

BAB V

KESIMPULAN dan SARAN

A. Kesimpulan

Berdasarkan penelitian yang telah dilakukan dapat disimpulkan bahwa:

1. *Alpha arbutin* dapat dibuat sediaan serum *gel* dengan mutu fisik dan stabilitas yang baik.
2. Variasi *gelling agent Carbopol 940* mempengaruhi sifat fisik serum *gel Alpha arbutin*. Semakin tinggi konsentrasi *Carbopol 940* yang digunakan menyebabkan sediaan memiliki daya sebar rendah, pH yang tinggi, daya lekat tinggi dan viskositas yang tinggi.
3. Konsentrasi *gelling agent Carbopol 940* 0,75% menghasilkan serum *gel Alpha arbutin* dengan mutu fisik yang paling baik dilihat pada uji hedonic atau kesukaan.

B. Saran

1. Perlu penelitian lebih lanjut efek Pencerah wajah, untuk mengetahui efektifitas dan seberapa besar potensi *Alpha arbutin* dalam sediaan serum *gel*.
2. Perlu dilakukan penelitian selanjutnya untuk optimasi formula dan variasi *gelling agent* yang lebih teliti agar diperoleh sediaan serum *gel* dengan sifat mutu yang lebih baik.

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LAMPIRAN

Lampiran 1. Sertifikat of analysis



CERTIFICATE OF ANALYSIS

Product : **ALPHA-ARBUTIN**
 INCI : ALPHA-ARBUTIN
 CAS No. : 84380-01-8
 BATCH NUMBER : 11111327
 QUANTITY : 60 kg
 CHEMICAL NAME : 4-Hydroxyphenyl- α -D-glucopyranoside
 DESCRIPTION : White crystalline powder

Test Item	Specification	Results
Assay	Not less than 98 %	99.90%
Odour	Characteristic	Conforms
Solubility in water	Dissolved	Conforms
Loss on drying	Not more than 5.0%	0.2%
Heavy Metals (Pb)	Less than 3ppm	Conforms
Heavy Metals (As)	Less than 1ppm	Conforms
Heavy Metals (Cu)	Less than 1ppm	Conforms
Yeast & Mold	< 100/g	Conforms
E. Coli	Negative	Conforms
Salmonella Solvents	Negative	Conforms
Specific Optical Rotation	$[\alpha]_{D20} = +174.0^{\circ} - +186.0^{\circ}$	+179°
Hydroquinone	Negative	Conforms

