

**Appendix 1. Spesifikasi Asam Sitrat “Multi Aroma”**

<b>Item</b>	<b>Unit</b>	<b>Standard Data</b>	<b>Actual Data</b>
Description	-	Colures crystal	As. Standard
Identification and Solubility	-	Pass test	Pass test
Clarity & Color of Solution	-	Pass test	Pass test
Content	%	99.5-101.0	99.93
Water	%	7.5-9.0	8.64
Barium	-	Pass test	Pass test
Calcium	-	Pass test	Pass test
Iron	Ppm	Less than 50	0.5
Arsenic	Ppm	Less than 1	0.1
Heavy Metals	Ppm	Less than 10	3
Oxalate	Ppm	Less than 350	30
Chloride	Ppm	Less than 50	3
Readily Carbonisable Substances	-	Pass test	Pass test
Sulphated Ash	%	Less than 0.1	0.02
Sulphate	Ppm	Less than 150	15

**Appendix 2. Spesifikasi *Essence* Jeruk Mandarin “Multi Aroma”**

<b>Parameter</b>	<b>Nilai</b>
Komponen utama	Extract daging buah jeruk
Kenampakan fisik	Berbentuk cair
Flavor	Asam
Kelarutan	Larut dengan baik dalam air



### Appendix 3. Kuesioner

<b>KUESIONER</b>	
Nama	:
Tanggal	:
Tanda tangan	:
Bahan	: Minuman Herbal Teh Meniran
Parameter	: Uji kesukaan terhadap <b>Aroma</b>
<p>Di hadapan Saudara disajikan 9 sampel minuman, Saudara diminta untuk memberikan penilaian terhadap <b>aroma</b> minuman tersebut. Kisaran nilai yang dapat diberikan adalah sebagai berikut:</p> <ul style="list-style-type: none"> <li>• Nilai 1 untuk aroma minuman yang paling tidak disukai</li> <li>• Nilai 10 untuk aroma minuman yang paling disukai</li> </ul>	
<b>Kode sampel</b>	<b>Nilai</b>
509	
172	
358	
946	
730	
261	
485	
604	
831	
<p>Komentar:.....</p>	

**KUESIONER**

Nama :  
Tanggal :  
Tanda tangan :  
Bahan : Minuman Herbal Teh Meniran  
Parameter : Uji kesukaan terhadap **Rasa**

Di hadapan Saudara disajikan 9 sampel minuman, Saudara diminta untuk memberikan penilaian terhadap **rasa** minuman tersebut. Kisaran nilai yang dapat diberikan adalah sebagai berikut:

- Nilai 1 untuk rasa minuman yang paling tidak disukai
- Nilai 10 untuk rasa minuman yang paling disukai

**Kode sampel    Nilai**

610

459

230

109

827

475

795

527

942

Komentar:.....

### KUESIONER

Nama :  
 Tanggal :  
 Tanda tangan :  
 Bahan : Minuman Herbal Teh Meniran  
 Parameter : Uji kesukaan terhadap **Warna**

Di hadapan Saudara disajikan 9 sampel minuman, Saudara diminta untuk memberikan penilaian terhadap **warna** minuman tersebut.

Kisaran nilai yang dapat diberikan adalah sebagai berikut:

- Nilai 1 untuk warna minuman yang paling tidak disukai
- Nilai 10 untuk warna minuman yang paling disukai

Kode sampel	Nilai
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426	
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217	
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320	
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124	
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513	
-----	--

251	
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846	
-----	--

791	
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305	
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Komentar:.....

**Appendix 4. Hasil Analisa Total Fenol**

## Data Absorbansi Minuman Fungsional Teh Meniran

Perlakuan	<b>B1</b>	<b>B2</b>	<b>B3</b>
<b>S1</b>	0,836	0,764	0,689
	0,830	0,753	0,500
	0,842	0,741	0,540
	Rata-rata= 0,836	Rata-rata=0,753	Rata-rata=0,576
<b>S2</b>	0,852	0,830	0,791
	0,847	0,828	0,783
	0,850	0,830	0,800
	Rata-rata=0,850	Rata-rata= 0,829	Rata-rata=0,791
<b>S3</b>	0,884	0,826	0,805
	0,934	0,822	0,814
	0,900	0,820	0,810
	Rata-rata=0,906	Rata-rata=0,823	Rata-rata=0,810

 $\lambda_{max} = 750nm$ 

## Data Absorbansi Ekstrak Uji Total Fenol

Teh hitam:Meniran	Ulangan 1	Ulangan 2	Ulangan 3
B3	0,633	0,807	0,770
B2	0,895	0,786	0,791
B1	0,466	0,417	0,422

## Data Kadar Uji Total Fenol (ekstrak)

Teh hitam:Meniran	Ulangan 1	Ulangan 2	Ulangan 3	Rata-rata (mg/100mL)
B3	2.128,9163	2.687,4679	2.568,6954	2.628,0816
B2	2.969,9538	2.620,0565	2.636,1068	2.628,0816
B1	3.185,6703	2.871,0837	2.903,1844	2.887,1340

Data Kadar Uji Total Fenol (sampel)

<b>S1</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>Rata-rata</b>
	2.780,5598	2.549,4300	1.766,1787	
	2.761,2994	2.514,1243	1.760,1788	
	2.799,8202	2.475,6035	1.766,1788	
	<b>Rata-rata= 2.780,5598</b>	<b>Rata-rata= 2.531,7772</b>	<b>Rata-rata= 1.766,1788</b>	<b>2.359,5053</b>
<b>S2</b>	2.831,9209	2.761,3000	2.636,1068	
	2.815,8706	2.754,8793	2.610,4263	
	2.825,5008	2.761,2994	2.664,9974	
	<b>Rata-rata= 2.828,7109</b>	<b>Rata-rata= 2.761,2997</b>	<b>Rata-rata= 2.623,2666</b>	<b>2.737,7591</b>
<b>S3</b>	2.934,6430	2.748,4592	2.681,0478	
	3.095,1464	2.735,6189	2.709,9384	
	2.986,0041	2.729,1988	2.697,0981	
	<b>Rata-rata= 2.960,3236</b>	<b>Rata-rata= 2.732,4089</b>	<b>Rata-rata= 2.689,0730</b>	<b>2.793,9352</b>
<b>Rata-rata</b>	<b>2.856,5314</b>	<b>2.675,1619</b>	<b>2.359,5061</b>	

