

## DAFTAR PUSTAKA

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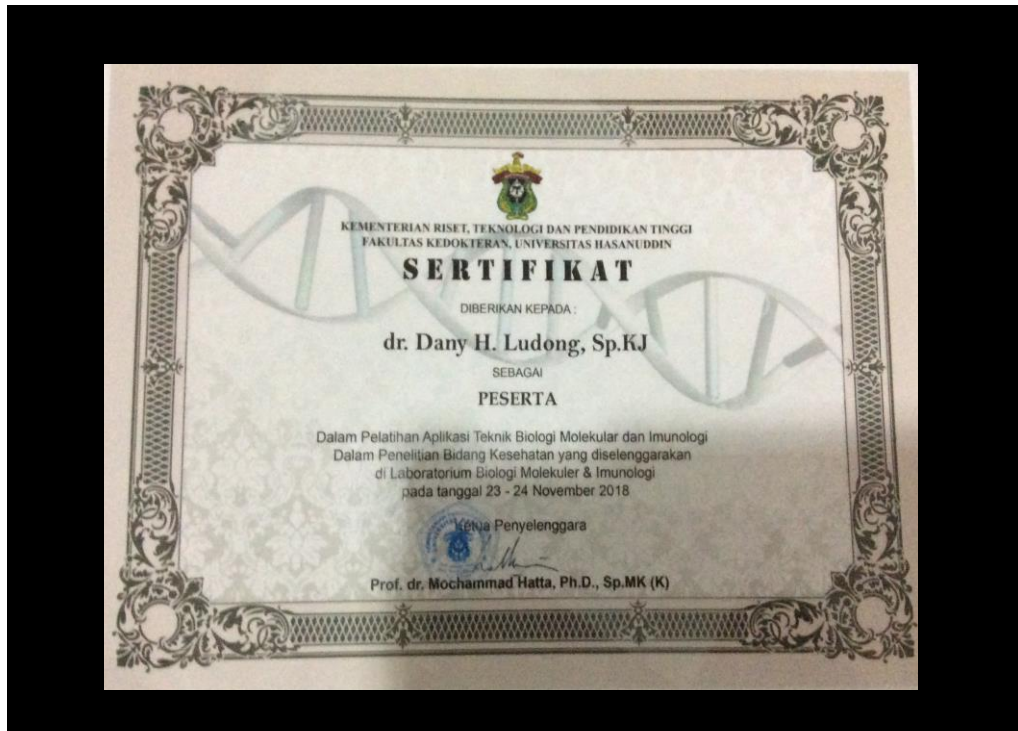
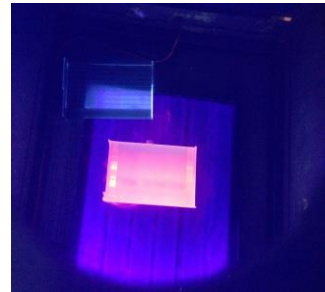


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# DAFTAR LAMPIRAN

## WORKSHOP BIOLOGI MOLEKULER



## SURAT PERSETUJUAN PENELITIAN DARI ATASAN



**BADAN NARKOTIKA NASIONAL REPUBLIK INDONESIA**  
**BALAI REHABILITASI BADDOKA**  
 Jl. Batara Bira VI No. 35 Baddoka Kel. Pal, Kec. Biringkanaya,  
 Kota Makassar, 90243  
 Telepon: (0411) 513235, 513213  
 Fax : (0411) 513287  
 Email: [bnnbaddoka@yahoo.com](mailto:bnnbaddoka@yahoo.com)  
 Website: [www.rehabbaddoka.bnn.go.id](http://www.rehabbaddoka.bnn.go.id)

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Lampiran 5

**SURAT PERSETUJUAN ATASAN**  
 Nomor : B/91/BD/BL.02.01/XII/2018/BDK

Yang bertanda tangan di bawah ini :

Nama : Agustinus Solli, SH.S.S.,M.Si  
 Pangkat / NRP : Komisaris Besar Polisi / 67080659  
 Jabatan : Kepala Balai Rehabilitasi BNN Baddoka Makassar

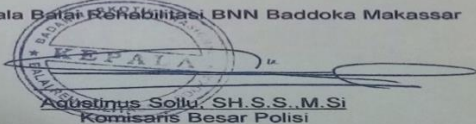
Sebagai atasan langsung dari :

Nama : dr. Dany Harianto Ludong, Sp. KJ  
 Pekerjaan : Dokter Spesialis Kedokteran Jiwa, di Balai Rehabilitasi BNN Baddoka Makassar

Menyatakan menyetujui yang bersangkutan melakukan penelitian dengan judul:


**ANALISIS EKSPRESI mRNA DAN KONSENTRASI PROTEIN PADA GEN NQO2 YANG MEMPENGARUHI TERJADINYA GANGGUAN PSIKOTIK PADA PENYALAHGUNA METAMFETAMIN**

Kepala Balai Rehabilitasi BNN Baddoka Makassar



**Agustinus Solli, SH.S.S.,M.Si**  
 Komisaris Besar Polisi

## REKOMENDASI PERSETUJUAN ETIK



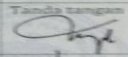

**KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI**  
**UNIVERSITAS HASANUDDIN**  
**FAKULTAS KEDOKTERAN**  
**RSPTN UNIVERSITAS HASANUDDIN**  
**RSUP DR. WAHIDIN SUDIROHUSODO MAKASSAR**  
**KOMITE ETIK PENELITIAN KESEHATAN**  
 Sekretariat : Lantai 3 Gedung Laboratorium Terpadu  
 JL.PERINTIS KEMERDEKAAN KAMPUS TAMALANREA KM.10 MAKASSAR 90245  
 Contact Person: dr. Agussalim Bukhari, M.Med.,Ph.D., Sp.GK TELP. 08122279479 e-mail: [agussalim@hasanuddin.ac.id](mailto:agussalim@hasanuddin.ac.id)

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**REKOMENDASI PERSETUJUAN ETIK**  
 Nomor : 521/UN4.6.4.5.31/PP36/2019

Tanggal: 17 Juli 2019

Dengan ini Menyatakan bahwa Protokol dan Dokumen yang Berhubungan Dengan Protokol berikut ini telah mendapatkan Persetujuan Etik :

No Protokol	UH19040251	No Protokol Sponsor	
Peneliti Utama	<b>dr. Dany Harianto Ludong</b>	Protokol Sponsor	
Judul Peneliti	Analisis Ekspresi mRNA dan Kadar Protein Pada NQO2 Yang Mempengaruhi Terjadinya Gangguan Psikotik Pada Penyalahguna Metamfetamin		
No Versi Protokol	2	Tanggal Versi	11 Juli 2019
No Versi PSP	2	Tanggal Versi	11 Juli 2019
Tempat Penelitian	<b>Balai Rehabilitasi BNN Baddoka Makassar</b>		
Jenis Review	<input type="checkbox"/> Exempted <input checked="" type="checkbox"/> Expedited <input type="checkbox"/> Fullboard Tanggal	Masa Berlaku	Frekuensi review lanjutan
		17 Juli 2019	Sampai 17 Juli 2020
Wakil Komisi Etik Penelitian	Nama <b>Prof.Dr.dr. Suryani As'ad, M.Sc.,Sp.GK (K)</b>	Tanda tangan	
Sekretaris Komisi Etik Penelitian	Nama <b>dr. Agussalim Bukhari, M.Med.,Ph.D.,Sp.GK (K)</b>	Tanda tangan	