Date of examination: January 8th, 2019
 Minimum Self-Life: January 8th, 2021

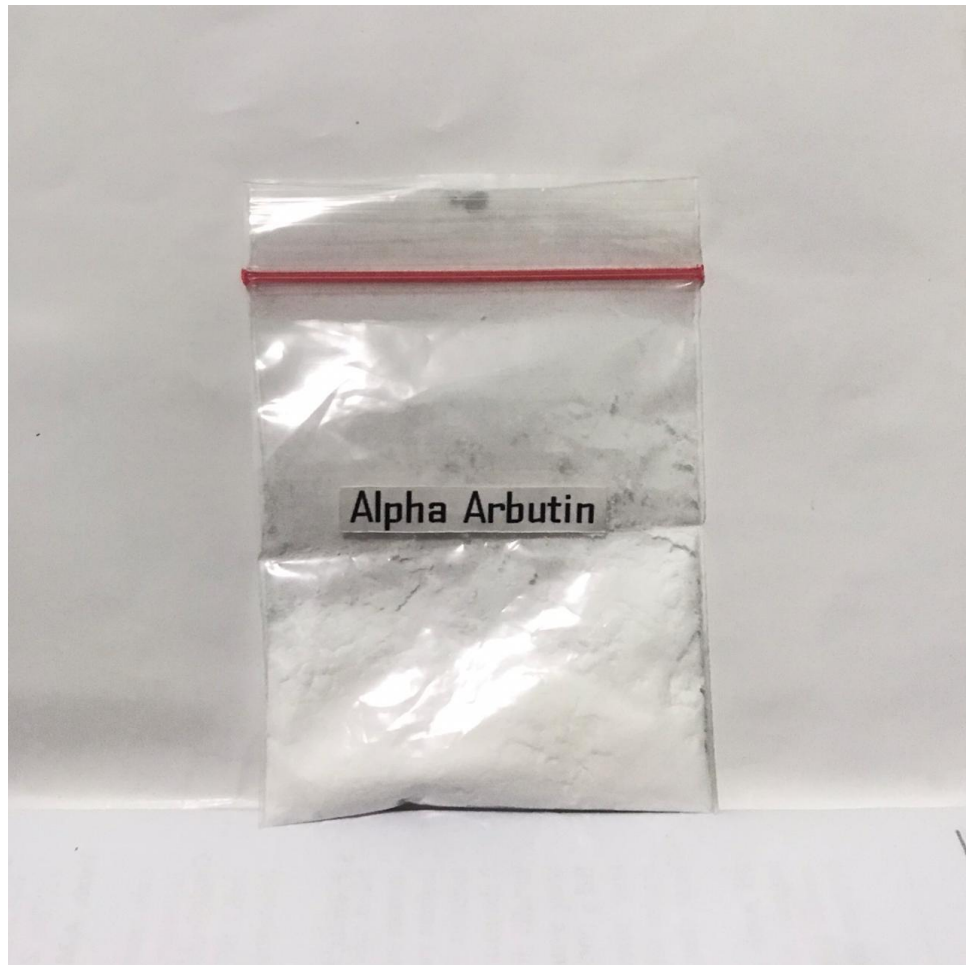
Dr. Samuel Escargo

QC Services Analytics

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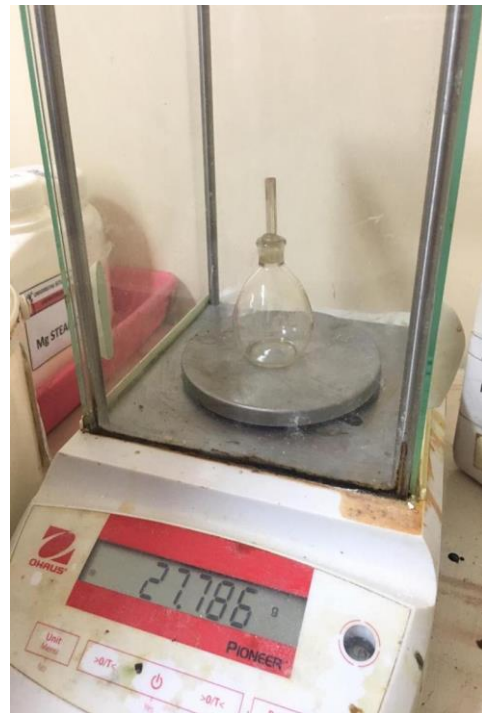
Lampiran 2. Gambar *Alpha arbutin*



Lampiran 3. Gambar alat dan proses pembuatan serum *gel Alpha arbutin*



Alat uji daya sebar



Alat timbang



Alat uji Viskositas



Proses pembuatan

Lampiran 4. Gambar alat dan proses pembuatan serum gel *Alpha arbutin*



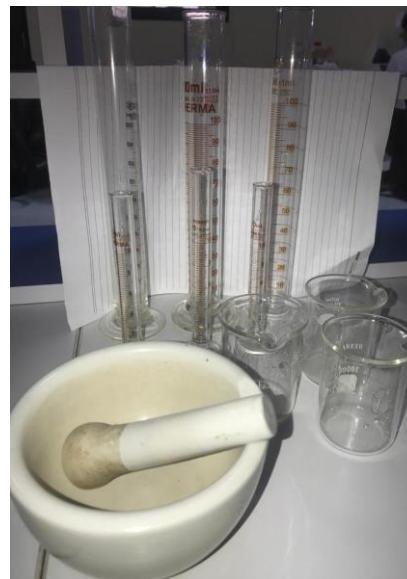
Alat uji stabilitas dipercepat



Alat uji daya Lekat



Alat uji PH



Alat alat praktikum

Lampiran 5. Sediaan serum gel *Alpha arbutin*

Penyimpanan hari ke-0



Penyimpanan hari ke-7



Penyimpanan hari ke-14



Penyimpanan hari ke-21



Lampiran 7. Hasil pengujian Daya Sebar FI serum gel *Alpha arbutin* menggunakan SPSS 21 Metode *one way anova*

Oneway

Notes		
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[DataSet0]

Descriptives

daya_sebar

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
hari uji ke 0	4	8,075	,6850	,3425	6,985	9,165
hari uji ke 7	4	7,525	,5620	,2810	6,631	8,419
hari uji ke 14	4	8,225	,9430	,4715	6,725	9,725
hari uji ke 21	4	7,975	,4573	,2287	7,247	8,703
Total	16	7,950	,6703	,1676	7,593	8,307