Contoh cara perhitungan kadar fenol=

$$Y = 0,007788x - 0,0302$$

$$\text{Absorbansi } 0,689 \rightarrow 0,689 = 0,007788x - 0,0302$$

$$X = 92,3472 \times 25$$

$$X = 2.308,6800 \text{ mg/100 mL}$$

Uji Anava Total Fenol

Rasio Teh hitam:Meniran	Suhu	Ulangan			Total Perlakuan
		1	2	3	
B1	S1	2.780,5598	2.761,2994	2.799,8202	8.341,6794
	S2	2.831,9209	2.815,8706	2.825,5008	8.473,2923
	S3	2.934,6430	3.095,1464	2.986,0041	9.015,7935
B2	S1	2.549,4300	2.514,1243	2.475,6035	7.539,1578
	S2	2.761,3000	2.754,8793	2.761,2994	8.277,4748
	S3	2.748,4592	2.735,6189	2.729,1988	8.213,2769
B3	S1	2.308,6800	1.701,9774	1.830,3801	5.841,0375
	S2	2.636,1068	2.610,4263	2.664,9974	7.911,5305
	S3	2.681,0478	2.709,9384	2.697,0981	8.088,0843
Total kelompok		24.232,1475	23.699,2810	23.769,9024	71.701,3309

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$$J = 71.701,3309$$

$$F_k = 5.141.080.853 : 27 = 190.410.402$$

$$JKT = \{(2.780,5598)^2 + \dots + (2.697,0981)^2\} - 190.410.402 = 2.348.360,4$$

$$JKK = \{(24.232,1475)^2 + (23.699,2810)^2 + (23.769,9024)^2\} : 9 - 190.410.402$$

$$= 18.614,9425$$

$$= 2.124.745,673$$

$$JKG = JKT - JKK - JKP = 2.204.999,7850$$

Rasio Teh hitam:Meniran	Suhu(°C)			Total
	S1	S2	S3	
B1	8.341,6794	8.473,2923	9.015,7935	25.830,7652
B2	7.539,1578	8.277,4787	8.213,2769	24.029,9134
B3	5.841,0375	7.911,5305	8.088,0843	21.840,6523
Total	21.721,8747	24.662,3015	25.317,1547	

$$JK(A) = \{(25.830,7652)^2 + (24.029,9134)^2 + (21.840,6523)^2\} : 9 - 190.410.402 = 887.293,7463$$

$$JK(B) = \{(21.721,8747)^2 + (24.662,3015)^2 + (25.317,1547)^2\} : 9 - 190.410.402 = 814.851,0957$$

$$JK(AB) = JKP - JK(A) - JK(B) = 422.600,831$$

$$KT(A) = 295.764,5821$$

$$KT(B) = 271.617,0319$$

$$KT(AB) = 140.866,9437$$

Sumber variasi	Db	JK	KT	Fhitung	Ftabel
Perlakuan	8	2.124.745,6730	265.593,2091		
A	2	887.293,7463	295.764,5821	2,4144	3,63
B	2	814.851,0957	217.617,0319	2,2173	3,63
AB	4	422.600,8310	140.866,9437	1,1499	3,01
Kelompok	2	18.614,9425	9.307,4712		
Galat	16	2.204.999,7850	122.499,9881		
Total	26	2.348.360.437			



Keterangan = A = Rasio teh hitam – daun meniran

B = Suhu pasteurisasi

S1 = 60° C, 30 menit

S2 = 75° C, 15 menit

S3 = 90° C, 2 menit

B1 = 90 - 10 (teh hitam-daun meniran)

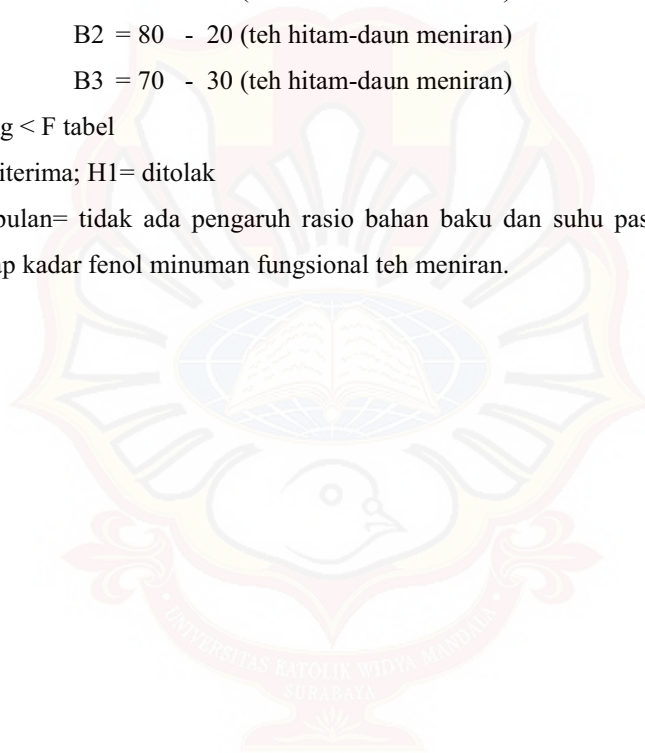
B2 = 80 - 20 (teh hitam-daun meniran)

B3 = 70 - 30 (teh hitam-daun meniran)

F hitung < F tabel

H0 = diterima; H1= ditolak

Kesimpulan= tidak ada pengaruh rasio bahan baku dan suhu pasteurisasi terhadap kadar fenol minuman fungsional teh meniran.



**Appendix 5. Hasil Analisa Flavonoid**

## Data Absorbansi Uji Flavonoid

Perlakuan	<b>B1</b>	<b>B2</b>	<b>B3</b>
<b>S1</b>	0,305	0,306	0,240
	0,302	0,303	0,237
	0,213	0,221	0,183
	Rata-rata= 0,273	Rata-rata=0,277	Rata-rata=0,220
<b>S2</b>	0,337	0,315	0,313
	0,334	0,313	0,310
	0,282	0,241	0,227
	Rata-rata=0,318	Rata-rata= 0,290	Rata-rata=0,283
<b>S3</b>	0,334	0,310	0,275
	0,330	0,307	0,274
	0,251	0,222	0,204
	Rata-rata=0,305	Rata-rata=0,280	Rata-rata=0,251

$\lambda$  max=510nm

## Data Absorbansi Ekstrak Uji Flavonoid

Teh hitam:Meniran	Ulangan 1	Ulangan 2	Ulangan 3
B3	0,220	0,221	0,274
B2	0,340	0,244	0,268
B1	0,361	0,116	0,133