**Kewajiban Peneliti Utama:**

- Menyerahkan Amandemen Protokol untuk persetujuan sebelum di implementasikan
- Menyerahkan Laporan SAE ke Komisi Etik dalam 24 jam dan dilampirkan dalam 7 hari dan Laporan SAE dalam 72 jam setelah Peneliti Utama menerima laporan
- Menyerahkan Laporan Kemajuan (progress report) setiap 6 bulan untuk penelitian resiko tinggi dan setiap setahun untuk penelitian resiko rendah
- Menyerahkan laporan akhir setelah Penelitian berakhir
- Melaporkan penyimpangan dari protokol yang disetujui (protocol deviation / violation)
- Mematuhi semua peraturan yang ditentukan

## **SURAT PERNYATAAN**

Yang bertanda tangan di bawah ini:

Nama : Dany Harianto Ludong

Nomor Pokok : CO13172009

Program Pendidikan : Doktor (S3)

Program Studi : Ilmu Kedokteran

Menyatakan secara benar, jujur dan bertanggung jawab bahwa disertasi yang berjudul “Pengaruh Ekspresi mRNA dan Kadar Protein Gen NQO2 Terhadap Kejadian Gangguan Psikotik pada Penyalahguna Metamfetamin” adalah asli dan bukan plagiat / bebas dari plagiat.

Jika dikemudian hari ternyata disertasi ini sebagian/seluruhnya mengandung unsur plagiat, maka disertasi dibatalkan dan bersedia menerima sanksi secara hukum dari Fakultas maupun Universitas.

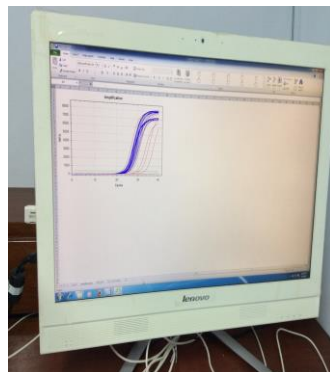
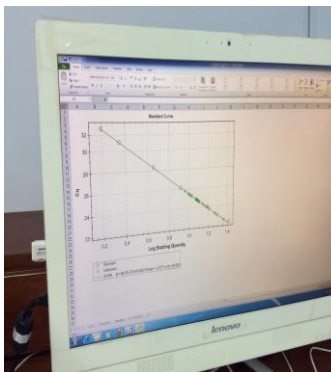
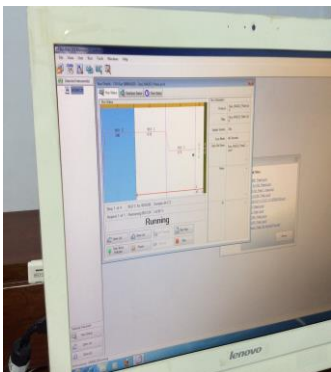
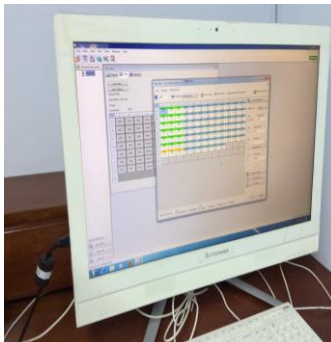
Demikian Surat Pernyataan ini dibuat tanpa tekanan siapapun.

Makassar, 26 Mei 2020

Mahasiswa,

Dany Harianto Ludong

**PROSES WAWANCARA dan PEMERIKSAAN GEN NQO2  
PADA REAL TIME POLYMERASE CHAIN REACTION (PCR)**





# NILAI HASIL PEMERIKSAAN REAL TIME PCR

Sample	Starting Quantity (SQ)	Slope (dR)	Template	Log Template	Exp. mRNA	ER Mean	ER Std. Dev
Standard	2.10E+01	-3.361	50.000	1.69897	15.23976	15.26976	0.12767
Standard	2.09E+01	-3.361	50.000	1.69897	15.15976	15.26976	0.12767
Standard	2.11E+01	-3.361	50.000	1.69897	15.40976	15.26976	0.12767
L21	1.81E+01	-3.361	50.265	1.70127	12.35205	12.52538	0.30892
L21	1.86E+01	-3.361	50.265	1.70127	12.88205	12.52538	0.30892
L22	1.98E+01	-3.361	50.316	1.70171	14.11057	14.06390	0.06429
L22	1.98E+01	-3.361	50.316	1.70171	14.09057	14.06390	0.06429
L22	1.97E+01	-3.361	50.316	1.70171	13.99057	14.06390	0.06429
L23	1.98E+01	-3.361	50.246	1.70110	14.08260	14.19926	0.11504
L23	2.00E+01	-3.361	50.246	1.70110	14.31260	14.19926	0.11504
L23	1.99E+01	-3.361	50.246	1.70110	14.20260	14.19926	0.11504
Standard	1.88E+01	-3.361	25.000	1.39794	14.05152	14.07819	0.02517
Standard	1.88E+01	-3.361	25.000	1.39794	14.10152	14.07819	0.02517
Standard	1.88E+01	-3.361	25.000	1.39794	14.08152	14.07819	0.02517
L24	1.84E+01	-3.361	50.324	1.70178	12.70033	12.64367	0.05132
L24	1.83E+01	-3.361	50.324	1.70178	12.60033	12.64367	0.05132
L24	1.84E+01	-3.361	50.324	1.70178	12.63033	12.64367	0.05132
L25	1.97E+01	-3.361	50.346	1.70196	13.96970	13.98970	0.03464
L25	1.98E+01	-3.361	50.346	1.70196	14.02970	13.98970	0.03464
L25	1.97E+01	-3.361	50.346	1.70196	13.96970	13.98970	0.03464
L26	1.73E+01	-3.361	50.035	1.69927	11.55874	11.74874	0.16643
L26	1.76E+01	-3.361	50.035	1.69927	11.86874	11.74874	0.16643
L26	1.75E+01	-3.361	50.035	1.69927	11.81874	11.74874	0.16643
Standard	1.59E+01	-3.361	12.500	1.09691	12.24329	12.40995	0.17010
Standard	1.63E+01	-3.361	12.500	1.09691	12.58329	12.40995	0.17010
Standard	1.61E+01	-3.361	12.500	1.09691	12.40329	12.40995	0.17010
L27	1.92E+01	-3.361	50.295	1.70152	13.52118	13.55451	0.07572
L27	1.94E+01	-3.361	50.295	1.70152	13.64118	13.55451	0.07572
L27	1.92E+01	-3.361	50.295	1.70152	13.50118	13.55451	0.07572
L28	2.08E+01	-3.361	49.473	1.69437	15.11523	15.10189	0.16042
L28	2.10E+01	-3.361	49.473	1.69437	15.25523	15.10189	0.16042
L28	2.06E+01	-3.361	49.473	1.69437	14.93523	15.10189	0.16042
L29	1.86E+01	-3.361	50.369	1.70216	12.91903	12.95236	0.12342
L29	1.86E+01	-3.361	50.369	1.70216	12.84903	12.95236	0.12342
L29	1.88E+01	-3.361	50.369	1.70216	13.08903	12.95236	0.12342
Standard	1.36E+01	-3.361	6.250	0.79588	10.94505	11.03505	0.08185
Standard	1.38E+01	-3.361	6.250	0.79588	11.10505	11.03505	0.08185
Standard	1.37E+01	-3.361	6.250	0.79588	11.05505	11.03505	0.08185
L30	1.91E+01	-3.361	50.331	1.70184	13.36613	13.34680	0.11060
L30	1.90E+01	-3.361	50.331	1.70184	13.23013	13.34680	0.11060
L30	1.92E+01	-3.361	50.331	1.70184	13.45013	13.34680	0.11060
L31	1.26E+01	-3.361	50.241	1.70106	6.85274	6.93608	0.27465
L31	1.24E+01	-3.361	50.241	1.70106	6.71274	6.93608	0.27465
L31	1.30E+01	-3.361	50.241	1.70106	7.24274	6.93608	0.27465
L32	1.29E+01	-3.361	50.118	1.69999	7.19632	7.39632	0.24269
L32	1.34E+01	-3.361	50.118	1.69999	7.66632	7.39632	0.24269
L32	1.30E+01	-3.361	50.118	1.69999	7.32632	7.39632	0.24269
Standard	1.89E+01	-3.361	3.125	0.49485	9.04681	10.02014	0.06429
Standard	1.16E+01	-3.361	3.125	0.49485	9.94681	10.02014	0.06429
Standard	1.17E+01	-3.361	3.125	0.49485	10.06681	10.02014	0.06429
L33	1.51E+01	-3.361	50.391	1.70235	9.40839	9.38844	0.12117

