

LAMPIRAN

Lampiran 1. Perhitungan penyiapan agonis dan piperin

Penyiapan adrenalin

$$M = \frac{\text{bobot (gram)}}{BM} \times \frac{1000}{\text{volume (ml)}}$$

$$2 \times 10^{-3} = \frac{\text{bobot (gram)}}{183,2044} \times \frac{1000}{10 \text{ ml}}$$

$$\text{Bobot (gram)} = \frac{183,2044 \times 0,002}{100}$$

$$\text{Bobot (gram)} = 0.003664$$

$$\text{Bobot (mg)} = 3,66 \text{ mg}$$

Sediaan injeksi adrenalin 1mg/ml

$$\text{Volume yang diambil (ml)} = \frac{3,66 \text{ mg}}{1 \text{ mg/ml}}$$

$$\text{Volume yang diambil (ml)} = 3,66 \text{ ml ad } 10 \text{ ml}$$

- Adrenalin stok :

$$3,66 \text{ ml ad } 10 \text{ ml} = 2 \times 10^{-3}$$

Penyiapan piperin

$$M = \frac{\text{bobot (gram)}}{BM} \times \frac{1000}{\text{volume (ml)}}$$

$$2 \times 10^{-2} = \frac{\text{bobot (gram)}}{285,34} \times \frac{1000}{5 \text{ ml}}$$

$$\text{Bobot (gram)} = \frac{285,34 \times 0,02}{200}$$

$$\text{Bobot (gram)} = 0,0028534 \text{ gr}$$

$$\text{Bobot (mg)} = 28,534 \text{ mg}$$

Stok piperin :

$$28,354 \text{ ad } 5 \text{ ml} = 2 \times 10^{-2}$$

Lampiran 2. Data pengaruh timolol Terhadap Reseptor B₂ Adrenergik Otot Polos Aorta

Data respon kontraksi seri adrenalin tanpa praperlakuan antagonis

log	Respon kontraksi										Mean	SEM	
	1	2	3	4	5	6	7	8	9	10			
-													
10.0	28.95	28.13	14.81	40.74	20.69	18.01	16.67	14.67	18.18	18.60	21.94	2.61	
-9.5	36.84	37.50	33.33	44.44	24.14	25.59	22.92	24.00	29.55	23.26	30.16	2.38	
-9.0	36.84	37.50	38.89	48.15	29.31	35.07	29.17	33.33	34.09	27.91	35.03	1.88	
-8.5	60.53	59.38	53.70	48.15	41.38	45.97	50.00	40.00	47.73	34.88	48.17	2.60	
-8.0	63.16	81.25	68.52	48.15	55.17	54.98	54.17	45.33	54.55	44.19	56.95	3.59	
-7.5	73.68	93.75	83.33	48.15	70.69	67.30	54.17	56.00	63.64	44.19	65.49	4.93	
-7.0	84.21	93.75	100.00	51.85	70.69	73.93	54.17	61.33	75.00	60.47	72.54	5.15	
-6.5	89.47	93.75	100.00	51.85	87.93	82.94	54.17	68.00	86.36	76.74	79.12	5.16	
-6.0	97.37	100.00	100.00	51.85	87.93	91.00	79.17	68.00	86.36	83.72	84.54	4.80	
-5.5	100.00	100.00	100.00	66.67	93.10	96.68	83.33	80.00	90.91	93.02	90.37	3.42	
-5.0	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	

Data respon kontraksi seri adrenalin akibat praperlakuan timolol 10 μ M

log	Respon kontraksi					Mean	SEM
	1	2	3	4	5		
-10.0	15.65	10.42	4.00	18.18	9.30	11.51	2.49
-9.5	25.22	22.92	8.00	27.27	11.63	19.01	3.86
-9.0	27.83	29.17	13.33	29.55	18.60	23.70	3.27
-8.5	40.00	35.42	18.67	36.36	25.58	31.21	3.94
-8.0	47.83	39.58	26.67	38.64	25.58	35.66	4.21
-7.5	48.70	39.58	33.33	40.91	37.21	39.95	2.54
-7.0	52.17	39.58	37.33	45.45	41.86	43.28	2.60
-6.5	78.26	45.83	42.67	54.55	44.19	53.10	6.62
-6.0	83.48	54.17	52.00	68.18	46.51	60.87	6.69
-5.5	90.43	54.17	74.67	81.82	60.47	72.31	6.69
-5.0	95.65	56.25	74.67	88.64	72.09	77.46	6.86