## Data Kadar Uji Total Flavonoid (ekstrak)

Teh hitam:Meniran	Ulangan 1	Ulangan 2	Ulangan 3	Rata-rata (mg/100mL)
B3	56,7421	56,9888	70,0662	56,8655
B2	86,3512	62,6639	68,5857	65,6248
B1	91,5328	62,1616	70,5509	66,3563

Data Kadar Flavonoid (sampel)

S1	B1	B2	B3	Rata-rata
	77,7152	77,9620	61,6769	
	76,9750	77,2217	60,9367	
	55,0149	56,9888	47,6126	
	<b>Rata-rata= 77,3451</b>	<b>Rata-rata= 77,5919</b>	<b>Rata-rata= 61,3068</b>	<b>72,0813</b>
S2	85,6110	80,1827	79,6892	
	84,8708	79,6892	78,9489	
	72,0401	61,9237	58,4693	
	<b>Rata-rata= 85,2409</b>	<b>Rata-rata= 79,9360</b>	<b>Rata-rata= 79,3191</b>	<b>81,4987</b>
S3	84,8708	78,9489	70,3129	
	83,8838	78,2087	70,0662	
	64,3911	57,2356	52,7942	
	<b>Rata-rata= 84,3773</b>	<b>Rata-rata= 78,5788</b>	<b>Rata-rata= 70,1896</b>	<b>77,7152</b>
<b>Rata-rata</b>	<b>82,3211</b>	<b>78,7022</b>	<b>70,2718</b>	

Contoh cara perhitungan kadar flavonoid =

$$Y = 0,10132x - 0,0099643$$

Misal absorbansi 0,313  $\rightarrow 0,313 = 0,10132x - 0,0099643$

$$X = 3,1876 \times 25 = 79,6892$$

Uji Anava Flavonoid

Rasio Teh hitam:Meniran	Suhu (°C)	Ulangan			Total Perlakuan
		1	2	3	
B1	S1	77,7152	76,9750	55,0149	209,7051
	S2	85,6110	84,8708	72,0401	242,5219
	S3	84,8708	83,8838	64,3911	233,1457
B2	S1	77,9620	77,2217	56,9888	212,1725
	S2	80,1827	79,6892	61,9237	221,7956
	S3	78,9489	78,2087	57,2356	214,3932
B3	S1	61,6769	60,9367	47,6126	170,2262
	S2	79,6892	78,9489	58,4693	217,1074
	S3	70,3129	70,0662	52,7942	193,1733
Total kelompok		696,9696	690,8010	526,4703	1.914,2409

$$J = 1.914,2409$$

$$F_k = 3.664.318,223 : 27 = 135.715,4897$$

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$$JKT = \{(77,7152)^2 + \dots + (52,7942)^2\} - 135.715,4897 = 3.339,034$$

$$JKK = \{(696,9696)^2 + (690,801)^2 + (526,4703)^2\} : 9 - 135.715,4897 = 2.078,246045$$

$$JKP = \{(209,7051)^2 + \dots + (193,1733)^2\} : 3 - 135.715,4897 = 1.202,319183$$

$$JKG = JKT - JKK - JKP = 2.463,107138$$

Rasio Teh hitam:Meniran	Suhu(°C)			Total
	S1	S2	S3	
B1	209,7051	242,5219	233,1457	685,3727
B2	212,1725	221,7956	214,3932	648,3613
B3	170,2262	217,1074	193,1733	580,5069
Total	592,1038	681,4249	640,7122	

$$JK(A) = \{(685,3727)^2 + (648,3613)^2 + (580,5069)^2\} : 9 - 135.715,4897 = 628,5519$$

$$JK(B) = \{(592,1038)^2 + (681,4249)^2 + (640,7122)^2\} : 9 - 135.715,4897 = 444,3911$$

$$JK(AB) = JKP - JK(A) - JK(B) = 129,376183$$

$$KT(A) = 314,27595$$

$$KT(B) = 222,19555$$

$$KT(AB) = 32,3440$$

Sumber variasi	db	JK	KT	Fhitung	Ftabel
Perlakuan	8	1.202,319183	150,2899		
A	2	628,5519	314,27595	2,2967	3,63
B	2	444,3911	222,19555	1,6238	3,63
AB	4	129,376183	32,3440	0,2364	3,01
Kelompok	2	2.078,246045	1.039,1230		
Galat	16	2.463,107138	136,8393		
Total	26	3.339,034			

Keterangan = A = Rasio teh hitam – daun meniran

B = Suhu pasteurisasi

S1 = 60° C, 30 menit

S2 = 75° C, 15 menit

S3 = 90° C, 2 menit

B1 = 90 - 10 (teh hitam-daun meniran)

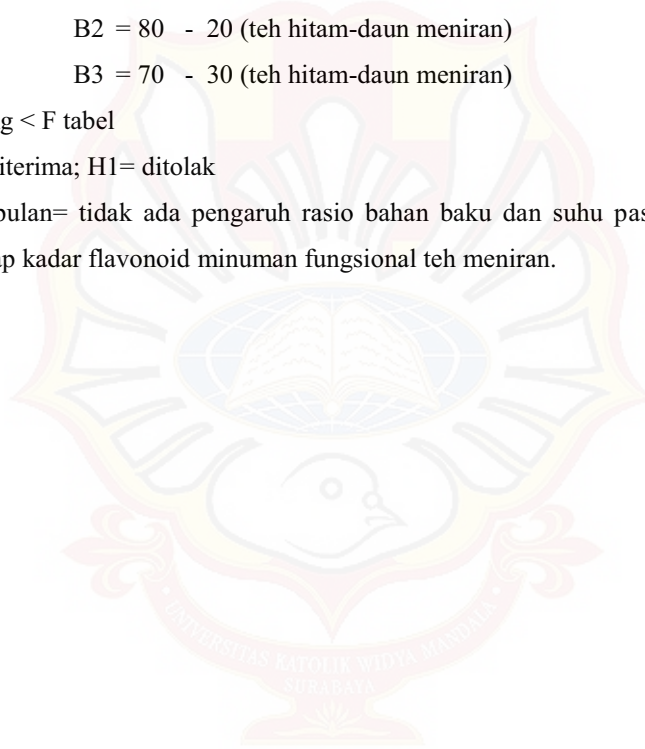
B2 = 80 - 20 (teh hitam-daun meniran)

B3 = 70 - 30 (teh hitam-daun meniran)

F hitung < F tabel

H0 = diterima; H1= ditolak

Kesimpulan= tidak ada pengaruh rasio bahan baku dan suhu pasteurisasi terhadap kadar flavonoid minuman fungsional teh meniran.