L33	1.52E+01	-3.361	50.391	1.70235	9.49839	9.38844	0.12117
L33	1.50E+01	-3.361	50.386	1.70231	9.25854	9.38844	0.12117
L34	1.34E+01	-3.361	49.695	1.69631	7.69869	7.92536	0.22030
L34	1.38E+01	-3.361	49.695	1.69631	8.13869	7.92536	0.22030
L34	1.36E+01	-3.361	49.695	1.69631	7.93869	7.92536	0.22030
L35	1.41E+01	-3.361	49.947	1.69851	8.39131	8.24464	0.13317
L35	1.38E+01	-3.361	49.947	1.69851	8.13131	8.24464	0.13317
L35	1.39E+01	-3.361	49.947	1.69851	8.21131	8.24464	0.13317
Standard	9.58E+00	-3.361	1.562	0.19368	8.92904	8.90904	0.05292
Standard	9.60E+00	-3.361	1.562	0.19368	8.94904	8.90904	0.05292
Standard	9.50E+00	-3.361	1.562	0.19368	8.84904	8.90904	0.05292
L36	1.20E+01	-3.361	50.187	1.70059	6.26431	5.91431	0.45177
L36	1.18E+01	-3.361	50.187	1.70059	6.07431	5.91431	0.45177
L36	1.11E+01	-3.361	50.187	1.70059	5.40431	5.91431	0.45177
L37	10.73000	-3.361	50.348	1.70198	5.00964	5.21630	0.24685
L37	10.87000	-3.361	50.348	1.70198	5.14964	5.21630	0.24685
L37	11.21000	-3.361	50.348	1.70198	5.48964	5.21630	0.24685
L38	14.89000	-3.361	50.212	1.70081	9.17359	9.17692	0.09504
L38	14.99000	-3.361	50.212	1.70081	9.27359	9.17692	0.09504
L38	14.80000	-3.361	50.212	1.70081	9.03359	9.17692	0.09504
Neg	N/A	N/A	N/A	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Neg	N/A	N/A	N/A	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Neg	N/A	N/A	N/A	#VALUE!	#VALUE!	#VALUE!	#VALUE!
L39	12.61000	-3.361	50.394	1.70238	6.88830	7.00164	0.11015
L39	12.83000	-3.361	50.394	1.70238	7.10830	7.00164	0.11015
L39	12.73000	-3.361	50.394	1.70238	7.00830	7.00164	0.11015
L40	14.17000	-3.361	50.351	1.70201	8.44955	8.34622	0.11676
L40	13.94000	-3.361	50.351	1.70201	8.21955	8.34622	0.11676
L40	14.09000	-3.361	50.351	1.70201	8.36955	8.34622	0.11676

RUMUS EKSPRESI :  
SLOPE \* LOG TEMPLATE +  
STARTING QUANTITY

SATUAN EKSPRESI :  
FOLD CHANGE

Sample	Starting Quantity (SQ)	Slope (dR)	Template	Log Template	Exp. mRNA	ER Mean	ER Std. Dev
Standard	2.08E+01	-3.377	50.000	1.69897	15.09258	15.05591	0.15822
Standard	2.09E+01	-3.377	50.000	1.69897	15.19258	15.05591	0.15822
Standard	2.06E+01	-3.377	50.000	1.69897	14.88258	15.05591	0.15822
L01	1.84E+01	-3.377	50.305	1.70161	12.62366	12.62366	0.26000
L01	1.81E+01	-3.377	50.305	1.70161	12.36366	12.62366	0.26000
L01	1.86E+01	-3.377	50.305	1.70161	12.88366	12.62366	0.26000
L02	1.72E+01	-3.377	50.301	1.70158	11.46378	11.44378	0.14107
L02	1.70E+01	-3.377	50.301	1.70158	11.29378	11.44378	0.14107
L02	1.73E+01	-3.377	50.301	1.70158	11.57378	11.44378	0.14107
L03	1.87E+01	-3.377	50.173	1.70047	12.92751	13.13751	0.19313
L03	1.89E+01	-3.377	50.173	1.70047	13.17751	13.13751	0.19313
L03	1.91E+01	-3.377	50.173	1.70047	13.30751	13.13751	0.19313
Standard	1.89E+01	-3.377	25.000	1.39794	14.21916	14.35249	0.14048
Standard	1.92E+01	-3.377	25.000	1.39794	14.49916	14.35249	0.14048
Standard	1.91E+01	-3.377	25.000	1.39794	14.33916	14.35249	0.14048
L04	1.82E+01	-3.377	49.978	1.69878	12.48322	12.38322	0.10536
L04	1.81E+01	-3.377	49.978	1.69878	12.39322	12.38322	0.10536
L04	1.80E+01	-3.377	49.978	1.69878	12.27322	12.38322	0.10536
L05	1.97E+01	-3.377	50.256	1.70119	13.94509	14.05176	0.09713
L05	1.98E+01	-3.377	50.256	1.70119	14.07509	14.05176	0.09713
L05	1.99E+01	-3.377	50.256	1.70119	14.13509	14.05176	0.09713
L06	1.77E+01	-3.377	49.457	1.69423	11.98859	11.95526	0.22189
L06	1.79E+01	-3.377	49.457	1.69423	12.15859	11.95526	0.22189
L06	1.74E+01	-3.377	49.457	1.69423	11.71859	11.95526	0.22189
Standard	1.67E+01	-3.377	12.500	1.09691	12.96573	12.94240	0.09713
Standard	1.67E+01	-3.377	12.500	1.09691	13.02573	12.94240	0.09713
Standard	1.65E+01	-3.377	12.500	1.09691	12.83573	12.94240	0.09713
L07	1.83E+01	-3.377	50.296	1.70153	12.50392	12.48725	0.04726
L07	1.82E+01	-3.377	50.296	1.70153	12.43392	12.48725	0.04726
L07	1.83E+01	-3.377	50.296	1.70153	12.52392	12.48725	0.04726
L08	1.68E+01	-3.377	50.071	1.69959	11.08050	11.02716	0.11930
L08	1.66E+01	-3.377	50.071	1.69959	10.89050	11.02716	0.11930
L08	1.69E+01	-3.377	50.071	1.69959	11.11050	11.02716	0.11930
L09	1.72E+01	-3.377	50.116	1.69998	11.48918	11.73918	0.21794
L09	1.76E+01	-3.377	50.116	1.69998	11.83918	11.73918	0.21794
L09	1.76E+01	-3.377	50.116	1.69998	11.88918	11.73918	0.21794
Standard	1.43E+01	-3.377	6.250	0.79588	11.65231	11.64898	0.12503
Standard	1.42E+01	-3.377	6.250	0.79588	11.52231	11.64898	0.12503
Standard	1.45E+01	-3.377	6.250	0.79588	11.77231	11.64898	0.12503
L10	2.04E+01	-3.377	50.274	1.70134	14.69456	14.75456	0.20664
L10	2.07E+01	-3.377	50.274	1.70134	14.98456	14.75456	0.20664
L10	2.03E+01	-3.377	50.274	1.70134	14.58456	14.75456	0.20664
L11	1.99E+01	-3.377	50.312	1.70167	14.12346	14.25015	0.11154
L11	2.00E+01	-3.377	50.312	1.70167	14.29346	14.25015	0.11154
L11	1.97E+01	-3.377	50.312	1.70167	14.33346	14.25015	0.11154
L12	1.79E+01	-3.377	50.175	1.70049	12.11745	11.97412	0.34790
L12	1.73E+01	-3.377	50.175	1.70049	11.5		