Descriptives

daya_sebar

	Minimum	Maximum
hari uji ke 0	7,3	8,9
hari uji ke 7	6,8	8,1
hari uji ke 14	7,1	9,3
hari uji ke 21	7,5	8,5
Total	6,8	9,3

Test of Homogeneity of Variances

daya_sebar

Levene Statistic	df1	df2	Sig.
,991	3	12	,430

ANOVA

daya_sebar

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1,090	3	,363	,772	,532
Within Groups	5,650	12	,471		
Total	6,740	15			

Lampiran 8. Hasil pengujian Daya Sebar FII serum gel *Alpha arbutin* menggunakan SPSS 21 Metode *one way anova*

Oneway

Notes		
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Syntax		
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[DataSet2]

Descriptives

daya_sebar

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
hari uji ke 0	4	7,600	,3742	,1871	7,005	8,195
hari uji ke 7	4	7,275	,7411	,3705	6,096	8,454
hari uji ke 14	4	7,175	,4113	,2056	6,521	7,829

hari uji ke 21	4	7,850	,4041	,2021	7,207	8,493
Total	16	7,475	,5298	,1324	7,193	7,757

Descriptives

daya_sebar

	Minimum	Maximum
hari uji ke 0	7,1	8,0
hari uji ke 7	6,6	8,3
hari uji ke 14	6,8	7,7
hari uji ke 21	7,3	8,2
Total	6,6	8,3

Test of Homogeneity of Variances

daya_sebar

Levene Statistic	df1	df2	Sig.
,753	3	12	,542

ANOVA

daya_sebar

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1,145	3	,382	1,494	,266
Within Groups	3,065	12	,255		
Total	4,210	15			

Lampiran 9. Hasil pengujian Daya Sebar FIII serum gel Alpha arbutin menggunakan SPSS 21 Metode *one way anova*

Oneway

Notes		
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Syntax		
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[DataSet3]

Descriptives

daya_sebar

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
hari uji ke 0	4	6,700	,5715	,2858	5,791	7,609
hari uji ke 7	4	6,550	,5508	,2754	5,674	7,426
hari uji ke 14	4	5,900	,3651	,1826	5,319	6,481

hari uji ke 21	4	6,550	,6245	,3122	5,556	7,544
Total	16	6,425	,5768	,1442	6,118	6,732

Descriptives

daya_sebar

	Minimum	Maximum
hari uji ke 0	6,1	7,4
hari uji ke 7	5,9	7,1
hari uji ke 14	5,5	6,3
hari uji ke 21	5,8	7,2
Total	5,5	7,4

Test of Homogeneity of Variances

daya_sebar

Levene Statistic	df1	df2	Sig.
,750	3	12	,543

ANOVA

daya_sebar

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1,530	3	,510	1,769	,207
Within Groups	3,460	12	,288		
Total	4,990	15			

Lampiran 9. Hasil pengujian Daya Lekat FI serum gel *Alpha arbutin* menggunakan SPSS 21 Metode *one way anova*

Oneway

Output Created		27-JUN-2020 11:19:18
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Missing Value Handling	Cases Used	Statistics for each analysis are based on cases with no missing data for any variable in the analysis.
		ONEWAY daya_lekat BY hari_uji_ke /STATISTICS DESCRIPTIVES HOMOGENEITY /MISSING ANALYSIS /POSTHOC=TUKEY LSD GH ALPHA(0.05).
Syntax		
Resources	Processor Time	00:00:00,05
	Elapsed Time	00:00:00,05

[DataSet4]

Descriptives

daya_lekat

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
hari uji ke 0	3	,3433	,08327	,04807	,1365	,5502
hari uji ke 7	3	,5467	,07024	,04055	,3722	,7211
hari uji ke 14	3	,4300	,05568	,03215	,2917	,5683
hari uji ke 21	3	,3933	,02309	,01333	,3360	,4507

Total	12	,4283	,09456	,02730	,3682	,4884
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Descriptives

daya_lekat

	Minimum	Maximum
hari uji ke 0	,25	,41
hari uji ke 7	,48	,62
hari uji ke 14	,38	,49
hari uji ke 21	,38	,42
Total	,25	,62

