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**PERSETUJUAN ETIK**  
*Ethical Clearance*  
**Nomor: 76/KER/FK/V/2015**

Komisi Etik Riset Fakultas Kedokteran Universitas Trisakti setelah mempelajari dengan seksama dan mendengarkan penjelasan dari peneliti utama tentang kemungkinan adanya dampak etis terhadap subyek riset, masyarakat dan lingkungan, menetapkan penelitian dengan judul:

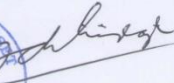
**"PENGARUH HIPOKSIA SISTEMIK TERHADAP KADAR MALONDIALDEHID (MDA) JANTUNG"**

Peneliti Utama : Yinwill  
Lembaga/Tempat penelitian : FK Universitas Tarumanagara

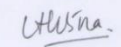
Dinyatakan memenuhi persyaratan etik untuk dilaksanakan.

Jakarta, 27 Mei 2015

Ketua

  
Prof. DR. dr. Adi Hidayat, MS

Sekretaris

  
dr. Alvina SpPK

Lampiran 2: Tabel hasil serapan serta kadar GSH hati

Kelompok	Perlakuan	Sampel	Absorban		Absorban rata-rata	Kadar
			A	B		
P1	Normoksia	Tikus 1	0,076	0,080	0,078	1,864
		Tikus 2	0,071	0,067	0,069	1,659
		Tikus 3	0,075	0,073	0,074	1,773
		Tikus 4	0,072	0,076	0,074	1,773
P2	Hipoksia 1 jam	Tikus 1	0,075	0,080	0,078	1,852
		Tikus 2	0,079	0,077	0,078	1,864
		Tikus 3	0,080	0,078	0,079	1,886
		Tikus 4	0,077	0,080	0,079	1,875
P3	Hipoksia 3 jam	Tikus 1	0,087	0,089	0,088	2,091
		Tikus 2	0,085	0,086	0,086	2,034
		Tikus 3	0,080	0,083	0,082	1,943
		Tikus 4	0,081	0,079	0,080	1,909
P4	Hipoksia 6 jam	Tikus 1	0,083	0,081	0,082	1,955
		Tikus 2	0,081	0,082	0,082	1,943
		Tikus 3	0,091	0,101	0,096	2,273
		Tikus 4	0,110	0,102	0,106	2,500
P5	Hipoksia 12 jam	Tikus 1	0,101	0,100	0,101	2,375
		Tikus 2	0,118	0,130	0,124	2,909
		Tikus 3	0,102	0,113	0,108	2,534
		Tikus 4	0,104	0,100	0,102	2,409
P6	Hipoksia 24 jam	Tikus 1	0,120	0,128	0,124	2,909
		Tikus 2	0,137	0,135	0,136	3,182
		Tikus 3	0,138	0,127	0,133	3,102
		Tikus 4	0,121	0,119	0,120	2,818
P7	Hipoksia 72 jam	Tikus 1	0,115	0,109	0,112	2,636
		Tikus 2	0,151	0,157	0,154	3,591
		Tikus 3	0,126	0,122	0,124	2,909
		Tikus 4	0,161	0,159	0,160	3,727