Data respon kontraksi seri adrenalin akibat praperlakuan timolol 50 μ M

log	Respon kontraksi					Mean	SEM
	1	2	3	4	5		
-10.0	28.95	21.88	18.52	18.52	24.14	22.40	1.95
-9.5	36.84	21.88	25.93	18.52	24.14	25.46	3.10
-9.0	36.84	21.88	25.93	18.52	24.14	25.46	3.10
-8.5	60.53	31.25	27.78	18.52	24.14	32.44	7.33
-8.0	63.16	31.25	33.33	18.52	27.59	34.77	7.54
-7.5	73.68	31.25	40.74	18.52	32.76	39.39	9.28
-7.0	84.21	31.25	48.15	44.44	34.48	48.51	9.45
-6.5	89.47	31.25	55.56	48.15	41.38	53.16	9.92
-6.0	97.37	62.50	74.07	51.85	51.72	67.50	8.53
-5.5	100.00	75.00	74.07	51.85	51.72	70.53	8.95
-5.0	100.00	75.00	79.63	51.85	68.97	75.09	7.81

Data nilai pD₂ Timolol

No.	Nilai pD ₂		
	(-) Timolol	(+)Timolol 10	(+)Timolol 50
1	8.73	7.33	6.76
2	8.73	6.26	6.21
3	8.64	6.11	6.88
4	7.26	6.76	6.26
5	8.20	5.88	5.60
6	8.29		
7	8.17		
8	7.79		
9	8.35		
10	7.34		
Mean	8.15	6.47	6.34
SEM	0.17	0.18	0.16

Lampiran 3. Data pengaruh Piperin Terhadap Reseptor β_2 Adrenergik Otot Polos Aorta

Data respon kontraksi seri adrenalin tanpa praperlakuan antagonis

log	Respon kontraksi										Mean	SEM
	1	2	3	4	5	6	7	8	9	10		
-												
10.0	22.73	20.45	53.57	15.19	27.78	15.57	17.86	16.92	16.92	20.69	22.77	3.63
-9.5	39.39	20.45	53.57	17.72	27.78	25.41	27.98	26.15	26.15	20.69	28.53	3.35
-9.0	45.45	25.00	53.57	27.85	27.78	35.25	33.33	30.77	30.77	27.59	33.74	2.86
-8.5	60.61	34.09	53.57	45.57	36.11	40.98	41.67	43.08	43.08	39.66	43.84	2.51
-8.0	75.76	52.27	78.57	63.29	38.89	51.64	50.60	49.23	49.23	50.00	55.95	3.99
-7.5	93.94	54.55	100.00	63.29	38.89	54.92	53.57	52.31	52.31	60.34	62.41	6.12
-7.0	95.45	72.73	100.00	63.29	55.56	53.28	70.24	58.46	58.46	60.34	68.78	5.20
-6.5	100.00	77.27	100.00	63.29	88.89	68.03	83.33	70.77	70.77	72.41	79.48	4.14
-6.0	100.00	84.09	100.00	63.29	88.89	74.59	84.52	92.31	92.31	86.21	86.62	3.54
-5.5	100.00	84.09	100.00	65.82	100.00	86.89	89.29	100.00	100.00	89.66	91.57	3.50
-5.0	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00

Data respon kontraksi seri adrenalin akibat praperlakuan piperin 10 μ M

log	Respon kontraksi					Mean	SEM
	1	2	3	4	5		
-							
10.0	5.74	11.90	16.92	13.27	12.07	11.98	1.80
-9.5	6.56	11.90	26.15	15.04	15.52	15.04	3.21
-9.0	9.84	11.90	30.77	18.58	20.69	18.36	3.70
-8.5	13.11	21.43	43.08	21.24	24.14	24.60	4.97
-8.0	13.11	25.00	52.31	23.01	37.93	30.27	6.78
-7.5	14.75	33.33	52.31	23.01	43.10	33.30	6.74
-7.0	18.03	33.33	58.46	35.40	51.72	39.39	7.16
-6.5	26.23	38.10	70.77	47.79	58.62	48.30	7.76
-6.0	32.79	44.05	92.31	52.21	65.52	57.37	10.24
-5.5	44.26	47.62	100.00	59.29	72.41	64.72	10.11
-5.0	59.02	70.24	100.00	67.26	79.31	75.16	7.01