Test of Homogeneity of Variances

daya_lekat

Levene Statistic	df1	df2	Sig.
1,295	3	8	,341

ANOVA

daya_lekat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,067	3	,022	5,795	,200
Within Groups	,031	8	,004		
Total	,098	11			

Lampiran 9. Hasil pengujian Daya Lekat FIIserum gel *Alpha arbutin* menggunakan SPSS 21 Metode *one way anova*

Oneway

Notes

Output Created	27-JUN-2020 11:24:38
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Missing Value Handling	Cases Used	Statistics for each analysis are based on cases with no missing data for any variable in the analysis.	
Syntax		ONEWAY daya_lekat BY hari_uji_ke /STATISTICS DESCRIPTIVES HOMOGENEITY /MISSING ANALYSIS /POSTHOC=TUKEY LSD GH ALPHA(0.05).	
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[DataSet5]

Descriptives

daya_lekat

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
hari uji ke 0	3	,4500	,11136	,06429	,1734	,7266
hari uji ke 7	3	,6000	,05292	,03055	,4686	,7314
hari uji ke 14	3	,4333	,12014	,06936	,1349	,7318
hari uji ke 21	3	,5200	,07810	,04509	,3260	,7140
Total	12	,5008	,10596	,03059	,4335	,5682

Descriptives

daya_lekat

	Minimum	Maximum
hari uji ke 0	,35	,57
hari uji ke 7	,56	,66

hari uji ke 14	,31	,55
hari uji ke 21	,43	,57
Total	,31	,66

Test of Homogeneity of Variances

daya_lekat

Levene Statistic	df1	df2	Sig.
,571	3	8	,649

ANOVA

daya_lekat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,052	3	,017	1,941	,202
Within Groups	,071	8	,009		
Total	,123	11			

Lampiran 10. Hasil pengujian Daya Lekat FIII serum *gel Alpha arbutin* menggunakan SPSS 21 Metode *one way anova*

Oneway

Notes

Output Created		27-JUN-2020 11:30:06
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Syntax		ONEWAY daya_lekat BY hari_uji_ke /STATISTICS DESCRIPTIVES HOMOGENEITY /MISSING ANALYSIS /POSTHOC=TUKEY LSD GH ALPHA(0.05).
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[DataSet6]

Descriptives

daya_lekat

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
hari uji ke 0	3	,6900	,08000	,04619	,4913	,8887
hari uji ke 7	3	,6900	,07000	,04041	,5161	,8639
hari uji ke 14	3	,6033	,09018	,05207	,3793	,8274
hari uji ke 21	3	,6633	,04163	,02404	,5599	,7668
Total	12	,6617	,07222	,02085	,6158	,7076

Descriptives

daya_lekat

	Minimum	Maximum
hari uji ke 0	,61	,77
hari uji ke 7	,61	,74
hari uji ke 14	,51	,69
hari uji ke 21	,63	,71
Total	,51	,77

Test of Homogeneity of Variances

daya_lekat

Levene Statistic	df1	df2	Sig.
,393	3	8	,761

ANOVA

daya_lekat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,015	3	,005	,947	,462
Within Groups	,042	8	,005		
Total	,057	11			

Lampiran 11. Hasil pengujian pHserum gel *Alpha arbutin* menggunakan SPSS 21

Metode *one way anova*

Oneway

Notes

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Missing Value Handling		Statistics for each analysis are based on cases with no missing data for any variable in the analysis.
	Cases Used	

Syntax		ONEWAY ph formula BY hari_uji_ke /STATISTICS DESCRIPTIVES HOMOGENEITY /MISSING ANALYSIS /POSTHOC=TUKEY LSD GH ALPHA(0.05).
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[DataSet7]

Descriptives

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Ph	hari uji ke 0	3	6,1267	,34675	,20019	5,2653
	hari uji ke 7	3	6,0733	,56412	,32570	4,6720
	hari uji ke 14	3	5,9333	,42501	,24538	4,8776
	hari uji ke 21	3	6,1533	,37072	,21404	5,2324
	Total	12	6,0717	,38133	,11008	5,8294
Formula	hari uji ke 0	3	2,00	1,000	,577	-,48
	hari uji ke 7	3	2,00	1,000	,577	-,48
	hari uji ke 14	3	2,00	1,000	,577	-,48
	hari uji ke 21	3	2,00	1,000	,577	-,48
	Total	12	2,00	,853	,246	1,46