**Appendix 6. Hasil Analisa Aktivitas Antibakteri (*Escherichia coli*)**Data Aktivitas Antibakteri *Escherichia coli*

Perlakuan	B1	B2	B3
<b>S1</b>	0,91	-	-
	0,93	-	-
	0,94	-	-
	Rata-rata= 0,93	Rata-rata= -	Rata-rata= -
<b>S2</b>	-	1,02	1,02
	-	1,00	1,03
	-	1,03	1,02
	Rata-rata= -	Rata-rata= 1,02	Rata-rata= 1,02
<b>S3</b>	1,21	-	1,06
	1,21	-	1,05
	1,20	-	1,08
	Rata-rata= 1,21	Rata-rata= -	Rata-rata= 1,06

Keterangan(-) = tidak ada zona hambat

Data Kadar Uji Aktivitas Antibakteri *Escherichia coli*(ekstrak)

Teh hitam:Meniran	Ulangan 1	Ulangan 2	Ulangan 3	Rata-rata (mg/100mL)
B3	1,16	1,15	1,15	1,15
B2	1,00	0,98	0,95	0,96
B1	1,17	1,20	1,19	1,19

Keterangan(-) = tidak ada zona hambat

Uji Anava Aktivitas Antibakteri (*Escherichia coli*)

Rasio Teh hitam:Meniran	Suhu (°C)	Ulangan			Total Perlakuan
		1	2	3	
B1	S1	0,91	0,93	0,94	2,78
	S2	-	-	-	-
	S3	1,21	1,21	1,20	3,62
B2	S1	-	-	-	-
	S2	1,02	1,00	1,03	3,05
	S3	-	-	-	-
B3	S1	-	-	-	-
	S2	1,02	1,03	1,02	3,07
	S3	1,06	1,05	1,08	3,19
Total kelompok		5,22	5,22	5,27	15,71

$$J = 15,71$$

$$F_k = 246,8041 : 27 = 9,14089$$

$$JKT = \{(0,91)^2 + \dots + (1,08)^2\} - 9,14089 = 7,43941$$

$$JKK = \{(5,22)^2 + (5,22)^2 + (5,27)^2\} : 9 - 9,14089 \\ = 0,00018777$$

$$JKP = \{(2,78)^2 + \dots + (3,19)^2\} : 3 - 9,14089 \\ = 7,4379$$

$$JKG = JKT - JKK - JKP = 0,00132223$$

Rasio Teh hitam:Meniran	Suhu(°C)			Total
	S1	S2	S3	
B1	2,78	-	3,62	6,40
B2	-	3,05	-	3,05
B3	-	3,07	3,19	6,26
Total	2,78	6,12	6,81	

$$JK(A) = \{(6,40)^2 + (3,05)^2 + (6,26)^2\} : 9 - 9,14089 = 0,79801$$

$$JK(B) = \{(2,78)^2 + (6,12)^2 + (6,81)^2\} : 9 - 9,14089 = 1,0323$$

$$JK(AB) = JKP - JK(A) - JK(B) = 5,60759$$

$$KT(A) = 0,399005$$

$$KT(B) = 0,51615$$

$$KT(AB) = 1,4018975$$

Sumber variasi	Db	JK	KT	Fhitung	Ftabel
Perlakuan	8	7,4379	0,929737		
A	2	0,79801	0,399005	5.436,035	3,63
B	2	1,0323	0,51615	7.032,0163	3,63
AB	4	5,60759	1,4018975	19.099,42098	3,01
Kelompok	2	0,00018777	0,00009388		
Galat	16	0,00132223	0,0000734		
Total	26	7,43941			

Keterangan = A = Rasio teh hitam – daun meniran

B = Suhu pasteurisasi

S1 = 60° C, 30 menit

S2 = 75° C, 15 menit

S3 = 90° C, 2 menit

B1 = 90 - 10 (teh hitam-daun meniran)

B2 = 80 - 20 (teh hitam-daun meniran)

B3 = 70 - 30 (teh hitam-daun meniran)

F hitung > F tabel

H0 = ditolak; H1= diterima

Kesimpulan= ada pengaruh rasio bahan baku dan suhu pasteurisasi terhadap aktivitas antibakteri (*Escherichia coli*) minuman fungsional teh meniran

Uji DMRT

$$S_y = (KTG : n)^{1/2} = (0,0000734:3)^{1/2} = 2,4467 \times 10^{-5}$$

Tabel DMRT

	2	3	4	5	6	7	8	9
Rp	3	3,15	3,23	3,30	3,34	3,37	3,29	3,41
Rp	7,3 $\times 10^{-5}$	7,71 $\times 10^{-5}$	7,90 $\times 10^{-5}$	8,07 $\times 10^{-5}$	8,17 $\times 10^{-5}$	8,25 $\times 10^{-5}$	8,05 $\times 10^{-5}$	8,34 $\times 10^{-5}$

Tabel Beda Nyata Aktivitas Antibakteri (*E. coli*)

Perlakuan	Rata-rata	Notasi
90-10 (75°C)	0	a
80-20 (60°C)	0	a
80-20 (90°C)	0	a
70-30 (60°C)	0	a
90-10 (60°C)	0,93	b
80-20 (75°C)	1,02	c
70-30 (75°C)	1,02	d
70-30 (90°C)	1,06	e
90-10 (90°C)	1,21	f



### Appendix 7. Hasil Analisa Aktivitas Antibakteri (*Staphylococcus aureus*)

Data Aktivitas Antibakteri *Staphylococcus aureus*

Perlakuan	B1	B2	B3
S1	1,28	1,69	1,48
	1,25	1,70	1,48
	1,29	1,69	1,47
	Rata-rata= 1,27	Rata-rata= 1,69	Rata-rata= 1,48
S2	1,60	1,35	1,99
	1,61	1,35	1,98
	1,61	1,33	2,00
	Rata-rata= 1,61	Rata-rata= 1,34	Rata-rata= 1,99
S3	1,57	1,68	1,38
	1,55	1,66	1,38
	1,58	1,69	1,39
	Rata-rata= 1,57	Rata-rata= 1,68	Rata-rata= 1,38

Data Kadar Uji Aktivitas Antibakteri *Staphylococcus aureus*(ekstrak)

Teh hitam:Meniran	Ulangan 1	Ulangan 2	Ulangan 3	Rata-rata (mg/100mL)
B3	1,66	1,70	1,64	1,67
B2	1,62	1,65	1,64	1,64
B1	1,51	1,50	1,50	1,50