Data respon kontraksi seri adrenalin akibat praperlakuan piperin 50 μ M

log	Respon kontraksi					Mean	SEM
	1	2	3	4	5		
-							
10.0	18.18	0.00	0.00	12.66	16.67	9.50	3.98
-9.5	18.18	13.64	17.86	12.66	16.67	15.80	1.12
-9.0	22.73	13.64	17.86	12.66	16.67	16.71	1.78
-8.5	30.30	13.64	46.43	12.66	27.78	26.16	6.20
-8.0	36.36	22.73	46.43	12.66	44.44	32.52	6.48
-7.5	39.39	34.09	46.43	12.66	44.44	35.40	6.08
-7.0	45.45	43.18	46.43	12.66	44.44	38.43	6.47
-6.5	45.45	43.18	46.43	27.85	47.22	42.03	3.61
-6.0	48.48	50.00	46.43	27.85	58.33	46.22	5.02
-5.5	51.52	50.00	57.14	70.89	99.00	65.71	9.10
-5.0	57.58	63.64	67.86	70.89	100.00	71.99	7.35

Data nilai pD2 piperin

No.	Nilai pD2		
	(-) piperin	(+) piperin 10	(+) piperine 100
1	8.86	5.32	5.76
2	8.48	5.47	6.02
3	8.60	6.96	5.84
4	8.39	6.26	5.75
5	7.17	7.10	6.39
6	8.08		
7	8.03		
8	8.13		
9	8.25		
10	8.02		
Mean	8.20	6.22	5.95
SEM	0.14	0.26	0.08

Lampiran 4. Hasil Uji Statistik Pada Uji Pengaruh Timolol Reseptor β_2 Adrenergik Otot Polos Aorta

Case Processing Summary

perlakuan		Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
pD2	non timolol	10	100.0%	0	.0%	10	100.0%
	10 mikro	5	100.0%	0	.0%	5	100.0%
	50 mikro	5	100.0%	0	.0%	5	100.0%

Tests of Normality

perlakuan		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
pD2	non timolol	.215	10	.200 [*]	.891	10	.175
	10 mikro	.240	5	.200 [*]	.933	5	.619
	50 mikro	.198	5	.200 [*]	.931	5	.604

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Tes normalitas untuk menguji data normal atau tidak dengan ditunjukkan dengan nilai $p > 0,05$ dengan kepercayaan 95%, dan terlihat bahwa nilai sig. $> 0,05$ yang berarti data tersebut normal.

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
pD2	Based on Mean	.095	2	17	.910
	Based on Median	.029	2	17	.971
	Based on Median and with adjusted df	.029	2	16.340	.971
	Based on trimmed mean	.084	2	17	.919

Tes homogenitas untuk mengetahui persebaran data homogen atau tidak dengan ditunjukkan nilai sig. > 0,05 dengan kepercayaan 95% dan terlihat bahwa nilai sig. > 0,05 yang berarti data tersebut homogen.

Oneway

Test of Homogeneity of Variances

pD2

Levene Statistic	df1	df2	Sig.
.095	2	17	.910

ANOVA

pD2

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15.265	2	7.632	26.278	.000
Within Groups	4.938	17	.290		
Total	20.202	19			

Uji anova untuk mengetahui karakteristik dari suatu data yang memiliki lebih dari 2 variabel. Perbedaan ditunjukkan dengan nilai sig. < 0,05 dengan tingkat kepercayaan 95%. dan terlihat bahwa nilai sig. < 0,05 yang berarti data tersebut berbeda signifikan