Descriptives

	N	95% Confidence Interval for Mean		Minimum	Maximum
		Upper Bound	Lower Bound		
Ph	hari uji ke 0	3	6,9880	5,74	6,41
	hari uji ke 7	3	7,4747	5,46	6,57
	hari uji ke 14	3	6,9891	5,51	6,36
	hari uji ke 21	3	7,0743	5,73	6,42

	Total	6,3140	5,46	6,57
	hari uji ke 0	4,48	1	3
	hari uji ke 7	4,48	1	3
Formula	hari uji ke 14	4,48	1	3
	hari uji ke 21	4,48	1	3
	Total	2,54	1	3

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Ph	,337	3	8	,799
Formula	,000	3	8	1,000

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Ph	Between Groups	,087	3	,029	,152	,925
	Within Groups	1,513	8	,189		
	Total	1,600	11			
Formula	Between Groups	,000	3	,000	,000	1,000
	Within Groups	8,000	8	1,000		
	Total	8,000	11			

Lampiran 12. Hasil pengujian Viskositas serum gel *Alpha arbutin* menggunakan SPSS 21 Metode *one way anova*

Oneway

Notes

Output Created		27-JUN-2020 11:45:51
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		/MISSING ANALYSIS
		/POSTHOC=TUKEY LSD GH ALPHA(0.05).
Resources	Processor Time	00:00:00,08
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[DataSet8]

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean
		Lower Bound				
viskositas	hari uji ke 0	3	22,33	5,508	3,180	8,65
	hari uji ke 7	3	22,33	5,508	3,180	8,65
	hari uji ke 14	3	22,33	5,508	3,180	8,65
	hari uji ke 21	3	22,33	5,508	3,180	8,65
	Total	12	22,33	4,697	1,356	19,35
Formula	hari uji ke 0	3	2,00	1,000	,577	-,48
	hari uji ke 7	3	2,00	1,000	,577	-,48
	hari uji ke 14	3	2,00	1,000	,577	-,48
	hari uji ke 21	3	2,00	1,000	,577	-,48
	Total	12	2,00	,853	,246	1,46

Descriptives

		95% Confidence Interval for Mean	Minimum	Maximum
		Upper Bound		
viskositas	hari uji ke 0	36,01	17	28
	hari uji ke 7	36,01	17	28
	hari uji ke 14	36,01	17	28
	hari uji ke 21	36,01	17	28
	Total	25,32	17	28
Formula	hari uji ke 0	4,48	1	3
	hari uji ke 7	4,48	1	3
	hari uji ke 14	4,48	1	3
	hari uji ke 21	4,48	1	3
	Total	2,54	1	3

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
viskositas	,000	3	8	1,000
Formula	,000	3	8	1,000

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
viskositas	Between Groups	,000	3	,000	,000	1,000
	Within Groups	242,667	8	30,333		
	Total	242,667	11			
Formula	Between Groups	,000	3	,000	,000	1,000
	Within Groups	8,000	8	1,000		
	Total	8,000	11			

Lampiran 13. Hasil pengujian Hedonik serum *gel Alpha arbutin*

Tabel kuisioner uji *hedonic* sediaan serum *gelAlpha arbutin*

Nama :
Usia:

Jenis kelamin :
Tanggal :

Formula	Tingkat kesukaan
1	
2	
3	

Keterangan :

1. Tidak suka
2. Agak Suka
3. Suka
4. Sangat Suka

Responden	F I	F II	F III
1	2	4	2
2	1	3	2
3	1	3	2
4	1	4	2
5	1	3	2
6	2	3	3
7	1	2	2
8	1	4	3

9	1	3	4
10	1	4	3
11	2	4	3
12	1	4	3
13	1	3	4
14	1	3	2
15	2	4	3
16	1	4	3
17	2	4	3
18	2	4	3
19	2	4	3
20	1	4	3
Total score:	28	71	55
Prsentase nilai	35%	88,75%	68,75%

Rumus : $N = Sp / Sn \times 100\%$. Prsentasi yang di dapat selanjutnya dikelompokan berdasarkan kriteria. Sangat suka jika nilai rata-rata $75 < x \leq 100\%$. Suka jika rata-rata $50 < x \leq 75\%$, agak suka jika nilai rata-rata $25 < x \leq 50\%$, tidak suka jika nilai rata-rata $0 < x \leq 25\%$.