## HASIL PEMERIKSAAN REAL TIME PCR

### Sampel Nomor 1 – 30: Kelompok Kontrol

No	Sampel	Kontrol	Ekspresi (fold change)
1	L01	MA Non Psikotik	12.624
2	L02	MA Non Psikotik	11.444
3	L03	MA Non Psikotik	13.138
4	L04	MA Non Psikotik	12.383
5	L05	MA Non Psikotik	14.052
6	L06	MA Non Psikotik	11.955
7	L07	MA Non Psikotik	12.487
8	L08	MA Non Psikotik	11.027
9	L09	MA Non Psikotik	11.739
10	L10	MA Non Psikotik	14.755
11	L11	MA Non Psikotik	11.749
12	L12	MA Non Psikotik	13.555
13	L13	MA Non Psikotik	15.102
14	L14	MA Non Psikotik	12.952
15	L15	MA Non Psikotik	13.347

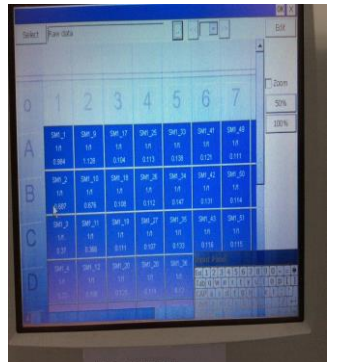
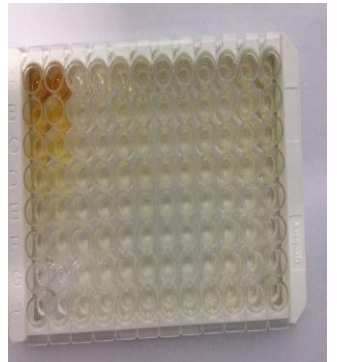
No	Sampel	Kontrol	Ekspresi (fold change)
16	L16	Non Pengguna	13.537
17	L17	Non Pengguna	12.383
18	L18	Non Pengguna	12.639
19	L19	Non Pengguna	13.334
20	L20	Non Pengguna	12.906
21	L21	Non Pengguna	12.525
22	L22	Non Pengguna	14.064
23	L23	Non Pengguna	14.064
24	L24	Non Pengguna	11.739
25	L25	Non Pengguna	14.064
26	L26	Non Pengguna	14.250
27	L27	Non Pengguna	11.974
28	L28	Non Pengguna	11.974
29	L29	Non Pengguna	11.893
30	L30	Non Pengguna	11.893

### Sampel Nomor 31 – 60: Kelompok Kasus

NO	Sampel	Ekspresi (Fold change)
31	L31	6.936
32	L32	7.396
33	L33	9.388
34	L34	7.925
35	L35	8.245
36	L36	5.914
37	L37	5.216
38	L38	9.177
39	L39	7.002
40	L40	8.346
41	L41	8.034
42	L42	6.088
43	L43	8.289
44	L44	7.719
45	L45	8.092

NO	Sampel	Ekspresi (Fold change)
46	L46	8.239
47	L47	9.653
48	L48	9.170
49	L49	5.015
50	L50	6.926
51	L53	6.460
52	L52	8.430
53	L53	5.449
54	L54	6.080
55	L55	7.637
56	L56	4.722
57	L57	8.947
58	L58	9.807
59	L59	5.537
60	L60	8.074

## PEMERIKSAAN KADAR PROTEIN GEN NQO2 DENGAN SANDWICH ELISA



# NILAI PEMERIKSAAN SANDWICH ELISA

Human Ribosyldihyronicotinamide Dehydrogenase [Quinone] (NQO2) ELISA Kit Cat.No: MBS9321059

**Layout**

<>	1	2	3	4	5	6	7	8	9	10	11	12
A	Standard 1	Standard 1	Sample-1	Sample-1	Sample-2	Sample-2	Sample-3	Sample-3	Sample-4	Sample-4	Sample-5	Sample-5
B	Standard 2	Standard 2	Sample-6	Sample-6	Sample-7	Sample-7	Sample-8	Sample-8	Sample-9	Sample-9	Sample-10	Sample-10
C	Standard 3	Standard 3	Sample-11	Sample-11	Sample-12	Sample-12	Sample-13	Sample-13	Sample-14	Sample-14	Sample-15	Sample-15
D	Standard 4	Standard 4	Sample-16	Sample-16	Sample-17	Sample-17	Sample-18	Sample-18	Sample-19	Sample-19	Sample-20	Sample-20
E	Standard 5	Standard 5	Sample-21	Sample-21	Sample-22	Sample-22	Sample-23	Sample-23	Sample-24	Sample-24	Sample-25	Sample-25
F	Standard 6	Standard 6	Sample-26	Sample-26	Sample-27	Sample-27	Sample-28	Sample-28	Sample-29	Sample-29	Sample-30	Sample-30
G	Standard 7	Standard 7	Sample-31	Sample-31	Sample-32	Sample-32	Sample-33	Sample-33	Sample-34	Sample-34	Sample-35	Sample-35
H	NEG	NEG	Sample-36	Sample-36	Sample-37	Sample-37	Sample-38	Sample-38	Sample-39	Sample-39	Sample-40	Sample-40

**Sampel**

<>	1	2	3	4	5	6	7	8	9	10	11	12
A	hNQO2#1	8	S01	S01	S02	S02	S03	S03	S04	S04	S05	S05
B	hNQO2#2	4	S06	S06	S07	S07	S08	S08	S09	S09	S10	S10
C	hNQO2#3	2	S11	S11	S12	S12	S13	S13	S14	S14	S15	S15
D	hNQO2#4	1	S16	S16	S17	S17	S18	S18	S19	S19	S20	S20
E	hNQO2#5	0.5	S31	S31	S32	S32	S33	S33	S34	S34	S35	S35
F	hNQO2#6	0.25	S36	S36	S37	S37	S38	S38	S39	S39	S40	S40
G	NEG	0	S41	S41	S42	S42	S43	S43	S44	S44	S45	S45
H	Blank	0	S46	S46	S47	S47	S48	S48	S49	S49	S50	S50

**Optic Density**

<>	1	2	3	4	5	6	7	8	9	10	11	12
A	0.984	1.128	0.104	0.113	0.138	0.121	0.111	0.112	0.111	0.117	0.141	0.132
B	0.687	0.676	0.108	0.112	0.147	0.131	0.114	0.105	0.117	0.119	0.144	0.148
C	0.370	0.366	0.111	0.107	0.133	0.116	0.115	0.107	0.107	0.116	0.146	0.132
D	0.220	0.186	0.123	0.114	0.13	0.125	0.112	0.125	0.116	0.124	0.143	0.129
E	0.139	0.130	0.086	0.084	0.091	0.097	0.097	0.104	0.097	0.112	0.108	0.095
F	0.105	0.089	0.095	0.092	0.093	0.09	0.083	0.091	0.087	0.113	0.108	0.111
G	0.054	0.050	0.083	0.088	0.086	0.09	0.089	0.098	0.090	0.109	0.122	0.115
H	0.048	0.316	0.086	0.101	0.097	0.088	0.083	0.086	0.088	0.115	0.098	0.096