Post Hoc Tests

Multiple Comparisons

Dependent Variable:pD2

	(I) perlakuan	(J) perlakuan	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Tukey HSD	non timolol	10 mikro	1.68200 [*]	.29518	.000	.9247	2.4393
		50 mikro	1.80800 [*]	.29518	.000	1.0507	2.5653
	10 mikro	non timolol	-1.68200 [*]	.29518	.000	-2.4393	-.9247

	50 mikro		.12600	.34085	.928	-.7484	1.0004
	50 mikro	non timolol	-1.80800*	.29518	.000	-2.5653	-1.0507
	10 mikro		-.12600	.34085	.928	-1.0004	.7484
LSD	non timolol	10 mikro	1.68200*	.29518	.000	1.0592	2.3048
	50 mikro		1.80800*	.29518	.000	1.1852	2.4308
	10 mikro	non timolol	-1.68200*	.29518	.000	-2.3048	-1.0592
	50 mikro		.12600	.34085	.716	-.5931	.8451
	50 mikro	non timolol	-1.80800*	.29518	.000	-2.4308	-1.1852
	10 mikro		-.12600	.34085	.716	-.8451	.5931

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

pD2

perlakuan	N	Subset for alpha = 0.05	
		1	2
Tukey HSD ^a 50 mikro	5	6.3420	
10 mikro	5	6.4680	
non timolol	10		8.1500
Sig.		.914	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.000.

Lampiran 5. Hasil Uji Statistik Pada Uji Pengaruh piperin Reseptor β_2 Adrenergik Otot Polos Aorta

Tests of Normality

perlakuan		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
pD2	non piperin	.245	10	.090	.911	10	.289
	10 mikro	.220	5	.200 [*]	.883	5	.322
	50 mikro	.262	5	.200 [*]	.831	5	.142

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Tes normalitas untuk menguji data normal atau tidak dengan ditunjukkan dengan nilai $p > 0,05$ dengan kepercayaan 95% dan terlihat bahwa nilai sig. $> 0,05$ yang berarti data tersebut normal.

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
pD2	Based on Mean	3.489	2	17	.054
	Based on Median	3.230	2	17	.065
	Based on Median and with adjusted df	3.230	2	15.232	.068
	Based on trimmed mean	3.481	2	17	.054

Tes homogenitas untuk mengetahui persebaran data homogen atau tidak dengan ditunjukkan nilai sig. $> 0,05$ dengan kepercayaan 95% dan terlihat bahwa nilai sig. $> 0,05$ yang berarti data tersebut homogen.

Descriptives

pD2

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	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
non piperin	10	8.2010	.45388	.14353	7.8763	8.5257	7.17	8.86
10 mikro	5	6.2220	.82099	.36716	5.2026	7.2414	5.32	7.10
50 mikro	5	5.9520	.26771	.11972	5.6196	6.2844	5.75	6.39
Total	20	7.1440	1.20009	.26835	6.5823	7.7057	5.32	8.86

ANOVA

pD2	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	22.527	2	11.264	39.588	.000
Within Groups	4.837	17	.285		
Total	27.364	19			

Uji anova untuk mengetahui karakteristik dari suatu data yang memiliki lebih dari 2 variabel. Perbedaan ditunjukkan dengan nilai sig. <0,05 dengan tingkat kepercayaan 95% dan terlihat bahwa nilai sig. < 0,05 yang berarti data tersebut berbeda signifikan

Multiple Comparisons

Dependent Variable:pD2

	(I) perlakuan	(J) perlakuan	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Tukey HSD	non piperin	10 mikro	1.97900*	.29216	.000	1.2295	2.7285
		50 mikro	2.24900*	.29216	.000	1.4995	2.9985
	10 mikro	non piperin	-1.97900*	.29216	.000	-2.7285	-1.2295
		50 mikro	.27000	.33735	.708	-.5954	1.1354
	50 mikro	non piperin	-2.24900*	.29216	.000	-2.9985	-1.4995
		10 mikro	-.27000	.33735	.708	-1.1354	.5954
LSD	non piperin	10 mikro	1.97900*	.29216	.000	1.3626	2.5954

