

**L
A
M
P
I
R
A
N**

Lampiran 1. Surat keterangan determinasi temu hitam



KEMENTERIAN KESEHATAN REPUBLIK INDONESIA
BADAN KEBIJAKAN PEMBANGUNAN KESEHATAN
 BALAI BESAR PENELITIAN DAN PENGEMBANGAN
 TANAMAN OBAT DAN OBAT TRADISIONAL
 Jalan Lawu No.11 Tawamangu, Karanganyar, Jawa Tengah 57792
 Telepon (0271) 697 010 Faksimile (0271) 697 451
 Laman b2p2toot.litbang.kemkes.go.id Surat Elektronik b2p2toot@litbang.kemkes.go.id

Nomor : KM.04.02/2/628/2022
 Hal : Keterangan Determinasi

21 Maret 2022

Yth. Dekan Fakultas Farmasi Universitas Setia Budi
 Jalan Letjend. Sutoyo Mojosongo Solo 57127

Merujuk surat Saudara nomor: 262/D3-04/10.02.2022 tanggal 10 Februari 2022 hal permohonan determinasi, dengan ini kami sampaikan bahwa hasil determinasi sampel tanaman sebagai berikut:

Nama Pemohon : Tita Novarini
 Nama Sampel : Temu Hitam
 Sampel : Tanaman Segar
 Spesies : *Curcuma aeruginosa* Roxb.
 Sinonim : -
 Familia : Zingiberaceae
 Penanggung Jawab : Nina Kumianingrum, S.Si.

Hasil determinasi tersebut hanya mencakup sampel tanaman yang telah dikirimkan ke B2P2TOOT.


Atas perhatian Saudara, kami sampaikan terima kasih.

Kepala Balai Besar Penelitian
 dan Pengembangan Tanaman Obat
 dan Obat Tradisional
 Tawangmangu,



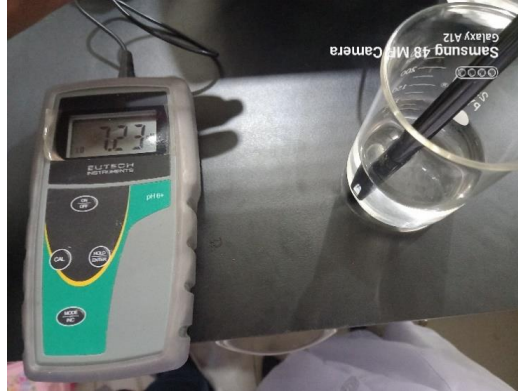
**Akhmad Saikhu, S.K.M.,
 M.Sc.PH.**

Lampiran 2. Ekstraksi enzim SOD

 <p>Pengambilan sampel</p>	 <p>Pencucian</p>
 <p>Diangin-anginkan</p>	 <p>Penimbangan sampel</p>
 <p>Perajangan</p>	 <p>Pemblenderan dengan penambahan PBS</p>
 <p>Penyaringan</p>	 <p>Sentrifugasi</p>
 <p>Supernatan ←</p> <p>→ Pelet</p> <p>Hasil sentrifugasi</p>	 <p>Ekstrak kasar/supernatan</p>

Lampiran 3. Pembuatan larutan PBS pH 7,2

NaCl ditimbang sebanyak 4,4 gram, Na_2HPO_4 sebanyak 1,5 gram, dan NaH_2PO_4 sebanyak 0,075 gram. Kemudian ketiga bahan tersebut dilarutkan dengan aquabidest dalam beaker glass dan dituang pada labu ukur 500 mL.



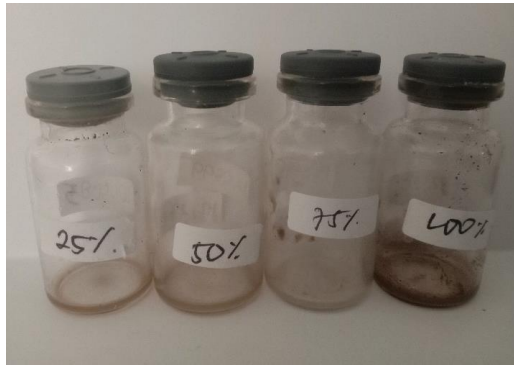
Lampiran 4. Penimbangan amonium sulfat

Initial concentration of ammonium sulfate (percentage saturation at 0 °C)	Percentage saturation at 0 °C																
	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	Solid ammonium sulfate (g) to be added to 1 l of solution																
0	106	134	164	194	226	258	291	326	361	398	436	476	516	559	603	650	697
5	79	108	137	166	197	229	262	296	331	368	405	444	484	526	570	615	662
10	53	81	109	139	169	200	233	266	301	337	374	412	452	493	536	581	627
15	26	54	82	111	141	172	204	237	271	306	343	381	420	460	503	547	592
20	0	27	55	83	113	143	175	207	241	276	312	349	387	427	469	512	557
25		0	27	56	84	115	146	179	211	245	280	317	355	395	436	478	522
30			0	28	56	86	117	148	181	214	249	285	323	362	402	445	488
35				0	28	57	87	118	151	184	218	254	291	329	369	410	453
40					0	29	58	89	120	153	187	222	258	296	335	376	418
45						0	29	59	90	123	156	190	226	263	302	342	383
50							0	30	60	92	125	159	194	230	268	308	348
55								0	30	61	93	127	161	197	235	273	313
60									0	31	62	95	129	164	201	239	279
65										0	31	63	97	132	168	205	244
70											0	32	65	99	134	171	209
75												0	32	66	101	137	174
80													0	33	67	103	139
85														0	34	68	105
90															0	34	70
95																0	35
100																	0