Keterangan(-)= tidak ada zona hambat

Uji Anava Aktivitas Antibakteri (*Staphylococcus aureus*)

Rasio Teh hitam:Meniran	Suhu (°C)	Ulangan			Total Perlakuan
		1	2	3	
B1	S1	1,28	1,25	1,29	3,82
	S2	1,60	1,61	1,61	4,82
	S3	1,57	1,55	1,58	4,70
B2	S1	1,69	1,70	1,69	5,08
	S2	1,35	1,35	1,33	4,03
	S3	1,68	1,66	1,69	5,03
B3	S1	1,48	1,48	1,47	4,43
	S2	1,99	1,98	2,00	5,97
	S3	1,38	1,38	1,39	4,15
Total kelompok		14,02	13,96	14,05	42,03

82

$$J = 42,03$$

$$F_k = 1.766,5209 : 27 = 65,4267$$

$$JKT = \{(1,28)^2 + \dots + (1,39)^2\} - 65,4267 = 1,1596$$

$$JKK = \{(14,02)^2 + (13,96)^2 + (14,05)^2\} : 9 - 65,4267$$

$$= 0,00046667$$

$$JKP = \{(3,82)^2 + \dots + (4,15)^2\} : 3 - 65,4267$$

$$= 1,1571$$

$$JKG = JKT - JKK - JKP = 0,00203333$$

Rasio Teh hitam:Meniran	Suhu(°C)			Total
	S1	S2	S3	
B1	3,82	4,82	4,70	13,34
B2	5,08	4,03	5,03	14,14
B3	4,43	5,97	4,15	14,55
Total	13,33	14,82	13,88	

$$JK(A) = \{(13,34)^2 + (14,14)^2 + (14,55)^2\} : 9 - 65,4267 = 0,0842$$

$$JK(B) = \{(13,33)^2 + (14,82)^2 + (13,88)^2\} : 9 - 65,4267 = 0,1262$$

$$JK(AB) = JKP - JK(A) - JK(B) = 0,9467$$

$$KT(A) = 0,0421$$

$$KT(B) = 0,0631$$

$$KT(AB) = 0,236675$$

Sumber variasi	db	JK	KT	Fhitung	Ftabel
Perlakuan	8	1,1571	0,14464		
A	2	0,0842	0,0421	372,6891	3,63
B	2	0,1262	0,0631	558,5910	3,63
AB	4	0,9467	0,236675	2.095,1588	3,63
Kelompok	2	0,00046667	0,0002333		
Galat	16	0,00203333	0,00011296		
Total	26	1,1596			

Keterangan = A = Rasio teh hitam – daun meniran

B = Suhu pasteurisasi

S1 = 60° C, 30 menit

S2 = 75° C, 15 menit

S3 = 90° C, 2 menit

B1 = 90 - 10 (teh hitam-daun meniran)

B2 = 80 - 20 (teh hitam-daun meniran)

B3 = 70 - 30 (teh hitam-daun meniran)

F hitung > F tabel

H0 = ditolak; H1= diterima

Kesimpulan= ada pengaruh rasio bahan baku dan suhu pasteurisasi terhadap aktivitas antibakteri (*Staphylococcus aureus*) minuman fungsional teh meniran.

Uji DMRT

$$S_y = (KTG : n)^{1/2} = (0,00011296:3)^{1/2} = 6,1363 \times 10^{-3}$$

Tabel DMRT

	2	3	4	5	6	7	8	9
rp	3	3,15	3,23	3,30	3,34	3,37	3,29	3,41
Rp	0,0184	0,0215	0,0198	0,0202	0,0205	0,0207	0,0202	0,0209

Tabel Beda Nyata Aktivitas Antibakteri (*Staphylococcus aureus*)

Perlakuan	Rata-rata	Notasi
90-10 (60°C)	1,27	a
80-20 (75°C)	1,34	b
70-30 (90°C)	1,38	c
70-30 (60°C)	1,48	d
90-10 (90°C)	1,57	e
90-10 (75°C)	1,61	f
80-20 (90°C)	1,68	g
80-20 (60°C)	1,69	h
70-30 (75°C)	1,99	i

**Appendix 8. Hasil Uji Organoleptik**

## Hasil Uji Organoleptik Warna

Panelis	426	217	320	124	513	251	846	791	305
1	6	8	8	7	7	4	5	8	7
2	3	4	3	5	5	2	3	3	4
3	3	4	3	5	5	2	3	3	4
4	7	7	6	8	7	7	7	7	6
5	5	7	6	8	5	6	8	5	5
6	5	5	5	5	5	5	5	5	5
7	7	8	1	9	4	2	3	6	5
8	6	5	6	6	7	7	6	7	7
9	5	7	6	8	6	3	7	8	4
10	7	4	8	8	4	7	7	7	7
11	8	8	7	7	9	8	8	8	7
12	3	7	10	9	4	2	6	9	5
13	8	7	6	7	7	7	8	6	9
14	6	6	7	8	7	8	8	5	6
15	4	4	5	5	4	6	5	5	5
16	4	2	2	6	2	4	6	4	4
17	8	9	8	7	7	5	8	8	9
18	5	7	7	6	4	9	8	6	8
19	10	8	10	7	9	6	8	8	5
20	8	8	6	8	6	6	6	7	5
21	7	6	7	9	5	6	6	7	6
22	7	7	9	5	8	5	8	6	8
23	8	3	7	8	8	8	6	6	9
24	8	6	5	7	3	6	5	7	6
25	3	4	5	6	1	4	7	4	6
26	3	3	4	4	2	3	4	5	4
27	5	3	5	4	2	3	2	4	4
28	2	5	5	2	1	2	4	2	1

Panelis	426	217	320	124	513	251	846	791	305
29	2	3	3	3	3	3	4	3	3
30	5	3	2	5	3	4	6	4	7
31	4	4	4	4	4	4	4	4	4
32	9	9	6	9	7	7	6	5	9
33	5	4	3	3	4	3	3	4	4
34	3	3	5	5	5	5	4	5	2
35	7	5	6	3	5	7	9	6	10
36	8	8	8	6	8	6	7	5	6
37	6	2	9	3	4	5	8	7	1
38	6	6	5	2	6	6	4	3	4
39	8	8	7	6	6	5	3	4	6
40	9	7	8	5	4	8	7	6	5
41	10	9	2	1	3	8	7	9	5
42	8	5	9	6	2	4	7	1	3
43	5	4	5	8	8	4	10	7	9
44	5	5	5	5	5	5	5	5	5
45	5	7	5	7	3	5	7	5	7
46	6	4	3	5	2	3	3	4	4
47	6	9	5	8	6	5	7	8	7
48	6	7	7	5	4	3	3	2	3
49	8	8	5	9	6	4	9	6	9
50	6	7	6	7	8	6	8	9	8
51	7	7	7	8	9	7	7	6	5
52	9	8	8	7	6	8	7	7	4
53	8	9	10	9	6	6	6	7	8
54	4	6	6	7	6	7	8	7	6
55	5	6	4	3	5	2	4	6	7
56	3	3	3	4	4	2	3	3	2
57	5	3	3	8	5	3	6	6	1
58	6	7	5	7	7	5	5	5	6