Lampiran 3: Tabel hasil serapan serta kadar GSH darah

Kelompok	Perlakuan	Sampel	Absorban		Absorban rata-rata	Kadar
			A	B		
P1	Normoksia	Tikus 1	0,061	0,064	0,063	1,520
		Tikus 2	0,053	0,058	0,056	1,361
		Tikus 3	0,057	0,055	0,056	1,373
		Tikus 4	0,066	0,062	0,064	1,555
P2	Hipoksia 1 jam	Tikus 1	0,071	0,066	0,069	1,648
		Tikus 2	0,065	0,070	0,068	1,625
		Tikus 3	0,075	0,079	0,077	1,841
		Tikus 4	0,073	0,071	0,072	1,727
P3	Hipoksia 3 jam	Tikus 1	0,081	0,077	0,079	1,886
		Tikus 2	0,075	0,080	0,078	1,852
		Tikus 3	0,079	0,074	0,077	1,830
		Tikus 4	0,083	0,072	0,078	1,852
P4	Hipoksia 6 jam	Tikus 1	0,093	0,088	0,091	2,148
		Tikus 2	0,086	0,078	0,082	1,955
		Tikus 3	0,088	0,081	0,085	2,011
		Tikus 4	0,083	0,089	0,086	2,045
P5	Hipoksia 12 jam	Tikus 1	0,101	0,094	0,098	2,307
		Tikus 2	0,099	0,106	0,103	2,420
		Tikus 3	0,089	0,096	0,093	2,193
		Tikus 4	0,095	0,088	0,092	2,170
P6	Hipoksia 24 jam	Tikus 1	0,116	0,124	0,120	2,818
		Tikus 2	0,121	0,118	0,120	2,807
		Tikus 3	0,118	0,112	0,115	2,705
		Tikus 4	0,120	0,125	0,123	2,875
P7	Hipoksia 72 jam	Tikus 1	0,128	0,132	0,130	3,045
		Tikus 2	0,136	0,140	0,138	3,227
		Tikus 3	0,127	0,132	0,130	3,034
		Tikus 4	0,133	0,129	0,131	3,068

Lampiran 4: Uji statistik-1. Analisis statistik gas darah dan hematologi

**1. Nilai Rerata & Uji Mann-Whitney untuk Perbedaan pH Darah**

Col. Stats	P1	P2	P3	P4	P5	P6	P7
Mean	7,43	7,43	7,42	7,41	7,4	7,4	7,39
Std. Deviation	0,014	0,018	0,018	0,012	0,008	0,008	0,008
Std. Error	0,007	0,009	0,009	0,006	0,004	0,004	0,004
	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>
<b>Mann-whitney test</b>	vs	vs	vs	vs	vs	vs	vs
	<b>P2</b>	<b>P3</b>	<b>P4</b>	<b>P5</b>	<b>P6</b>	<b>P7</b>	
P value	1	0,559	0,0907	0,0294	0,0294	0,0294	0,0294
Are medians signif. different? (P < 0.05)	ns	ns	ns	Yes	Yes	Yes	Yes
One- or two-tailed P value?	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed

**2. Nilai Rerata & Uji Mann-Whitney untuk Perbedaan pCO2**

Col. Stats	P1	P2	P3	P4	P5	P6	P7
Mean	40,7	39,2	38,3	36,4	35,7	32,5	30,2
Std. Deviation	0,141	0,082	0,082	0,082	0,141	0,141	0,141
Std. Error	0,071	0,041	0,041	0,041	0,071	0,071	0,071
	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>
<b>Mann-whitney test</b>	vs	vs	vs	vs	vs	vs	vs
	<b>P2</b>	<b>P3</b>	<b>P4</b>	<b>P5</b>	<b>P6</b>	<b>P7</b>	
P value	0,0294	0,0294	0,0294	0,0294	0,0294	0,0294	0,0294
Are medians signif. different? (P < 0.05)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
One- or two-tailed P value?	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed

**3. Nilai Rerata & Uji Mann-Whitney untuk Perbedaan pO2**

Col. Stats	P1	P2	P3	P4	P5	P6	P7
Mean	97,8	87,2	72,3	68,6	57,3	53,1	48,7
Std. Deviation	6,327	0,825	0,753	0,483	1,023	0,356	0,927
Std. Error	3,163	0,412	0,376	0,242	0,512	0,178	0,464
	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>
<b>Mann-whitney test</b>	vs	vs	vs	vs	vs	vs	vs
	<b>P2</b>	<b>P3</b>	<b>P4</b>	<b>P5</b>	<b>P6</b>	<b>P7</b>	
P value	0,0286	0,0286	0,0286	0,0286	0,0286	0,0286	0,0286
Are medians signif. different? (P < 0.05)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
One- or two-tailed P value?	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed

(lanjutan) Lampiran 4: Uji statistik-1. Analisis statistik gas darah dan hematologi

#### 4. Nilai Rerata & Uji Mann-Whitney untuk Perbedaan HCO<sub>3</sub>

Col. Stats	P1	P2	P3	P4	P5	P6	P7
Mean	24,8	22,2	20,4	17,9	21,4	19,3	18,2
Std. Deviation	0,497	0,258	0,141	0,408	0,424	0,141	0,294
Std. Error	0,248	0,129	0,071	0,204	0,212	0,071	0,147
	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>
<b>Mann-whitney test</b>	vs	vs	vs	vs	vs	vs	vs
	<b>P2</b>	<b>P3</b>	<b>P4</b>	<b>P5</b>	<b>P6</b>	<b>P7</b>	
P value	0,0286	0,0286	0,0286	0,0286	0,0286	0,0286	0,0286
Are medians signif. different? (P < 0.05)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
One- or two-tailed P value?	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed

#### 5. Nilai Rerata & Uji Mann-Whitney untuk Perbedaan Sat O<sub>2</sub>

Col. Stats	P1	P2	P3	P4	P5	P6	P7
Mean	95,8	89,7	80,2	71,3	65,7	54,7	58,2
Std. Deviation	0,258	0,392	0,316	0,392	0,392	0,497	0,572
Std. Error	0,129	0,196	0,158	0,196	0,196	0,248	0,286
	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>
<b>Mann-whitney test</b>	vs	vs	vs	vs	vs	vs	vs
	<b>P2</b>	<b>P3</b>	<b>P4</b>	<b>P5</b>	<b>P6</b>	<b>P7</b>	
P value	0,0286	0,0286	0,0286	0,0286	0,0286	0,0286	0,0286
Are medians signif. different? (P < 0.05)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
One- or two-tailed P value?	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed

#### 6. Nilai Rerata & Uji Mann-Whitney untuk Perbedaan Hemoglobin

Col. Stats	P1	P2	P3	P4	P5	P6	P7
Mean	120,1	120,7	123,2	126,6	133,4	148,6	162,5
Std. Deviation	0,440	0,365	0,408	0,392	0,469	0,572	0,548
Std. Error	0,220	0,183	0,204	0,196	0,235	0,286	0,274
	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>
<b>Mann-whitney test</b>	vs	vs	vs	vs	vs	vs	vs
	<b>P2</b>	<b>P3</b>	<b>P4</b>	<b>P5</b>	<b>P6</b>	<b>P7</b>	
P value	0,1465	0,0286	0,0286	0,0286	0,0286	0,0286	0,0286
Are medians signif. different? (P < 0.05)	ns	Yes	Yes	Yes	Yes	Yes	Yes
One- or two-tailed P value?	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed

(lanjutan) Lampiran 4: Uji statistik-1. Analisis statistik gas darah dan hematologi

**7. Nilai Rerata & Uji Mann-Whitney untuk Perbedaan Hematokrit**

Col. Stats	P1	P2	P3	P4	P5	P6	P7
Mean	45,2	45,6	47,1	48,3	51,2	53,4	55,8
Std. Deviation	0,497	0,216	0,408	0,949	0,483	0,294	0,245
Std. Error	0,248	0,108	0,204	0,474	0,242	0,147	0,123
		<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>
<b>Mann-whitney test</b>		vs	vs	vs	vs	vs	vs
		<b>P2</b>	<b>P3</b>	<b>P4</b>	<b>P5</b>	<b>P6</b>	<b>P7</b>
P value		0,2454	0,0286	0,0286	0,0286	0,0286	0,0286
Are medians signif. different? (P < 0.05)		ns	Yes	Yes	Yes	Yes	Yes
One- or two-tailed P value?		Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed

**8. Nilai Rerata & Uji Mann-Whitney untuk Perbedaan Sel Darah Merah**

Col. Stats	P1	P2	P3	P4	P5	P6	P7
Mean	6,7	6,8	7	7,2	7,8	8,15	8,3
Std. Deviation	0,216	0,163	0,141	0,183	0,216	0,129	0,258
Std. Error	0,108	0,082	0,071	0,091	0,108	0,065	0,129
		<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>
<b>Mann-whitney test</b>		vs	vs	vs	vs	vs	vs
		<b>P2</b>	<b>P3</b>	<b>P4</b>	<b>P5</b>	<b>P6</b>	<b>P7</b>
P value		0,6573	0,0545	0,0286	0,0286	0,0286	0,0286
Are medians signif. different? (P < 0.05)		ns	ns	Yes	Yes	Yes	Yes
One- or two-tailed P value?		Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed

Lampiran 5: Uji statistik-2. Kadar GSH hati dan darah

**1. Nilai Rerata & Uji Mann-Whitney untuk Perbedaan Kadar GSH hati**

Col. Stats	P1	P2	P3	P4	P5	P6	P7
Mean	1,767	1,869	1,994	2,168	2,557	3,003	3,216
Std. Deviation	0,084	0,015	0,083	0,269	0,245	0,168	0,527
Std. Error	0,042	0,007	0,042	0,135	0,122	0,084	0,263
	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>
<b>Mann-whitney test</b>	vs	vs	vs	vs	vs	vs	vs
	<b>P2</b>	<b>P3</b>	<b>P4</b>	<b>P5</b>	<b>P6</b>	<b>P7</b>	
P value	0,0796	0,0294	0,0294	0,0294	0,0294	0,0294	0,0294
Are medians signif. different? (P < 0.05)	Ns	Yes	Yes	Yes	Yes	Yes	Yes
One- or two-tailed P value?	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed

**2. Nilai Rerata & Uji Mann-Whitney untuk Perbedaan Kadar GSH Darah**

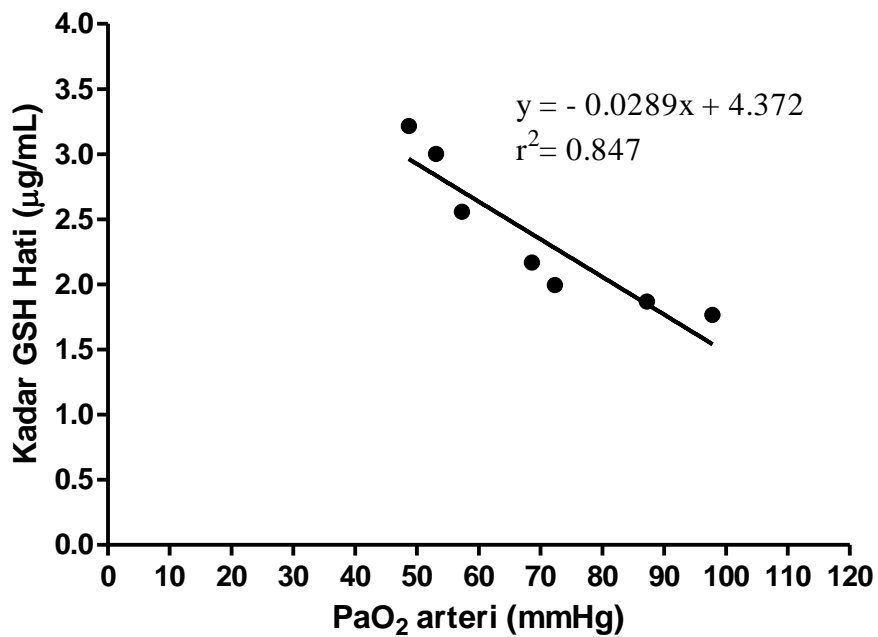
Col. Stats	P1	P2	P3	P4	P5	P6	P7
Mean	1,452	1,710	1,855	2,040	2,273	2,801	3,094
Std. Deviation	0,100	0,098	0,023	0,081	0,115	0,071	0,090
Std. Error	0,050	0,049	0,012	0,041	0,058	0,035	0,045
	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>	<b>P1</b>
<b>Mann-whitney test</b>	vs	vs	vs	vs	vs	vs	vs
	<b>P2</b>	<b>P3</b>	<b>P4</b>	<b>P5</b>	<b>P6</b>	<b>P7</b>	
P value	0,0286	0,0286	0,0286	0,0286	0,0286	0,0286	0,0286
Are medians signif. different? (P < 0.05)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
One- or two-tailed P value?	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed	Two-tailed