Human Ribosyldihyronicotinamide Dehydrogenase [Quinone] (NQO2) ELISA Kit Cat.No: MBS9321059

**Layout**

<>	1	2	3	4	5	6	7	8	9	10	11	12
A	Standard 1	Standard 1	Sample-1	Sample-1	Sample-2	Sample-2	Sample-3	Sample-3	Sample-4	Sample-4	Sample-5	Sample-5
B	Standard 2	Standard 2	Sample-6	Sample-6	Sample-7	Sample-7	Sample-8	Sample-8	Sample-9	Sample-9	Sample-10	Sample-10
C	Standard 3	Standard 3	Sample-11	Sample-11	Sample-12	Sample-12	Sample-13	Sample-13	Sample-14	Sample-14	Sample-15	Sample-15
D	Standard 4	Standard 4	Sample-16	Sample-16	Sample-17	Sample-17	Sample-18	Sample-18	Sample-19	Sample-19	Sample-20	Sample-20
E	Standard 5	Standard 5	Sample-21	Sample-21	Sample-22	Sample-22	Sample-23	Sample-23	Sample-24	Sample-24	Sample-25	Sample-25
F	Standard 6	Standard 6										
G	Standard 7	Standard 7										
H	NEG	NEG										

**Sampel**

<>	1	2	3	4	5	6	7	8	9	10	11	12
A	hNQO2#1	8	S21	S21	S22	S22	S23	S23	S24	S24	S25	S25
B	hNQO2#2	4	S26	S26	S27	S27	S28	S28	S29	S29	S30	S30
C	hNQO2#3	2	S51	S51	S52	S52	S53	S53	S54	S54	S55	S55
D	hNQO2#4	1	S56	S56	S57	S57	S58	S58	S59	S59	S60	S60
E	hNQO2#5	0.5	S33	S33	S34	S34	S35	S35	S45	S45	S49	S49
F	hNQO2#6	0.25										
G	NEG	0										
H	Blank	0										

**Optic Density**

<>	1	2	3	4	5	6	7	8	9	10	11	12
A	1.253	0.977	0.125	0.141	0.143	0.131	0.133	0.119	0.129	0.119	0.141	0.129
B	0.733	0.671	0.133	0.125	0.141	0.137	0.108	0.134	0.152	0.130	0.117	0.137
C	0.358	0.371	0.103	0.077	0.076	0.094	0.098	0.092	0.101	0.093	0.096	0.070
D	0.194	0.204	0.096	0.090	0.103	0.073	0.107	0.091	0.077	0.095	0.096	0.086
E	0.138	0.131	0.083	0.091	0.112	0.136	0.088	0.079	0.125	0.103	0.078	0.083
F	0.102	0.095	0.047	0.045	0.044	0.047	0.043	0.044	0.044	0.043	0.047	0.046
G	0.053	0.051	0.043	0.046	0.046	0.042	0.045	0.043	0.045	0.044	0.048	0.046
H	0.046	0.048	0.046	0.043	0.045	0.045	0.042	0.045	0.048	0.046	0.043	0.047

Human Ribosyldihyronicotinamide Dehydrogenase [Quinone] (NQO2) ELISA Kit Cat.No: MBS9321059

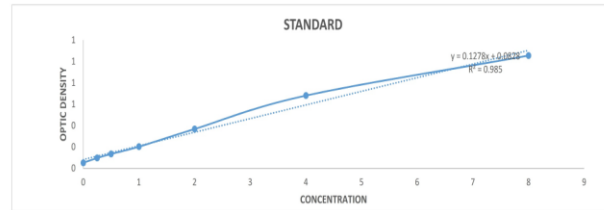
Mean / STD DEV OD

<>	1	2	3	4	5	6	7	8	9	10	11	12
A	1.056	0.102	0.109	0.006	0.130	0.012	0.112	0.001	0.114	0.004	0.137	0.006
B	0.682	0.008	0.110	0.003	0.139	0.011	0.110	0.006	0.118	0.001	0.146	0.003
C	0.368	0.003	0.109	0.003	0.125	0.012	0.111	0.006	0.112	0.006	0.139	0.010
D	0.203	0.024	0.119	0.006	0.128	0.004	0.119	0.009	0.120	0.006	0.136	0.010
E	0.135	0.006	0.085	0.001	0.094	0.004	0.101	0.005	0.105	0.011	0.102	0.009
F	0.097	0.011	0.094	0.002	0.092	0.002	0.087	0.006	0.100	0.018	0.110	0.002
G	0.052	0.003	0.086	0.004	0.088	0.003	0.094	0.006	0.100	0.013	0.119	0.005
H	0.182	0.190	0.094	0.011	0.093	0.006	0.085	0.002	0.102	0.019	0.097	0.001

Sampel / Concentration (pg/ml)

	1	2	3	4	5	6	7	8	9	10	11	12
A	hNQO2#1	8	S01	0.2319	S02	0.39379	S03	0.25503	S04	0.2743	S05	0.44775
B	hNQO2#2	4	S06	0.24346	S07	0.46702	S08	0.23961	S09	0.30514	S10	0.52099
C	hNQO2#3	2	S11	0.23576	S12	0.35524	S13	0.25117	S14	0.25503	S15	0.46702
D	hNQO2#4	1	S16	0.30899	S17	0.37837	S18	0.30899	S19	0.32055	S20	0.4439
E	hNQO2#5	0.5	S31	0.05074	S32	0.12012	S33	0.17023	S34	0.20106	S35	0.17794
F	hNQO2#6	0.25	S36	0.11627	S37	0.10085	S38	0.06616	S39	0.16637	S40	0.23961
G	NEG	0	S41	0.05459	S42	0.07387	S43	0.11627	S44	0.16252	S45	0.30899
H	Blank	0	S46	0.11627	S47	0.10856	S48	0.04689	S49	0.17794	S50	0.14325

Conc	OD
8	1.056
4	0.682
2	0.368
1	0.203
0.5	0.135
0.25	0.097
0	0.052



Human Ribosyldihyronicotinamide Dehydrogenase [Quinone] (NQO2) ELISA Kit Cat.No: MBS9321059

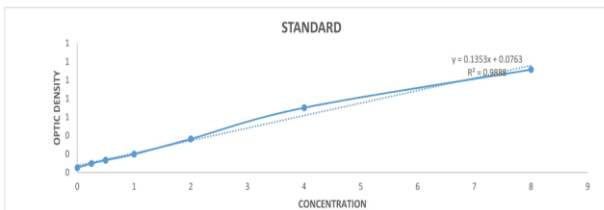
Mean / STD DEV OD

<>	1	2	3	4	5	6	7	8	9	10	11	12
A	1.115	0.195	0.133	0.011	0.137	0.008	0.126	0.010	0.124	0.007	0.135	0.008
B	0.702	0.044	0.129	0.006	0.139	0.003	0.121	0.018	0.141	0.016	0.127	0.014
C	0.365	0.009	0.090	0.018	0.085	0.013	0.095	0.004	0.097	0.006	0.083	0.018
D	0.199	0.007	0.093	0.004	0.088	0.021	0.099	0.011	0.086	0.013	0.091	0.007
E	0.135	0.005	0.087	0.006	0.124	0.017	0.084	0.006	0.114	0.016	0.081	0.004
F	0.099	0.005										
G	0.052	0.001										
H	0.047	0.001										