	50 mikro	2.24900*	.29216	.000	1.6326	2.8654
10 mikro	non piperin	-1.97900*	.29216	.000	-2.5954	-1.3626
	50 mikro	.27000	.33735	.435	-.4418	.9818
50 mikro	non piperin	-2.24900*	.29216	.000	-2.8654	-1.6326
	10 mikro	-.27000	.33735	.435	-.9818	.4418

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

Lampiran 6. Hasil Uji Statistik antara piperin dengan timolol

Test of Homogeneity of Variances

pD2

Levene Statistic	df1	df2	Sig.
1.482	5	34	.222

Hasil uji homogenitas menunjukkan bahwa data yang diujikan adalah homogen dengan nilai sig. > 0,05 (sig. = 0,222)

ANOVA

ANOVA					
pD2					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	37.970	5	7.594	26.416	.000
Within Groups	9.774	34	.287		
Total	47.745	39			

Hasil uji dengan Anova menunjukkan nilai yang berbeda signifikan (sig. <0,05 yaitu 0,000)

Multiple Comparisons

Dependent Variable: pD2

		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval		
(I) perlakuan	(J) perlakuan				Lower Bound	Upper Bound	
Tukey HSD	non piperin	piperin 10 micro	1.97900 [*]	.29367	.000	1.0926	2.8654
		piperin 50 micro	2.24900 [*]	.29367	.000	1.3626	3.1354
		non timolol	.05100	.23978	1.000	-.6727	.7747
		timolol 10 micro	1.73300 [*]	.29367	.000	.8466	2.6194
		timolol 50 micro	1.85900 [*]	.29367	.000	.9726	2.7454
piperin 10 micro	non piperin	piperin 10 micro	-1.97900 [*]	.29367	.000	-2.8654	-1.0926
		piperin 50 micro	.27000	.33911	.966	-.7535	1.2935
		non timolol	-1.92800 [*]	.29367	.000	-2.8144	-1.0416
		timolol 10 micro	-.24600	.33911	.977	-1.2695	.7775

		timolol 50 micro		-1.12000	.33911	.999	-1.1435	.9035
piperin 50 micro	non piperin			-2.24900*	.29367	.000	-3.1354	-1.3626
	piperin 10 micro			-.27000	.33911	.966	-1.2935	.7535
	non timolol			-2.19800*	.29367	.000	-3.0844	-1.3116
	timolol 10 micro			-.51600	.33911	.653	-1.5395	.5075
	timolol 50 micro			-.39000	.33911	.857	-1.4135	.6335
non timolol	non piperin			-.05100	.23978	1.000	-.7747	.6727
	piperin 10 micro			1.92800*	.29367	.000	1.0416	2.8144
	piperin 50 micro			2.19800*	.29367	.000	1.3116	3.0844
	timolol 10 micro			1.68200*	.29367	.000	.7956	2.5684
	timolol 50 micro			1.80800*	.29367	.000	.9216	2.6944
timolol 10 micro	non piperin			-1.73300*	.29367	.000	-2.6194	-.8466
	piperin 10 micro			.24600	.33911	.977	-.7775	1.2695
	piperin 50 micro			.51600	.33911	.653	-.5075	1.5395
	non timolol			-1.68200*	.29367	.000	-2.5684	-.7956
	timolol 50 micro			.12600	.33911	.999	-.8975	1.1495
timolol 50 micro	non piperin			-1.85900*	.29367	.000	-2.7454	-.9726
	piperin 10 micro			.12000	.33911	.999	-.9035	1.1435
	piperin 50 micro			.39000	.33911	.857	-.6335	1.4135
	non timolol			-1.80800*	.29367	.000	-2.6944	-.9216
	timolol 10 micro			-.12600	.33911	.999	-1.1495	.8975
LSD	non piperin	piperin 10 micro		1.97900*	.29367	.000	1.3822	2.5758
		piperin 50 micro		2.24900*	.29367	.000	1.6522	2.8458
		non timolol		.05100	.23978	.833	-.4363	.5383
		timolol 10 micro		1.73300*	.29367	.000	1.1362	2.3298
		timolol 50 micro		1.85900*	.29367	.000	1.2622	2.4558
piperin 10 micro	non piperin			-1.97900*	.29367	.000	-2.5758	-1.3822
	piperin 50 micro			.27000	.33911	.431	-.4191	.9591
	non timolol			-1.92800*	.29367	.000	-2.5248	-1.3312
	timolol 10 micro			-.24600	.33911	.473	-.9351	.4431
	timolol 50 micro			-.12000	.33911	.726	-.8091	.5691