Lampiran 6: Uji statistik-3. Korelasi antara tekanan O2 arteri dan kadar GSH hati

### 1. Tekanan O2 arteri dan Kadar GSH Hati

Table format: XY		X	A
		PaO2 (mmHg)	Kadar GSH Hati (ug/mL)
		X	Y
1	P1	97,8	1,767
2	P2	87,2	1,869
3	P3	72,3	1,994
4	P4	68,6	2,168
5	P5	57,3	2,557
6	P6	53,1	3,003
7	P7	48,7	3,216

### 2. Grafik Regresi Linear antara Tekanan O2 arteri dan Kadar GSH Hati





(lanjutan) Lampiran 6: Uji statistik-3. Korelasi antara tekanan O2 arteri dan kadar GSH hati

### 3. Uji Regresi Linear antara Tekanan O2 arteri dan Kadar GSH Hati

Linear reg.		A
		Kadar GSH Hati (ug/mL)
		Y
1	Best-fit values	
2	Slope	-0.02892 ± 0.005492
3	Y-intercept when X=0.0	4.372 ± 0.3915
4	X-intercept when Y=0.0	151,1
5	1/slope	-34,57
6	95% Confidence Intervals	
7	Slope	-0.04304 to -0.01481
8	Y-intercept when X=0.0	3.365 to 5.378
9	X-intercept when Y=0.0	123.5 to 230.0
10	Goodness of Fit	
11	r <sup>2</sup>	0,8473
12	Sy.x	0,2439
13	Is slope significantly non-zero?	
14	F	27,74
15	DFn, DFd	1.000, 5.000
16	P value	0,0033
17	Deviation from zero?	Significant
18	Data	
19	Number of X values	7
20	Maximum number of Y replicates	1
21	Total number of values	7
22	Number of missing values	0

### 4. Uji Korelasi Pearson antara Tekanan O2 arteri dan Kadar GSH Hati

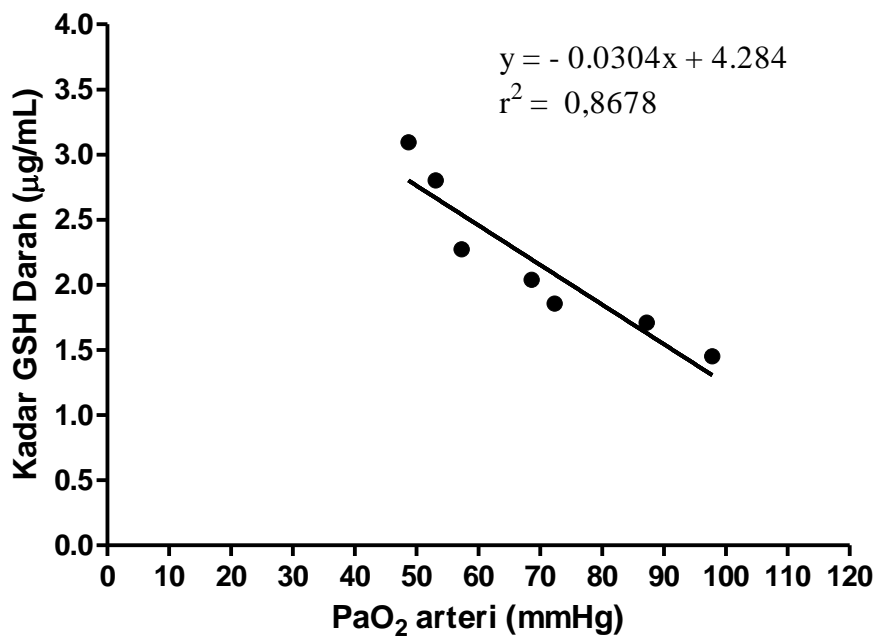
Correlation		A
		Kadar GSH Hati (ug/mL)
		Y
1	Number of XY Pairs	7
2	Pearson r	-0,9205
3	95% confidence interval	-0.9884 to -0.5455
4	P value (two-tailed)	0,0033
5	P value summary	**
6	Is the correlation significant? (alpha=0.05)	Yes
7	R squared	0,8473