Panelis	426	217	320	124	513	251	846	791	305
59	5	4	3	7	8	6	9	2	1
60	6	5	7	6	6	6	5	6	6
61	7	9	6	10	9	8	9	8	8
62	7	8	5	7	8	4	7	6	7
63	5	4	9	7	6	6	7	8	6
64	9	8	3	5	7	1	2	4	6
65	8	8	7	7	8	7	7	7	8
66	7	8	9	10	7	7	5	7	8
67	6	5	4	3	8	2	3	4	5
68	5	6	5	6	6	5	4	6	3
69	5	6	5	4	3	1	2	3	2
70	6	7	6	7	7	8	7	5	6
71	7	7	7	7	7	7	7	7	7
72	6	7	4	8	8	4	4	7	6
73	5	5	1	2	3	1	7	4	6
74	6	7	8	7	6	7	8	7	6
75	7	9	4	8	7	5	8	6	8
76	7	8	5	8	6	7	5	6	8
77	5	7	4	9	6	8	5	7	5
78	6	8	4	7	5	4	6	6	8
79	8	6	4	7	5	6	8	7	6
80	5	4	6	8	7	3	7	6	5
Rata-rata	6,04	6,05	5,59	6,28	5,51	5,08	5,95	5,67	5,65

Keterangan=

426 (90:10,60°C)

217 (90:10,75°C)

320 (90:10,90°C)

124 (80:20,60°C)

513 (80:20,75°C)

251 (80:20,90°C)

846 (70:30,60°C)

791 (70:30,75°C)

305 (70:30,90°C)

Tabel Anava Uji Organoleptik Warna

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	83.3528	8	10.4191	2.646545	0.007279	1.951408
Within Groups	2799.13	711	3.936867			
Total	2882.45	719				

Uji DMRT

$$S_y = (KTG:n)^{1/2} = (0,00003936867:3)^{1/2} = 0,0036226$$

	2	3	4	5	6	7	8	9
Rp	3	3,15	3,23	3,30	3,34	3,37	3,29	3,41
Rp	0,0109	0,0114	0,0117	0,0119	0,0121	0,0122	0,0119	0,0124

Tabel Beda Nyata Uji Organoleptik Warna

Perlakuan	Rata-rata	Notasi
80-20 (90°C)	5,08	a
80-20 (75°C)	5,51	b
90-10 (90°C)	5,59	c
70-30 (90°C)	5,65	d
70-30 (75°C)	5,67	e
70-30 (60°C)	5,95	f
90-10 (60°C)	6,04	g
90-10 (75°C)	6,05	h
80-20 (60°C)	6,28	i

## Hasil Uji Organoleptik Aroma

Panelis	509	172	358	946	730	261	485	604	831
1	6	5	7	5	6	4	3	7	8
2	3	4	4	5	5	4	2	1	2
3	8	9	7	8	7	7	6	7	8
4	3	4	4	5	5	4	2	1	2
5	5	4	5	6	5	5	5	6	5
6	6	7	4	7	6	3	2	7	4
7	6	5	4	6	7	5	2	7	2
8	2	5	1	4	3	7	8	6	9
9	7	7	6	7	7	6	7	8	9
10	4	5	6	7	5	3	6	7	8
11	8	4	8	7	6	8	6	7	7
12	7	7	8	9	7	8	8	8	6
13	3	5	4	8	7	6	5	7	8
14	9	8	8	7	6	8	8	8	7
15	9	8	10	5	8	8	5	5	7
16	7	6	7	6	7	6	6	7	8
17	1	5	4	4	2	8	6	7	3
18	6	4	7	6	5	8	6	4	7
19	9	8	4	5	6	7	2	3	6
20	5	3	4	7	5	7	3	6	8
21	9	7	8	8	7	8	6	8	6
22	6	6	8	7	5	6	6	7	6
23	8	9	8	7	7	5	1	4	5
24	8	7	6	4	5	7	5	7	6
25	5	3	3	4	5	7	6	4	3
26	4	4	6	5	5	7	6	4	7
27	4	4	3	2	5	4	3	2	2



Panelis	509	172	358	946	730	261	485	604	831
28	3	2	2	3	2	1	1	1	1
29	5	5	3	1	4	4	1	1	1
30	3	5	5	2	1	3	2	1	3
31	4	4	3	3	4	4	5	4	4
32	6	6	10	7	6	8	6	8	10
33	9	7	9	7	7	6	9	9	9
34	5	2	4	2	3	1	2	3	4
35	3	3	5	4	3	5	3	3	4
36	7	4	6	3	9	5	7	6	10
37	7	5	5	6	7	3	5	6	4
38	5	9	8	6	7	4	1	2	3
39	2	6	3	3	6	6	7	7	6
40	1	4	5	6	5	4	3	5	7
41	1	3	4	2	6	7	6	1	9
42	10	7	8	9	6	2	1	3	5
43	6	10	8	9	5	7	4	2	1
44	4	10	1	2	9	3	1	1	8
45	5	5	2	3	4	5	6	4	8
46	7	7	1	7	1	5	1	5	7
47	3	3	4	5	4	5	3	4	6
48	5	10	4	8	5	6	3	2	7
49	4	5	4	4	6	6	3	4	5
50	7	7	6	7	6	8	7	6	8
51	8	9	8	7	7	7	4	6	7
52	10	9	10	8	7	8	10	10	8
53	8	6	6	6	7	7	6	5	6
54	7	7	9	8	6	7	2	2	1
55	3	8	4	7	6	4	3	2	7
56	2	6	5	4	5	4	3	2	3
57	1	4	3	5	2	2	5	2	4