piperin 50 micro	non piperin	-2.24900*	.29367	.000	-2.8458	-1.6522
	piperin 10 micro	-.27000	.33911	.431	-.9591	.4191
	non timolol	-2.19800*	.29367	.000	-2.7948	-1.6012
	timolol 10 micro	-.51600	.33911	.137	-1.2051	.1731
	timolol 50 micro	-.39000	.33911	.258	-1.0791	.2991
non timolol	non piperin	-.05100	.23978	.833	-.5383	.4363
	piperin 10 micro	1.92800*	.29367	.000	1.3312	2.5248
	piperin 50 micro	2.19800*	.29367	.000	1.6012	2.7948
	timolol 10 micro	1.68200*	.29367	.000	1.0852	2.2788
	timolol 50 micro	1.80800*	.29367	.000	1.2112	2.4048
timolol 10 micro	non piperin	-1.73300*	.29367	.000	-2.3298	-1.1362
	piperin 10 micro	.24600	.33911	.473	-.4431	.9351
	piperin 50 micro	.51600	.33911	.137	-.1731	1.2051
	non timolol	-1.68200*	.29367	.000	-2.2788	-1.0852
	timolol 50 micro	.12600	.33911	.713	-.5631	.8151
timolol 50 micro	non piperin	-1.85900*	.29367	.000	-2.4558	-1.2622
	piperin 10 micro	.12000	.33911	.726	-.5691	.8091
	piperin 50 micro	.39000	.33911	.258	-.2991	1.0791
	non timolol	-1.80800*	.29367	.000	-2.4048	-1.2112
	timolol 10 micro	-.12600	.33911	.713	-.8151	.5631

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

Hasil uji LSD menunjukkan bahwa antara perlakuan piperin dengan timolol tidak berbeda signifikan

Lampiran 7. Hasil Konformasi *Molecular Docking*

Hasil Konformasi *Molecular Docking Native Ligand*

```

Reading input ... done.
Setting up the scoring function ... done.
Analyzing the binding site ... done.
Using random seed: -773484368
Performing search ...
0%  10  20  30  40  50  60  70  80  90  100%
|----|----|----|----|----|----|----|----|----|----|
*****
done.
Refining results ... done.

mode |  affinity | dist from best mode
      | (kcal/mol) | rmsd l.b. | rmsd u.b.
-----+-----+-----+-----
  1   |    -7.1   |    0.000   |    0.000
  2   |    -7.1   |    0.953   |    1.911
  3   |    -6.3   |    9.281   |   10.418
  4   |    -6.3   |    8.788   |   10.051
  5   |    -6.2   |    1.333   |    2.162
  6   |    -6.1   |    2.263   |    4.525
  7   |    -6.1   |    7.071   |    8.315
  8   |    -5.9   |    5.057   |    6.567
  9   |    -5.8   |    5.707   |    9.446
Writing output ... done.

```

Hasil Konformasi *Molecular Docking Piperin*

```

Detected 4 CPUs
Reading input ... done.
Setting up the scoring function ... done.
Analyzing the binding site ... done.
Using random seed: -1570822144
Performing search ...
0%  10  20  30  40  50  60  70  80  90  100%
|----|----|----|----|----|----|----|----|----|----|
*****
done.
Refining results ... done.

mode |  affinity | dist from best mode
      | (kcal/mol) | rmsd l.b. | rmsd u.b.
-----+-----+-----+-----
  1   |    -9.7   |    0.000   |    0.000
  2   |    -9.4   |    2.783   |    9.389
  3   |    -9.3   |    2.759   |    9.723
  4   |    -9.1   |    1.438   |    2.186
  5   |    -8.9   |    2.822   |    9.505
  6   |    -8.8   |    2.640   |    9.779
  7   |    -8.5   |    2.849   |    9.310
Writing output ... done.