Lampiran 7: Uji statistik-4. Korelasi antara tekanan O2 arteri dan kadar GSH darah

**1. Tekanan O2 arteri dan Kadar GSH Darah**

Table format: XY		X	A
		PaO2 (mmHg)	Kadar GSH Darah (ug/mL)
		X	Y
1	P1	97,8	1,452
2	P2	87,2	1,71
3	P3	72,3	1,855
4	P4	68,6	2,04
5	P5	57,3	2,273
6	P6	53,1	2,801
7	P7	48,7	3,094

**2. Grafik Regresi Linear antara Tekanan O2 arteri dan Kadar GSH Darah**



(lanjutan) Lampiran 7: Uji statistik-4. Korelasi antara tekanan O2 arteri dan kadar GSH darah

### 3. Uji Regresi Linear antara Tekanan O2 arteri dan Kadar GSH Darah

Linear reg.		A
		Kadar GSH Darah (ug/mL)
		Y
1	Best-fit values	
2	Slope	-0.03043 ± 0.005312
3	Y-intercept when X=0.0	4.284 ± 0.3787
4	X-intercept when Y=0.0	140,8
5	1/slope	-32,86
6	95% Confidence Intervals	
7	Slope	-0.04409 to -0.01678
8	Y-intercept when X=0.0	3.310 to 5.257
9	X-intercept when Y=0.0	117.7 to 199.8
10	Goodness of Fit	
11	r <sup>2</sup>	0,8678
12	Sy.x	0,2359
13	Is slope significantly non-zero?	
14	F	32,83
15	DFn, DFd	1.000, 5.000
16	P value	0,0023
17	Deviation from zero?	Significant
18	Data	
19	Number of X values	7
20	Maximum number of Y replicates	1
21	Total number of values	7
22	Number of missing values	0

### 4. Uji Korelasi Pearson antara Tekanan O2 arteri dan Kadar GSH Darah

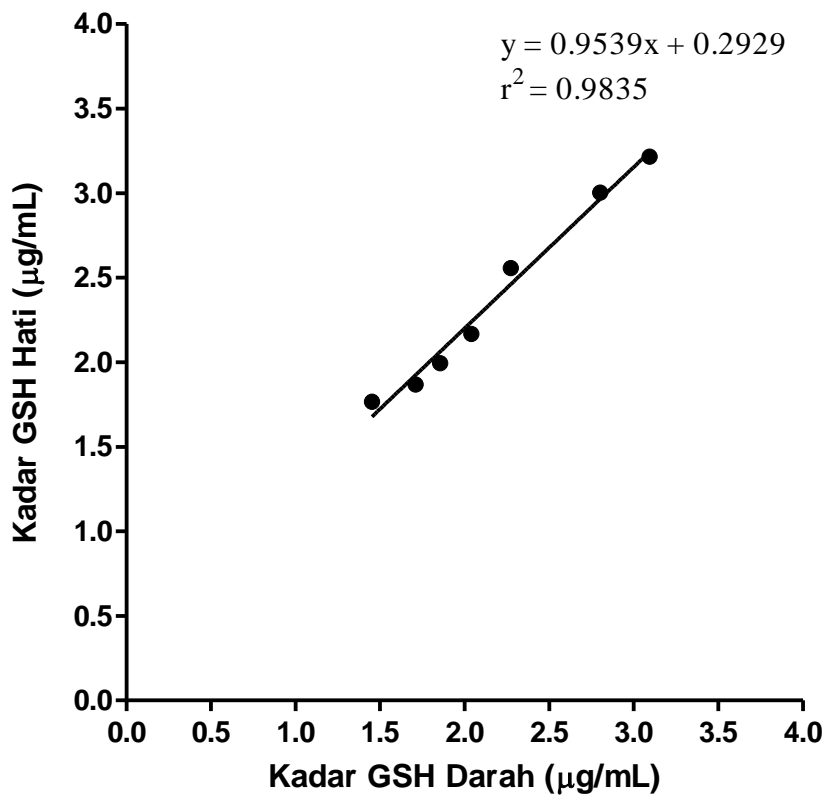
Correlation		A
		Kadar GSH Darah (ug/mL)
		Y
1	Number of XY Pairs	7
2	Pearson r	-0,9316
3	95% confidence interval	-0.9901 to -0.5979
4	P value (two-tailed)	0,0023
5	P value summary	**
6	Is the correlation significant? (alpha=0.05)	Yes
7	R squared	0,8678

