3,35	3,35	3,28
Formula II	55,46	2,55	2,5	2,53
	105,46	2,75	2,83	2,85
	155,46	3,15	3,11	3,08
	205,46	3,4	3,4	3,2
Formula III	55,46	2,55	2,58	2,58
	105,46	2,9	2,95	2,98
	155,46	3,25	3,25	3,33
	205,46	3,53	3,5	3,6

e. Pengujian minggu ke-4

Formula	Beban	Luas penyebaran (cm)		
		1	2	3
Formula I	55,46	2,33	2,35	2,38
	105,46	2,7	2,65	2,68
	155,46	3,03	3,88	2,95
	205,46	3,38	3,28	3,2
Formula II	55,46	2,53	2,48	2,55
	105,46	2,93	2,63	2,65
	155,46	3,2	2,95	2,9
	205,46	3,43	3,3	3,28
Formula III	55,46	2,48	2,55	2,55
	105,46	2,88	2,9	2,93
	155,46	3,2	3,28	3,28
	205,46	3,45	3,48	3,58

Rata-rata ± SD uji daya sebar

Formula	Diameter penyebaran (cm ± SD)					
	Beban	Minggu 0	Minggu 1	Minggu 2	Minggu 3	Minggu 4
Formula I	55,46	2,56 ± 0,03	2,52 ± 0,02	2,49 ± 0,01	2,45 ± 0,02	2,35 ± 0,03
	105,46	2,89 ± 0,07	2,94 ± 0,01	2,86 ± 0,05	2,79 ± 0,04	2,68 ± 0,03
	155,46	3,27 ± 0,10	3,13 ± 0,07	3,08 ± 0,05	3,02 ± 0,02	2,95 ± 0,07
	205,46	3,53 ± 0,05	3,41 ± 0,05	3,38 ± 0,03	3,33 ± 0,04	3,30 ± 0,07
Formula II	55,46	2,58 ± 0,13	2,56 ± 0,04	2,53 ± 0,05	2,53 ± 0,02	2,51 ± 0,03
	105,46	2,95 ± 0,03	2,93 ± 0,03	2,84 ± 0,09	2,81 ± 0,05	2,74 ± 0,17
	155,46	3,28 ± 0,04	3,21 ± 0,07	3,14 ± 0,08	3,11 ± 0,04	3,02 ± 0,16
	205,46	3,56 ± 0,07	3,42 ± 0,07	3,42 ± 0,04	3,38 ± 0,04	3,34 ± 0,08
Formula III	55,46	2,97 ± 0,06	2,93 ± 0,03	2,67 ± 0,04	2,57 ± 0,02	2,53 ± 0,04
	105,46	3,44 ± 0,04	3,30 ± 0,03	3,03 ± 0,03	2,94 ± 0,04	2,90 ± 0,03
	155,46	3,90 ± 0,03	3,60 ± 0,03	3,39 ± 0,06	3,28 ± 0,05	3,25 ± 0,05
	205,46	4,19 ± 0,05	3,88 ± 0,03	3,72 ± 0,02	3,54 ± 0,05	3,50 ± 0,07

Lampiran 8. Hasil uji statistik dan persamaan berdasarkan *Simplex Lattice Design* dengan program *Design Expert* Versi 8.0.6

Respon 1 Viskositas

Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value Prob > F	
Model	266.67	1	266.67	8.40	0.0230	significant
Linear Mixture	*266.67*	*1*	*266.67*	*8.40*	*0.0230*	
Residual	222.22	7	31.75			
Lack of Fit	*22.22*	*1*	*22.22*	*0.67*	*0.4454*	*not significant*
Pure Error	*200.00*	*6*	*33.33*			
Cor Total	488.89	8				

Final Equation in Terms of L_Pseudo Components:

viskositas =
+167.78 * A
+154.44 * B

Final Equation in Terms of Real Components:

viskositas =
+174.44444 * sorbitan 60
+147.77778 * polisorbat 60

Final Equation in Terms of Actual Components:

viskositas =
+43.61111 * sorbitan 60
+36.94444 * polisorbat 60

Respon 2 daya sebar

Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value Prob > F	
Model	0.47	1	0.47	34.49	0.0006	significant
Linear Mixture	*0.47*	*1*	*0.47*	*34.49*	*0.0006*	
Residual	0.095	7	0.014			
Lack of Fit	*0.090*	*1*	*0.090*	*118.23*	*< 0.0001*	*significant*
Pure Error	*4.583E-003*	*6*	*7.639E-004*			
Cor Total	0.56	8				