```

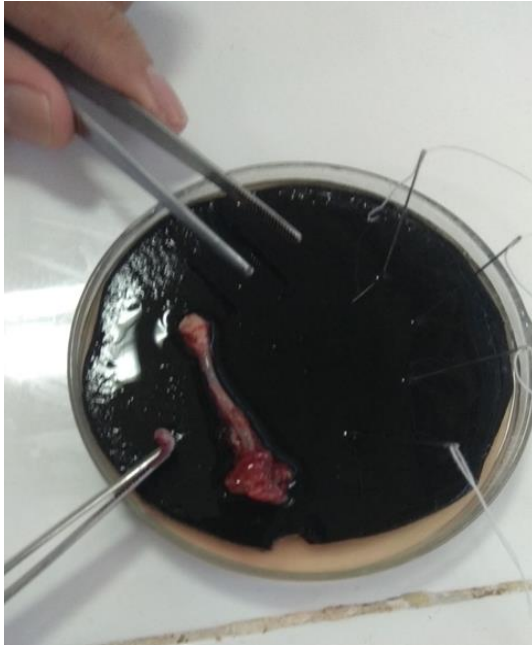

Hasil Konformasi *Molecular Docking* timolol

```
Reading input ... done.
Setting up the scoring function ... done.
Analyzing the binding site ... done.
Using random seed: -722843912
Performing search ...
0% 10 20 30 40 50 60 70 80 90 100%
|----|----|----|----|----|----|----|----|----|----|
*****
done.
Refining results ... done.

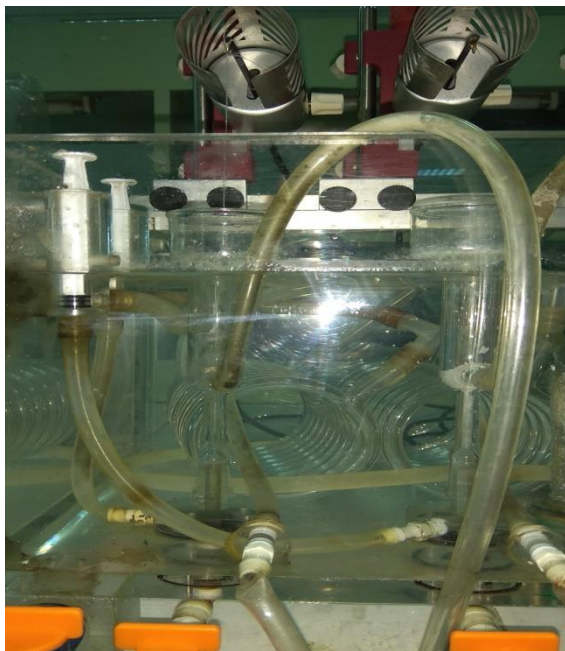
mode | affinity | dist from best mode
      | (kcal/mol) | rmsd l.b. | rmsd u.b.
-----+-----+-----+-----
  1   |   -7.0   |   0.000   |   0.000
  2   |   -6.9   |   0.984   |   1.559
  3   |   -6.6   |   2.837   |   3.860
  4   |   -5.8   |   2.645   |   3.614
  5   |   -5.8   |   3.191   |   7.891
  6   |   -5.3   |   2.739   |   3.397
  7   |   -5.2   |   3.126   |   8.227
  8   |   -5.1   |   2.778   |   3.407
  9   |   -4.6   |   2.691   |   7.898

Writing output ... done.
```