Sampel / Concentration (pg/ml)

	1	2	3	4	5	6	7	8	9	10	11	12
A	hNQO2#1	8	S21	0.43975	S22	0.46897	S23	0.38861	S24	0.374	S25	0.45436
B	hNQO2#2	4	S26	0.41052	S27	0.48358	S28	0.35208	S29	0.49819	S30	0.39591
C	hNQO2#3	2	S51	0.1256	S52	0.08907	S53	0.16213	S54	0.17674	S55	0.07446
D	hNQO2#4	1	S56	0.14752	S57	0.11099	S58	0.19135	S59	0.09638	S60	0.13291
E	hNQO2#5	0.5	S33	0.10368	S34	0.374	S35	0.07811	S45	0.30094	S49	0.0562
F	hNQO2#6	0.25										
G	NEG	0										
H	Blank	0										

Conc	OD
8	1.115
4	0.702
2	0.365
1	0.199
0.5	0.135
0.25	0.099
0	0.052



## HASIL PEMERIKSAAN SANDWICH ELISA

### Sampel Nomor 1 – 30: Kelompok Kontrol

No.	Sampel	Kontrol	Ekspresi (fold change)
1	L01	MA Non Psikotik	2.3190056
2	L02	MA Non Psikotik	3.9378903
3	L03	MA Non Psikotik	2.5502749
4	L04	MA Non Psikotik	2.7429993
5	L05	MA Non Psikotik	4.4775186
6	L06	MA Non Psikotik	2.4346403
7	L07	MA Non Psikotik	4.6702429
8	L08	MA Non Psikotik	2.3960954
9	L09	MA Non Psikotik	3.0513582
10	L10	MA Non Psikotik	5.2098711
11	L11	MA Non Psikotik	4.1052490
12	L12	MA Non Psikotik	4.8358206
13	L13	MA Non Psikotik	3.5207916
14	L14	MA Non Psikotik	4.9819350
15	L15	MA Non Psikotik	3.9591346

No.	Sampel	Kontrol	Ekspresi (fold change)
16	L16	Non Pengguna	2.3575505
17	L17	Non Pengguna	3.5524416
18	L18	Non Pengguna	2.5117300
19	L19	Non Pengguna	2.5117300
20	L20	Non Pengguna	2.5502749
21	L21	Non Pengguna	4.6702429
22	L22	Non Pengguna	3.7837108
23	L23	Non Pengguna	3.0899031
24	L24	Non Pengguna	3.2055377
25	L25	Non Pengguna	4.4389737
26	L26	Non Pengguna	4.3974776
27	L27	Non Pengguna	4.6897063
28	L28	Non Pengguna	3.8860774
29	L29	Non Pengguna	3.7399631
30	L30	Non Pengguna	4.5435920

### Sampel Nomor 31 – 60: Kelompok Kasus

NO	Sampel	Ekspresi (Fold change)
31	L31	6.936
32	L32	7.396
33	L33	9.388
34	L34	7.925
35	L35	8.245
36	L36	5.914
37	L37	5.216
38	L38	9.177
39	L39	7.002
40	L40	8.346
41	L41	8.034
42	L42	6.088
43	L43	8.289
44	L44	7.719
45	L45	8.092

NO	Sampel	Ekspresi (Fold change)
46	L46	8.239
47	L47	9.653
48	L48	9.170
49	L49	5.015
50	L50	6.926
51	L53	6.460
52	L52	8.430
53	L53	5.449
54	L54	6.080
55	L55	7.637
56	L56	4.722
57	L57	8.947
58	L58	9.807
59	L59	5.537
60	L60	8.074

## HASIL ANALISA SPSS 24

### A. ANALISIS EKSPRESI mRNA GEN NQO2 PADA PEMERIKSAAN RT PCR

#### 1. UJI T INDEPENDEN (INDEPENDENT SAMPLES TEST)

Uji T mula-mula dilakukan pada kelompok kontrol, antara klien pengguna MA tanpa psikotik (sampel nomor 1 sampai 15) dengan orang normal (bukan pengguna) (sampel nomor 16 sampai 30).

Group Statistics

	Normal	N	Mean	Std. Deviation	Std. Error Mean
met non	1	15	12.82060	1.192788	.307976
psikotik	2	15	12.93387	.928151	.239647

Nilai mean kelompok MA Non Psikotik = 12,82060, sedangkan kelompok orang normal / bukan pengguna = 12,93387.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Ekspresi mRNA	Equal variances assumed	.760	.391	-.290	28	.774	-.113267	.390231	-.912619	.686086
	Equal variances not assumed			-.290	26.406	.774	-.113267	.390231	-.914799	.688266

Hasil uji T memperlihatkan bahwa Nilai Sig. (2-tailed) yaitu 0,774, berarti lebih besar dari nilai alpha = 0,05 (>0,05).

Kemudian dilanjutkan Uji T antara kelompok kontrol keseluruhan (sampel nomor 1 sampai 30) dengan kelompok kasus (sampel nomor 31 sampai 60).

### T-Test

Group Statistics					
	KELOMPOK	N	Mean	Std. Deviation	Std. Error Mean
EKSPRESI RT- PCR	KONTROL	30	12,87723	1,051683	,192010
	KASUS	30	7,46377	1,454805	,265610

Nilai Mean Ekspresi RT-PCR pada kelompok kasus (7,46377), lebih kecil dari pada kelompok kontrol (12,87723).

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
EKSPRESI RT- PCR	Equal variances assumed	4,209	,045	16,517	58	,000	5,413467	,327745	4,757415	6,069519
	Equal variances not assumed			16,517	52,808	,000	5,413467	,327745	4,756039	6,070895

Hasil Uji T menunjukkan nilai *sig.(2-tailed)* = 0,000, berarti nilai tersebut lebih kecil dari nilai  $\alpha = 0.05$  ( $<0.05$ ).

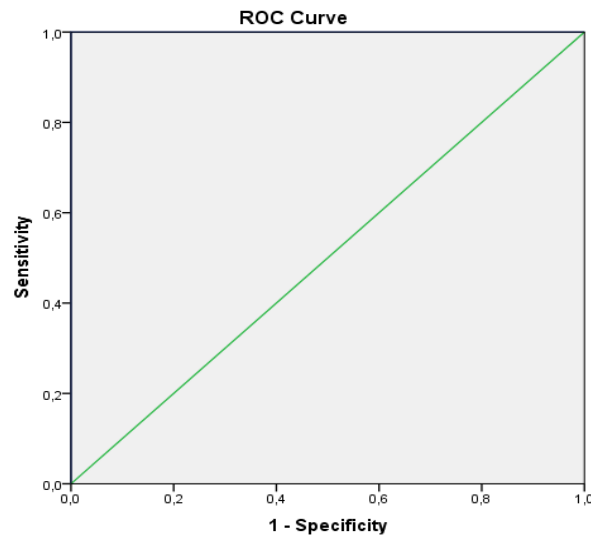
### 2. ROC CURVE

Case Processing Summary	
KELOMPOK	Valid N (listwise)
Positive <sup>a</sup>	30
Negative	30

Larger values of the test result variable(s) indicate stronger evidence for a positive actual state.

Interpretasi:

Pada tabel di atas menunjukkan bahwa jumlah subjek kelompok kontrol (Positive) adalah 30 dari 60 subjek. Dengan demikian prevalensinya adalah 50%.



Interpretasi:

Kurva ROC (Receiver Operating Characteristic) menunjukkan bahwa skor ekspresi RT-PCR mempunyai nilai diagnostic yang baik karena kurva jauh dari garis 50% dan mendekati 100%.