Final Equation in Terms of L_Pseudo Components:

daya sebar =
+2.81 * A
+3.37 * B

Final Equation in Terms of Real Components:

daya sebar =
+2.53333 * sorbitan 60
+3.65000 * polisorbat 60

Final Equation in Terms of Actual Components:

daya sebar =
+0.63333 * sorbitan 60
+0.91250 * polisorbat 60

Respon 3 aktivitas antibakteri

Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value Prob > F	
Model	1.667E-003	1	1.667E-003	0.20	0.6682	not significant
Linear Mixture	*1.667E-003*	*1*	*1.667E-003*	*0.20*	*0.6682*	
Residual	0.058	7	8.333E-003			
Lack of Fit	*5.000E-003*	*1*	*5.000E-003*	*0.56*	*0.4816*	*not significant*
Pure Error	*0.053*	*6*	*8.889E-003*			
Cor Total	0.060	8				

Final Equation in Terms of L_Pseudo Components:

antibakteri =

+2.98 * A

+2.95 * B

Final Equation in Terms of Real Components:

antibakteri =

+3.00000 * sorbitan 60

+2.93333 * polisorbat 60

Final Equation in Terms of Actual Components:

antibakteri =

+0.75000 * sorbitan 60

+0.73333 * polisorbat 60

Respon 4 Pergeseran Viskositas

Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Squares	df	Mean Square	F Value	p-value Prob > F	
Model	747.83	1	747.83	29.05	0.0010	significant
Linear Mixture	*747.83*	*1*	*747.83*	*29.05*	*0.0010*	
Residual	180.18	7	25.74			
Lack of Fit	*7.79*	*1*	*7.79*	*0.27*	*0.6213*	*not significant*
Pure Error	*172.39*	*6*	*28.73*			
Cor Total	928.01	8				

Final Equation in Terms of L_Pseudo Components:

pergeseran viskositas =
+42.57 * A
+20.24 * B

Final Equation in Terms of Real Components:

pergeseran viskositas =
+53.73356 * sorbitan 60
+9.07689 * polisorbat 60

Final Equation in Terms of Actual Components:

pergeseran viskositas =
+13.43339 * sorbitan 60
+2.26922 * polisorbat 60

Lampiran 10. Hasil analisa statistik ANOVA satu jalan

a. Viskositas

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
viskositas	9	161,1111	7,81736	150,00	170,00

One-Sample Kolmogorov-Smirnov Test

		viskositas
N		9
Normal Parameters[a,b]	Mean	161,1111
	Std. Deviation	7,81736
Most Extreme Differences	Absolute	,223
	Positive	,223
	Negative	-,221
Kolmogorov-Smirnov Z		,670
Asymp. Sig. (2-tailed)		,761

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

viskositas

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
formula I	3	166,6667	5,77350	3,33333	152,3245	181,0088	160,00	170,00
formula II	3	163,3333	5,77350	3,33333	148,9912	177,6755	160,00	170,00
formula III	3	153,3333	5,77350	3,33333	138,9912	167,6755	150,00	160,00
Total	9	161,1111	7,81736	2,60579	155,1022	167,1201	150,00	170,00

Test of Homogeneity of Variances

viskositas

Levene Statistic	df1	df2	Sig.
,000	2	6	1,000

ANOVA

viskositas

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	288,889	2	144,444	4,333	,068
Within Groups	200,000	6	33,333		
Total	488,889	8			

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
formula I	formula II	3,33333	4,71405	,768	-11,1307	17,7973
	formula III	13,33333	4,71405	,067	-1,1307	27,7973
formula II	formula I	-3,33333	4,71405	,768	-17,7973	11,1307
	formula III	10,00000	4,71405	,165	-4,4640	24,4640
formula III	formula I	-13,33333	4,71405	,067	-27,7973	1,1307
	formula I	-10,00000	4,71405	,165	-24,4640	4,4640

Homogeneous Subsets

viskositas

Tukey HSD[a]

formula	N	Subset for alpha = 0.05
		1
formula III	3	153,3333
formula II	3	163,3333
formula I	3	166,6667
Sig.		,067

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3,000.

b. Daya sebar

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
dayasebar	9	3,09167	,265165	2,875	3,475

One-Sample Kolmogorov-Smirnov Test

		dayasebar
N		9
Normal Parameters[a,b]	Mean	3,09167
	Std. Deviation	,265165
Most Extreme Differences	Absolute	,337
	Positive	,337
	Negative	-,211
Kolmogorov-Smirnov Z		1,010
Asymp. Sig. (2-tailed)		,259

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

dayasebar

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Formula I	3	2,88333	,014434	,008333	2,84748	2,91919	2,875	2,900
Formula II	3	2,95000	,025000	,014434	2,88790	3,01210	2,925	2,975
Formula III	3	3,44167	,038188	,022048	3,34680	3,53653	3,400	3,475
Total	9	3,09167	,265165	,088388	2,88784	3,29549	2,875	3,475

Test of Homogeneity of Variances

dayasebar

Levene Statistic	df1	df2	Sig.
1,217	2	6	,360

ANOVA

dayasebar

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,558	2	,279	365,182	,000
Within Groups	,005	6	,001		
Total	,563	8			