Lampiran 8: Uji statistik-5. Korelasi antara kadar GSH darah dan kadar GSH hati

### 1. Kadar GSH Darah dan Kadar GSH Hati

Table format: XY		X	A
		Kadar GSH Darah (ug/mL)	Kadar GSH Hati (ug/mL)
		X	Y
1	P1	1,452	1,767
2	P2	1,710	1,869
3	P3	1,855	1,994
4	P4	2,040	2,168
5	P5	2,273	2,557
6	P6	2,801	3,003
7	P7	3,094	3,216

### 2. Grafik Regresi Linear antara Kadar GSH Darah dan Kadar GSH Hati



(lanjutan) Lampiran 8: Uji statistik-5. Korelasi antara kadar GSH darah dan kadar GSH hati

### 3. Uji Regresi Linear antara Kadar GSH Darah dan Kadar GSH Hati

Linear reg.		A
		Kadar GSH Hati (ug/mL)
		Y
1	Best-fit values	
2	Slope	0.9539 ± 0.05523
3	Y-intercept when X=0.0	0.2929 ± 0.1239
4	X-intercept when Y=0.0	-0,3071
5	1/slope	1,048
6	95% Confidence Intervals	
7	Slope	0.8119 to 1.096
8	Y-intercept when X=0.0	-0.02555 to 0.6114
9	X-intercept when Y=0.0	-0.7501 to 0.02340
10	Goodness of Fit	
11	r <sup>2</sup>	0,9835
12	Sy.x	0,08014
13	Is slope significantly non-zero?	
14	F	298,3
15	DFn, DFd	1.000, 5.000
16	P value	< 0.0001
17	Deviation from zero?	Significant
18	Data	
19	Number of X values	7
20	Maximum number of Y replicates	1
21	Total number of values	7
22	Number of missing values	0

### 4. Uji Korelasi Pearson antara Kadar GSH Darah dan Kadar GSH Hati

Correlation		A
		Kadar GSH Hati (ug/mL)
		Y
1	Number of XY Pairs	7
2	Pearson r	0,9917
3	95% confidence interval	0.9427 to 0.9988
4	P value (two-tailed)	P<0.0001
5	P value summary	***
6	Is the correlation significant? (alpha=0.05)	Yes
7	R squared	0,9835

## DAFTAR RIWAYAT HIDUP

### A. Data Pribadi

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2. NIM : 405120174
3. Jenis Kelamin : Perempuan
4. Tempat, Tanggal Lahir : Palopo, 20 April 1995
5. Agama : Buddha
6. Status : Belum Menikah
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### B. Data Pendidikan

1. 2000 – 2006 : SD Advent Palopo
2. 2006 – 2009 : SMP Katolik Rajawali Makassar
3. 2009 – 2012 : SMA Katolik Rajawali Makassar