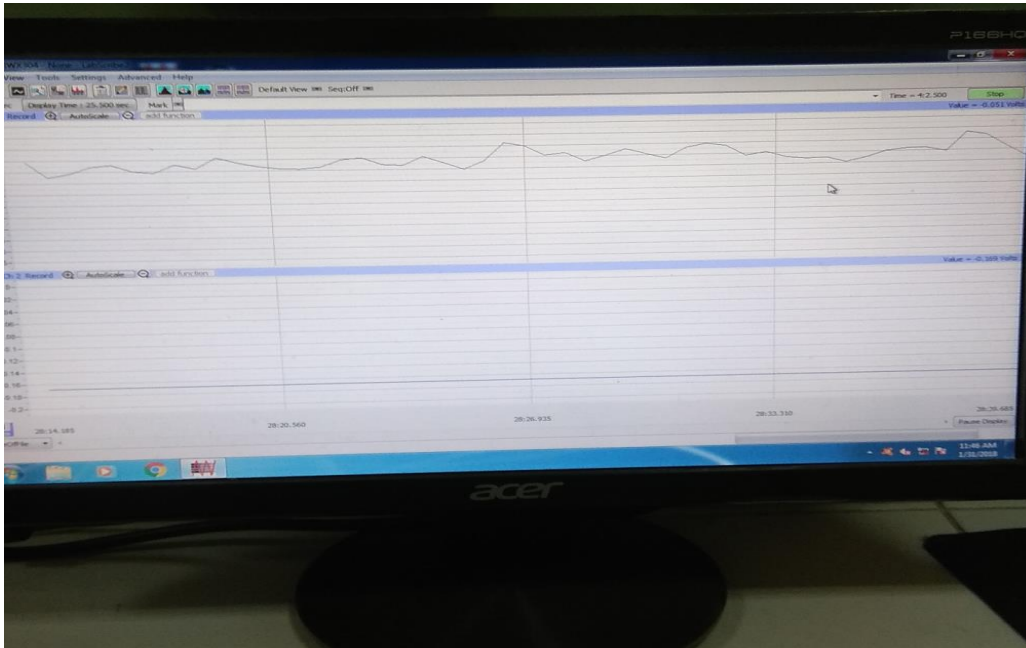
Lampiran 8. Dokumentasi preparasi organ



Lampiran 9. Dokumentasi Aorta yang telah dibersihkan dan diikat kedua sisinya dimasukkan ke dalam chamber



Lampiran 10. Pencatatan reaksi kontraksi dengan aplikasi *Labscribe 2*



Lampiran 11. Dokumentasi keterangan lolos uji etik



UMY UNIVERSITAS
MUHAMMADIYAH
YOGYAKARTA
Unggul & Islami

FAKULTAS
KEDOKTERAN DAN
ILMU KESEHATAN

Nomor : 153/EP-FKIK-UMY/III/2018

KETERANGAN LOLOS UJI ETIK ETHICAL APPROVAL

Komite Etik Penelitian Fakultas Kedokteran dan Ilmu Kesehatan Universitas Muhammadiyah Yogyakarta dalam upaya melindungi hak asasi dan kesejahteraan responden/subyek penelitian, telah mengkaji dengan teliti protokol berjudul :

The Ethics Committee of the Faculty of Medicine and Health Sciences, University of Muhammadiyah Yogyakarta, with regards of the protection of human rights and welfare in research, has carefully reviewed the research protocol entitled :

**"Uji Aktivitas Antagonisme Piperin (*Piper Nigrum* Linn.)
pada Reseptor β_2 Adrenergik Organ Aorta Marmut Terisolasi : Studi *In Vitro* dan *In Silico*"**

Peneliti Utama : Nanda Priatmoko Pamuji Indra Putra
Principal Investigator

Nama Institusi : Program Studi Farmasi FKIK UMY
Name of the Institution

Negara : Indonesia
Country

Dan telah menyetujui protokol tersebut diatas.
And approved the above-mentioned protocol.

Yogyakarta, 02 Maret 2018

Ketua

Chairperson



Dr. dr. Titiek Hidayati, M.Kes.,
FISPH., FISCM.

***Peneliti Berkewajiban :**

1. Menjaga kerahasiaan identitas subyek penelitian
2. Memberitahukan status penelitian apabila :
 - a. Setelah masa berlakunya keterangan lolos uji etik (1 tahun sejak tanggal terbit), penelitian masih belum selesai, dalam hal ini *ethical clearance* harus diperpanjang
 - b. Penelitian berhenti di tengah jalan
3. Melaporkan kejadian serius yang tidak diinginkan (*serious adverse events*).
4. Peneliti tidak boleh melakukan tindakan apapun pada responden/subyek sebelum penelitian lolos uji etik

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Lampiran 12. Hasil cek turnitin