#### Area Under the Curve

Test Result Variable(s): EKSPRESI RT- PCR

Area	Std. Error <sup>a</sup>	Asymptotic Sig. <sup>b</sup>	Asymptotic 95% Confidence Interval	
			Lower Bound	Upper Bound
1,000	,000	,000	1,000	1,000

a. Under the nonparametric assumption

b. Null hypothesis: true area = 0.5

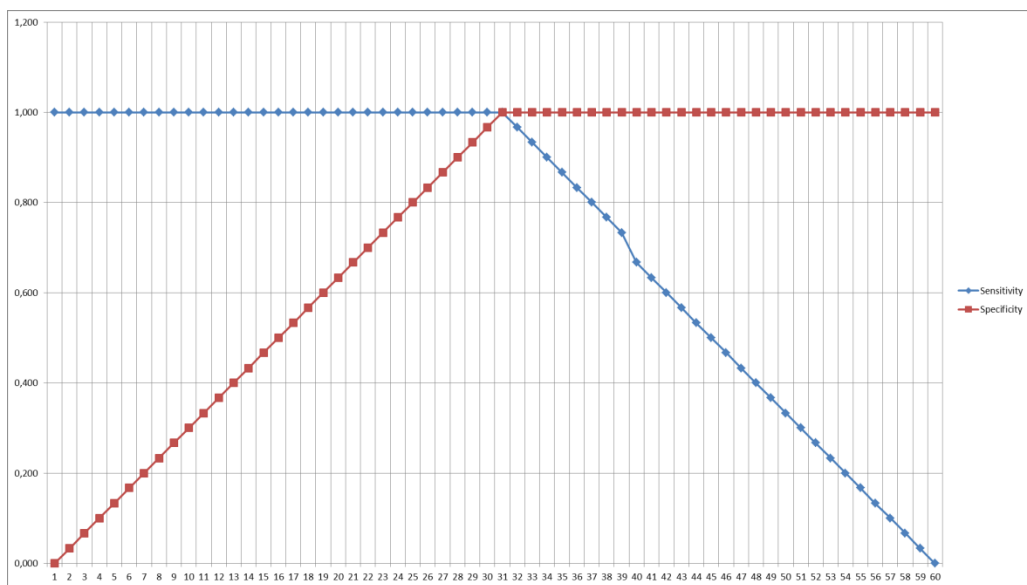
Interpretasi:

Nilai AUC (Area under the Curve) adalah 100% (IK95% 100% - 100%).

Nilai AUC 100% artinya apabila skor ekspresi RT-PCR digunakan



sebagai alat bantu diagnosa terhadap ada tidaknya gejala psikotik akibat penyalahgunaan metamfetamin pada 100 orang klien, maka kesimpulan yang tepat akan diperoleh pada 100 klien.



### Coordinates of the Curve

Test Result Variable(s): EKSPRESI RT- PCR

No.	Positive if Greater Than or Equal To <sup>a</sup>	Sensitivity	1 - Specificity
1	3,72200	1,000	1,000
2	4,86850	1,000	,967
3	5,11550	1,000	,933
4	5,33250	1,000	,900
5	5,49300	1,000	,867
6	5,72550	1,000	,833
7	5,99700	1,000	,800
8	6,08400	1,000	,767
9	6,27400	1,000	,733
10	6,69300	1,000	,700
11	6,93100	1,000	,667
12	6,96900	1,000	,633
13	7,19900	1,000	,600
14	7,51650	1,000	,567

15	7,67800	1,000	,533
16	7,82200	1,000	,500
17	7,97950	1,000	,467
18	8,05400	1,000	,433
19	8,08300	1,000	,400
20	8,16550	1,000	,367
21	8,24200	1,000	,333
22	8,26700	1,000	,300
23	8,31750	1,000	,267
24	8,38800	1,000	,233
25	8,68850	1,000	,200
26	9,05850	1,000	,167
27	9,17350	1,000	,133
28	9,28250	1,000	,100
29	9,52050	1,000	,067
30	9,73000	1,000	,033
31	10,41700	1,000	1,000
32	11,12500	,967	,000
33	11,33350	,933	,000
34	11,59150	,900	,000
35	11,74400	,867	,000
36	11,82100	,833	,000
37	11,92400	,800	,000
38	11,96450	,767	,000
39	12,17850	,733	,000
40	12,41500	,667	,000
41	12,46700	,633	,000
42	12,50600	,600	,000
43	12,57450	,567	,000
44	12,63150	,533	,000
45	12,64150	,500	,000
46	12,77500	,467	,000
47	12,92900	,433	,000
48	13,04500	,400	,000
49	13,23600	,367	,000
50	13,34050	,333	,000
51	13,44200	,300	,000
52	13,54600	,267	,000

53	13,77250	,233	,000
54	14,02100	,200	,000
55	14,05800	,167	,000
56	14,13150	,133	,000
57	14,22450	,100	,000
58	14,50250	,067	,000
59	14,92850	,033	,000
60	16,10200	,000	,000

a. The smallest cutoff value is the minimum observed test value minus 1, and the largest cutoff value is the maximum observed test value plus 1. All the other cutoff values are the averages of two consecutive ordered observed test values.

### Interpretasi:

**Titik potong (cut-off)** yang direkomendasikan secara statistik adalah antara 9,28 sampai 9,73, dengan nilai sensitivitas 100% dan spesifisitas  $\geq 90\%$ .

## B. ANALISIS KADAR PROTEIN PADA PEMERIKSAAN SANDWICH ELISA

### 9. UJI T INDEPENDEN (INDEPENDENT SAMPLES TEST)

Uji T mula-mula dilakukan pada kelompok kontrol, antara klien pengguna MA tanpa psikotik (sampel nomor 1 sampai 15) dengan orang normal (bukan pengguna) (sampel nomor 16 sampai 30).

**Group Statistics**

	kelompok	N	Mean	Std. Deviation	Std. Error Mean
elisa	1	15	3.679521826	1.0330177651	.2667240400
	2	15	3.633805655	.8101730502	.2091857821

Nilai mean kelompok MA Non Psikotik = 3.6752, sedangkan kelompok orang normal / bukan pengguna = 3,63387.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Elisa	Equal variances assumed	2.011	.167	.135	28	.894	.0457	.3389696225	-.6488316248	.7400639662
	Equal variances not assumed			.135	26.495	.894	.0457	.3389696225	-.6504126403	.7418449818

Hasil uji T memperlihatkan bahwa Nilai Sig. (2-tailed) yaitu 0,894, berarti lebih besar dari nilai alpha = 0,05 (>0,05).

Kemudian dilanjutkan Uji T antara kelompok kontrol keseluruhan (sampel nomor 1 sampai 30) dengan kelompok kasus (sampel nomor 31 sampai 60).

#### T-Test

	KELOMPOK	N	Mean	Std. Deviation	Std. Error Mean
KONSENTRASI SANDWICH	KONTROL	30	3,6570	,91276	,16665
ELISA	KASUS	30	1,2460	,59106	,10791

Nilai Mean kadar protein Elisa pada kelompok kasus (1,2460) lebih kecil dari kelompok kontrol (3,6570).

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
KONSENTRASI SANDWICH ELISA	Equal variances assumed	10,668	,002	12,144	58	,000	2,41100	,19853	2,01359	2,80841
	Equal variances not assumed			12,144	49,684	,000	2,41100	,19853	2,01217	2,80983

Hasil Uji t menunjukkan nilai *sig(2-tailed)* (Equal variances not assumed) = 0,000, lebih kecil dari 0.05 (<0.05).