Panelis	509	172	358	946	730	261	485	604	831
58	1	3	2	9	8	2	3	2	7
59	8	4	3	4	4	6	5	7	4
60	7	6	9	10	8	5	2	3	1
61	6	7	6	6	5	5	6	7	5
62	10	10	9	8	8	8	4	5	7
63	5	1	3	4	3	3	2	1	2
64	9	10	8	7	8	9	8	6	7
65	4	3	2	5	6	2	7	8	9
66	4	4	3	4	6	8	7	5	5
67	8	6	8	6	7	7	8	7	7
68	5	7	4	3	2	5	4	3	1
69	10	8	2	1	3	4	7	6	5
70	9	6	2	1	3	4	5	7	6
71	7	6	6	5	6	6	7	8	8
72	7	7	5	3	3	7	4	2	1
73	5	8	8	5	4	4	5	7	6
74	5	8	4	5	4	4	5	7	6
75	7	9	8	7	6	6	5	4	7
76	8	6	3	5	7	4	2	5	7
77	8	9	6	5	4	4	5	2	8
78	4	7	5	6	4	7	5	3	7
79	1	10	6	7	8	4	6	7	7
80	4	8	6	5	4	6	7	3	7
Rata-rata	5,64	6,05	5,34	5,45	5,39	5,41	4,62	4,84	5,69

Keterangan =

509 (90:10, 60°C)

172 (90:10, 75°C)

358 (90:10, 90°C)

946 (80:20, 60°C)

730 (80:20, 75°C)

261 (80;20, 90°C)

485 (70:30, 60°C)

604 (70:30, 75°C)

831 (70:30, 90°C)

Tabel Anava Uji Organoleptik Aroma

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	118.5528	8	14.8191	2.983816	0.002697	1.951408
Within Groups	3531.175	711	4.966491			
Total	3649.728	719				

Uji DMRT

$$S_y = (KTG:n)^{1/2} = (0,00004966491:3)^{1/2} = 0,004069$$

	2	3	4	5	6	7	8	9
Rp	3	3,15	3,23	3,30	3,34	3,37	3,29	3,41
Rp	0,0122	0,0128	0,0131	0,0134	0,0136	0,0137	0,0134	0,0139

Tabel Beda Nyata Uji Organoleptik Aroma

Perlakuan	Rata-rata	Notasi
70-30 (60°C)	4,62	a
70-30 (75°C)	4,84	b
90-10 (90°C)	5,34	c
80-20 (75°C)	5,39	d
80-20 (90°C)	5,41	e
80-20 (60°C)	5,45	f
90-10 (60°C)	5,64	g
70-30 (90°C)	5,69	h
90-10 (75°C)	6,05	I

## Hasil Uji Organoleptik Rasa

Panelis	610	459	230	109	827	475	795	527	942
1	7	7	6	8	6	7	5	5	5
2	4	5	3	2	3	2	1	1	2
3	7	3	5	2	5	2	1	3	4
4	4	5	3	2	3	2	1	1	2
5	5	5	4	4	5	3	4	6	5
6	4	5	6	2	3	4	3	2	4
7	4	5	5	1	2	1	2	3	3
8	6	10	9	4	8	5	3	1	2
9	7	5	6	7	6	8	4	3	3
10	10	9	10	7	6	5	10	9	8
11	7	7	8	8	5	7	3	4	9
12	9	9	8	9	8	9	8	6	7
13	7	5	6	7	8	7	9	8	6
14	9	8	9	7	6	7	8	9	6
15	9	10	8	4	6	6	5	7	8
16	6	8	6	7	6	5	3	4	3
17	1	4	8	6	3	2	1	2	1
18	10	8	9	4	6	2	3	1	2
19	9	8	7	3	8	6	2	5	7
20	9	7	10	6	5	6	6	6	1
21	8	6	8	8	7	5	5	7	6
22	6	4	5	4	5	5	6	5	5
23	7	8	7	2	1	2	1	3	4
24	8	6	6	7	7	6	3	4	3
25	5	4	5	4	5	4	5	2	6
26	5	4	5	4	5	3	2	1	3
27	10	10	10	8	8	6	2	4	6
28	4	4	6	8	6	2	4	2	4
29	10	8	10	4	2	8	2	4	2

Panelis	610	459	230	109	827	475	795	527	942
30	6	6	4	4	4	2	2	2	2
31	6	8	4	6	6	8	4	6	8
32	10	8	7	9	7	8	6	5	5
33	8	7	8	6	6	6	2	2	3
34	10	8	4	4	2	4	2	4	6
35	8	6	10	10	10	6	4	4	4
36	5	7	9	6	7	3	2	3	8
37	4	6	9	4	6	4	2	6	5
38	8	9	6	3	7	5	2	4	1
39	7	2	3	5	2	2	1	1	1
40	5	4	3	3	2	4	5	4	4
41	7	2	1	1	5	6	1	2	1
42	5	2	1	7	4	3	8	6	5
43	2	8	1	3	5	4	6	7	9
44	10	9	1	2	1	5	1	2	1
45	4	5	2	2	2	3	1	2	3
46	5	10	1	10	5	10	1	5	1
47	3	6	5	4	3	2	2	3	3
48	5	4	8	7	9	6	1	3	2
49	10	8	6	6	6	4	4	2	6
50	6	7	6	6	7	7	7	8	6
51	4	5	2	6	2	1	1	1	5
52	5	10	5	10	10	10	2	2	2
53	4	3	1	2	1	5	3	3	6
54	7	10	8	9	9	8	2	2	1
55	8	9	7	9	7	8	3	3	1
56	5	4	5	3	3	5	3	2	3
57	7	5	2	3	4	1	2	1	2
58	1	3	2	6	8	7	2	1	1
59	3	4	5	3	6	1	5	1	2

Panelis	610	459	230	109	827	475	795	527	942
60	1	6	4	5	7	8	2	3	9
61	6	7	5	5	4	5	4	5	6
62	10	5	4	1	1	2	1	1	2
63	5	6	4	3	4	3	1	1	3
64	3	4	2	5	6	6	7	8	9
65	8	5	4	7	6	2	1	1	1
66	8	8	9	7	10	9	9	10	9
67	6	7	7	6	7	6	6	6	7
68	4	6	7	3	2	5	1	1	5
69	5	5	4	6	3	2	3	4	2
70	8	3	2	2	4	1	2	1	4
71	2	9	7	6	6	4	4	5	7
72	6	6	7	4	4	4	3	2	1
73	6	7	8	5	4	3	1	2	2
74	7	8	8	1	1	2	1	3	2
75	3	9	6	7	8	5	3	5	4
76	7	8	7	6	5	4	4	3	1
77	8	8	6	5	5	4	3	2	2
78	9	8	7	6	4	4	3	3	2
79	8	7	7	6	6	5	5	3	1
80	6	7	6	5	5	4	3	2	3
Rata-rata	6,26	6,39	5,69	5,11	5,15	4,66	3,32	3,57	3,95