Post Hoc Tests

Multiple Comparisons

Daya sebar

Tukey HSD

(I) formula	(J) formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula I	Formula II	-,066667	,022567	,058	-,13591	,00257
	Formula III	-,558333	,022567	,000	-,62757	-,48909
Formula II	Formula I	,066667	,022567	,058	-,00257	,13591
	Formula III	-,491667	,022567	,000	-,56091	-,42243
Formula III	Formula I	,558333	,022567	,000	,48909	,62757
	Formula II	,491667	,022567	,000	,42243	,56091

Homogeneous Subsets

dayasebar

Tukey HSD[a]

formula	N	Subset for alpha = 0.05	
		1	2
Formula I	3	2,88333	
Formula II	3	2,95000	
Formula III	3		3,44167
Sig.		,058	1,000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3,000.

c. Aktivitas antibakteri

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
antibakteri	9	2,96667	,086603	2,900	3,100

One-Sample Kolmogorov-Smirnov Test

		antibakteri
N		9
Normal Parameters[a,b]	Mean	2,96667
	Std. Deviation	,086603
Most Extreme Differences	Absolute	,335
	Positive	,335
	Negative	-,221
Kolmogorov-Smirnov Z		1,005
Asymp. Sig. (2-tailed)		,265

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

Antibakteri

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Formula I	3	3,00000	,100000	,057735	2,75159	3,24841	2,900	3,100
Formula II	3	2,93333	,057735	,033333	2,78991	3,07676	2,900	3,000
Formula III	3	2,96667	,115470	,066667	2,67982	3,25351	2,900	3,100
Total	9	2,96667	,086603	,028868	2,90010	3,03324	2,900	3,100

Test of Homogeneity of Variances

antibakteri

Levene Statistic	df1	df2	Sig.
,857	2	6	,471

ANOVA

antibakteri

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,007	2	,003	,375	,702
Within Groups	,053	6	,009		
Total	,060	8			

Post Hoc Tests

Multiple Comparisons

antibakteri
Tukey HSD

(I) formula	(J) formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula I	Formula II	,066667	,076980	,679	-,16953	,30286
	Formula III	,033333	,076980	,903	-,20286	,26953
Formula II	Formula I	-,066667	,076980	,679	-,30286	,16953
	Formula III	-,033333	,076980	,903	-,26953	,20286
Formula III	Formula I	-,033333	,076980	,903	-,26953	,20286
	Formula II	,033333	,076980	,903	-,20286	,26953

Homogeneous Subsets

antibakteri

Tukey HSD[a]

formula	N	Subset for alpha = 0.05
		1
Formula II	3	2,93333
Formula III	3	2,96667
Formula I	3	3,00000
Sig.		,679

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3,000.

d. Pergeseran viskositas

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
pergeseranviskositas	9	31,40522	10,770383	13,333	47,059

One-Sample Kolmogorov-Smirnov Test

		pergeseranviskositas
N		9
Normal Parameters[a,b]	Mean	31,40522
	Std. Deviation	10,770383
Most Extreme Differences	Absolute	,159
	Positive	,102
	Negative	-,159
Kolmogorov-Smirnov Z		,476
Asymp. Sig. (2-tailed)		,977

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

pergeseranviskositas

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Formula I	3	41,91167	4,821776	2,783854	29,93371	53,88962	37,500	47,059
Formula II	3	32,72067	4,239821	2,447862	22,18837	43,25297	29,412	37,500
Formula III	3	19,58333	6,705947	3,871680	2,92484	36,24183	13,333	26,667
Total	9	31,40522	10,770383	3,590128	23,12637	39,68407	13,333	47,059

Test of Homogeneity of Variances

pergeseranviskositas

Levene Statistic	df1	df2	Sig.
,309	2	6	,745

ANOVA

pergeseranviskositas

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	755,618	2	377,809	13,150	,006
Within Groups	172,391	6	28,732		
Total	928,009	8			

Post Hoc Tests

Multiple Comparisons

pergeseranviskositas
Tukey HSD

(I) formula	(J) formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula I	Formula II	9,191000	4,376587	,170	-4,23757	22,61957
	Formula III	22,328333	4,376587	,005	8,89976	35,75691
Formula II	Formula I	-9,191000	4,376587	,170	-22,61957	4,23757
	Formula III	13,137333	4,376587	,054	-,29124	26,56591
Formula III	Formula I	-22,328333	4,376587	,005	-35,75691	-8,89976
	Formula II	-13,137333	4,376587	,054	-26,56591	,29124

Homogeneous Subsets

pergeseranviskositas

Tukey HSD[a]

formula	N	Subset for alpha = 0.05	
		1	2
Formula III	3	19,58333	
Formula II	3	32,72067	32,72067
Formula I	3		41,91167
Sig.		,054	,170

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3,000.