## 10. ROC CURVE

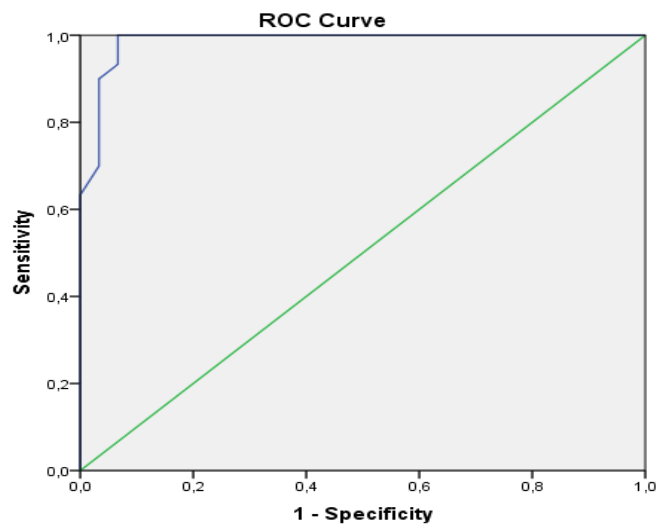
**Case Processing Summary**

KELOMPOK	Valid N (listwise)
Positive <sup>a</sup>	30
Negative	30

Larger values of the test result variable(s) indicate stronger evidence for a positive actual state.

### Interpretasi:

Pada tabel di atas menunjukkan bahwa jumlah subjek kelompok kasus (Positive) adalah 30 dari 60 subjek. Dengan demikian prevalensinya adalah 50%.



Diagonal segments are produced by ties.

### Interpretasi:

Kurva ROC (Receiver Operating Characteristic) menunjukkan bahwa skor konsentrasi Sandwich ELISA mempunyai nilai diagnostic yang baik karena kurva jauh dari garis 50% dan mendekati 100%.

**Area Under the Curve**  
**Test Result Variable(s): KONSENTRASI SANDWICH ELISA**

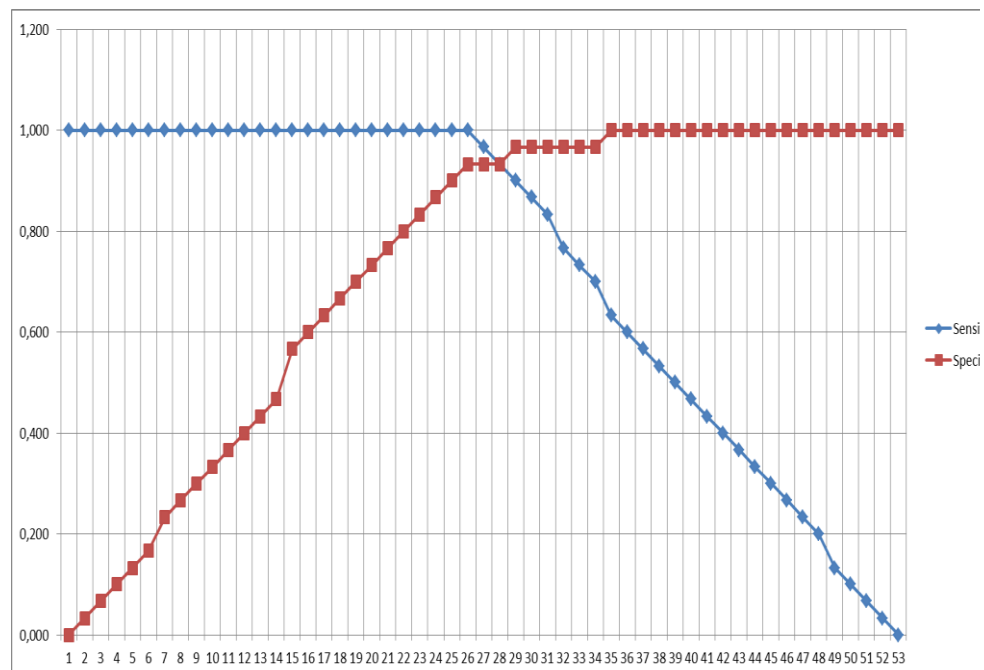
Area	Std. Error <sup>a</sup>	Asymptotic Sig. <sup>b</sup>	Asymptotic 95% Confidence Interval	
			Lower Bound	Upper Bound
,986	,012	,000	,962	1,000

The test result variable(s): KONSENTRASI SANDWICH ELISA has at least one tie between the positive actual state group and the negative actual state group. Statistics may be biased.

- a. Under the nonparametric assumption
- b. Null hypothesis: true area = 0.5

Interpretasi:

Nilai AUC (Area under the Curve) adalah 98,6% (IK95%; 92,2% - 100%). Nilai AUC 98,6% artinya apabila skor konsentrasi Sandwich ELISA digunakan untuk mendiagnosa ada tidaknya gejala psikotik akibat penyalahgunaan metamfetamin pada 100 orang klien, maka kesimpulan yang tepat akan diperoleh pada 98,6 klien



**Coordinates of the Curve**  
**Test Result Variable(s): KONSENTRASI**  
**SANDWICH ELISA**

No.	Positive if Greater Than or Equal To <sup>a</sup>	Sensitivity	1 - Specificity
1	-,5300	1,000	0,000
2	,4900	1,000	0,033
3	,5300	1,000	0,067
4	,5550	1,000	0,100
5	,6100	1,000	0,133
6	,7000	1,000	0,167
7	,7600	1,000	0,233
8	,8350	1,000	0,267
9	,9250	1,000	0,300
10	,9850	1,000	0,333
11	1,0250	1,000	0,367
12	1,0650	1,000	0,400
13	1,1000	1,000	0,433
14	1,1350	1,000	0,467
15	1,1800	1,000	0,567
16	1,2300	1,000	0,600
17	1,2950	1,000	0,633
18	1,3800	1,000	0,667
19	1,4550	1,000	0,700
20	1,5500	1,000	0,733
21	1,6250	1,000	0,767
22	1,6450	1,000	0,800
23	1,7150	1,000	0,833
24	1,8400	1,000	0,867
25	1,9600	1,000	0,900
26	2,1650	1,000	0,933
27	2,3400	,967	0,933
28	2,3800	,933	0,933
29	2,4150	,900	0,967
30	2,4700	,867	0,967
31	2,5300	,833	0,967
32	2,6450	,767	0,967
33	2,8950	,733	0,967

34	3,0700	,700	0,967
35	3,1500	0,633	1,000
36	21	Q`	1,000
37	3,5350	0,567	1,000
38	3,6450	0,533	1,000
39	3,7600	0,500	1,000
40	3,8350	0,467	1,000
41	3,9150	0,433	1,000
42	3,9500	0,400	1,000
43	4,0350	0,367	1,000
44	4,2550	0,333	1,000
45	4,4200	0,300	1,000
46	4,4600	0,267	1,000
47	4,5100	0,233	1,000
48	4,6050	0,200	1,000
49	4,6800	0,133	1,000
50	4,7650	0,100	1,000
51	4,9100	0,067	1,000
52	5,0950	0,033	1,000
53	6,2100	0,000	1,000

The test result variable(s): KADAR SANDWICH ELISA has at least one tie between the positive actual state group and the negative actual state group. The smallest cutoff value is the minimum observed test value minus 1, and the largest cutoff value is the maximum observed test value plus 1. All the other cutoff values are the averages of two consecutive ordered observed test values.

**Titik potong (cut-off)** yang direkomendasikan secara statistik adalah antara 0,49 sampai 0,55, dengan nilai sensitivitas 100% dan spesifisitas  $\geq 90\%$ .