Keterangan=

610 (90-10, 60°C)

459 (90-10, 75°C)

230 (90-10, 90°C)

109 (80-20, 60°C)

827 (80-20, 75°C)

475 (80-20, 90°C)

795 (70-30, 60°C)

527 (70-30, 75°C)

942 (70-30, 90°C)

Tabel Anava Uji Organoleptik Rasa

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	799.3611	8	99.92014	18.51705	2.45E-25	1.951408
Within Groups	3836.638	711	5.396115			
Total	4635.999	719				

Uji DMRT

$$S_y = (KTG:n)^{1/2} = (0,00005396115:3)^{1/2} = 0,0042411$$

	2	3	4	5	6	7	8	9
Rp	3	3,15	3,23	3,30	3,34	3,37	3,29	3,41
Rp	0,0127	0,0134	0,0137	0,0140	0,0142	0,0143	0,0140	0,0145

Tabel Beda Nyata Uji Organoleptik Rasa

Perlakuan	Rata-rata	Notasi
70:30 (60°C)	3,32	a
70:30 (75°C)	3,57	b
70:30 (90°C)	3,95	c
80:20 (90°C)	4,66	d
80:20 (60°C)	5,11	e
80:20 (75°C)	5,15	f
90:10 (90°C)	5,69	g
90:10 (60°C)	6,26	h
90:10 (75°C)	6,39	i

**Appendix 9. Hasil Pengamatan Kadar Air**

Pengamatan ke-	Kode 33	Kode 4	Kode 17
1	13,0964	12,9250	11,6420
2	13,0960	12,9245	11,6416
3	13,0958	12,9243	11,6413
4	13,0958	12,9243	11,6409
5	-	-	11,6408
Kadar air	71,11%	77,90%	77,83%

Contoh perhitungan =

Kode 33

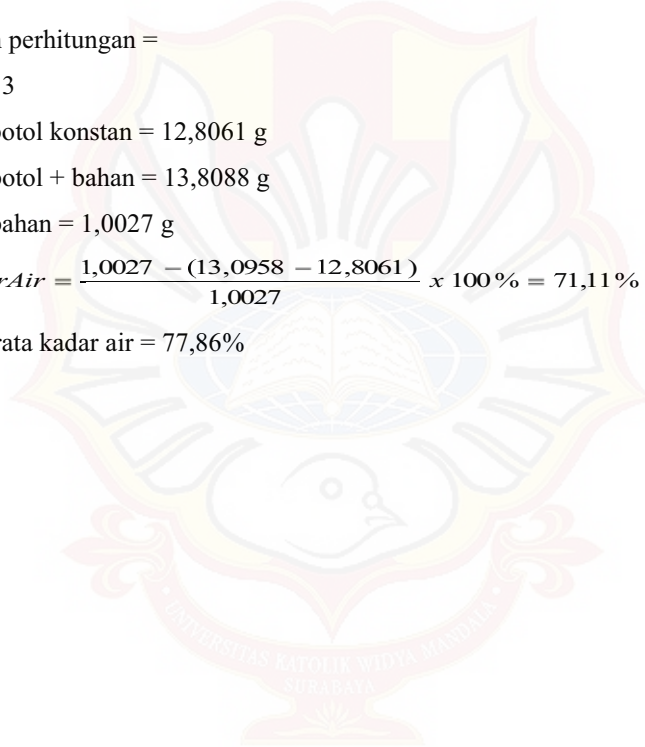
Berat botol konstan = 12,8061 g

Berat botol + bahan = 13,8088 g

Berat bahan = 1,0027 g

$$\text{Kadar Air} = \frac{1,0027 - (13,0958 - 12,8061)}{1,0027} \times 100\% = 71,11\%$$

Rata –rata kadar air = 77,86%





**Appendix 10. Gambar Minuman Fungsional Teh Meniran**

Teh hitam - Meniran  
(70:30)

90°C, 75°C, 60°C



Teh hitam - Meniran  
(80:20)

90°C, 75°C, 60°C



Teh hitam - Meniran  
(90:10)

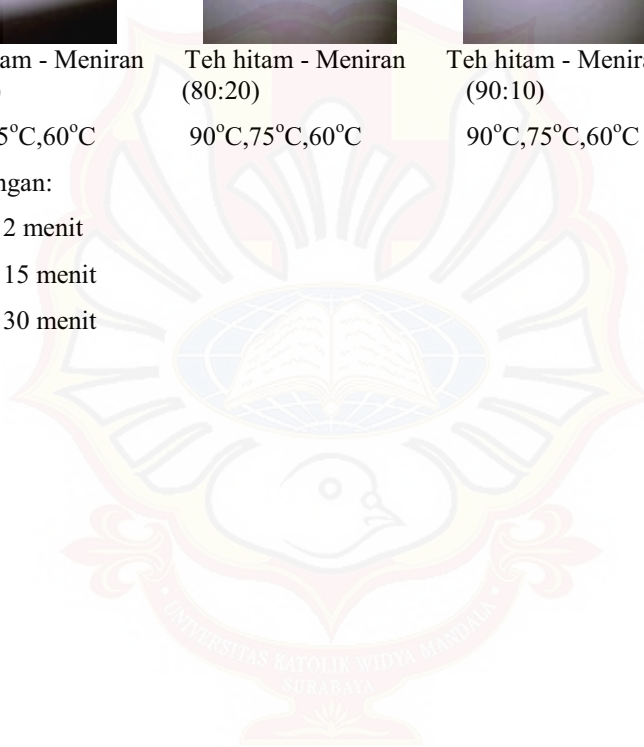
90°C, 75°C, 60°C

Keterangan:

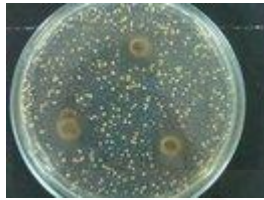
90°C – 2 menit

75°C – 15 menit

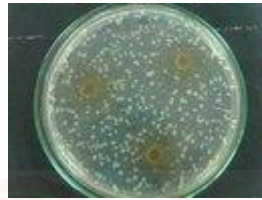
60°C – 30 menit



**Appendix 11. Gambar Antibakteri Minuman Fungsional Teh Meniran (Perlakuan Terbaik)**



70-30, 75°C(15 menit)  
*Staphylococcus aureus*



90-10, 90°C(2 menit)  
*Escherichia coli*