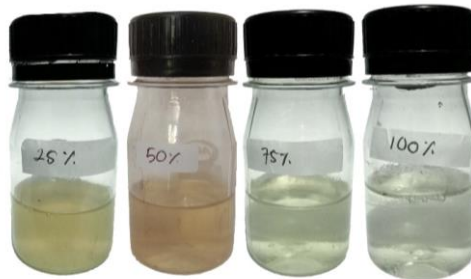
Penimbangan amonium sulfat adalah sebagai berikut:

- Konsentrasi garam amonium sulfat 25%
 $25\% = 30 \text{ mL} \times 134 \text{ gram}/1.000 \text{ mL} = 4,02 \text{ gram}$
- Konsentrasi garam amonium sulfat 50%
 $50\% = 30 \text{ mL} \times 291 \text{ gram}/1.000 \text{ mL} = 7,74 \text{ gram}$
- Konsentrasi garam amonium sulfat 75%
 $75\% = 30 \text{ mL} \times 476 \text{ gram}/1.000 \text{ mL} = 14,28 \text{ gram}$
- Konsentrasi garam amonium sulfat 100%
 $100\% = 30 \text{ mL} \times 697 \text{ gram}/1.000 \text{ mL} = 20,91 \text{ gram}$

Lampiran 5. Foto hasil pelet dan supernatan variasi konsentrasi presipitasi amonium sulfat



(Pelet)



(Supernatan)

Lampiran 6. Pembuatan reagen *Lowry*

Komposisi reagen *Lowry* adalah sebagai berikut:

1. Reagen *Lowry* A = 2% Na_2CO_3 + 0,10 N NaOH
2. Reagen *Lowry* B = 0,5% $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ + 1% Natrium Kalium Tartrat
3. Reagen *Lowry* C = 50 mL reagen A + 1 mL reagen B
4. Reagen *Lowry* D = 10 mL *Folin-Ciocalteu phenol* + 10 mL aquabidest



(Reagen *Lowry* A, B, dan D)



(Reagen *Lowry* C)

Lampiran 7. Pembuatan larutan induk dan pengenceran BSA

1. Larutan induk

$$\begin{aligned}\text{Larutan induk} &= 1 \text{ mg/1 ml} \\ &= 1.000 \text{ mg/1.000 ml} \\ &= 1.000 \text{ ppm}\end{aligned}$$

2. Pengenceran

$$V_1 \times N_1 = V_2 \times N_2$$

a. 50 ppm

$$\begin{aligned}V_1 \times 1.000 \text{ ppm} &= 10 \text{ mL} \times 50 \\ \text{ppm} \\ 1.000V_1 &= 500 \\ V_1 &= 500/1.000 \\ &= 0,5 \text{ ml}\end{aligned}$$

b. 75 ppm

$$\begin{aligned}V_1 \times 1.000 \text{ ppm} &= 10 \text{ mL} \times 75 \\ \text{ppm} \\ 1.000V_1 &= 750 \\ V_1 &= 750/1.000 \\ &= 0,75 \text{ ml}\end{aligned}$$

c. 100 ppm

$$\begin{aligned}V_1 \times 1.000 \text{ ppm} &= 10 \text{ mL} \times \\ 100 \text{ ppm} \\ 1.000V_1 &= 1.000 \\ V_1 &= 1.000/1.000 \\ &= 1 \text{ ml}\end{aligned}$$

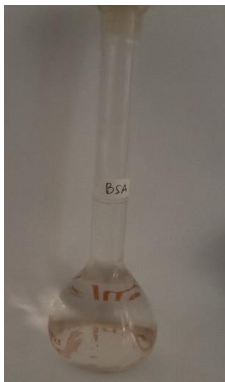
d. 125 ppm

$$\begin{aligned}V_1 \times 1.000 \text{ ppm} &= 10 \text{ mL} \times \\ 125 \text{ ppm} \\ 1.000V_1 &= 1.250 \\ V_1 &= 1.250/1000 \\ &= 1,25 \text{ ml}\end{aligned}$$

e. 150 ppm

$$\begin{aligned}V_1 \times 1.000 \text{ ppm} &= 10 \text{ mL} \times \\ 150 \text{ ppm} \\ 1.000V_1 &= 1.500 \\ V_1 &= 1.500/1000 \\ &= 1,5 \text{ ml}\end{aligned}$$

Lampiran 8. Foto larutan induk dan konsentrasi BSA



(Larutan induk BSA
1000 ppm)



(Konsentrasi BSA)

Lampiran 9. Absorbansi kurva baku BSA

Konsentrasi (ppm)	Absorbansi
0	0,028
50	0,327
75	0,437
100	0,564
125	0,661
150	0,785

Persamaan kalibrasi ($y = a + bx$) konsentrasi absorbansi BSA adalah
 $y = 0,053 + 0,005x$

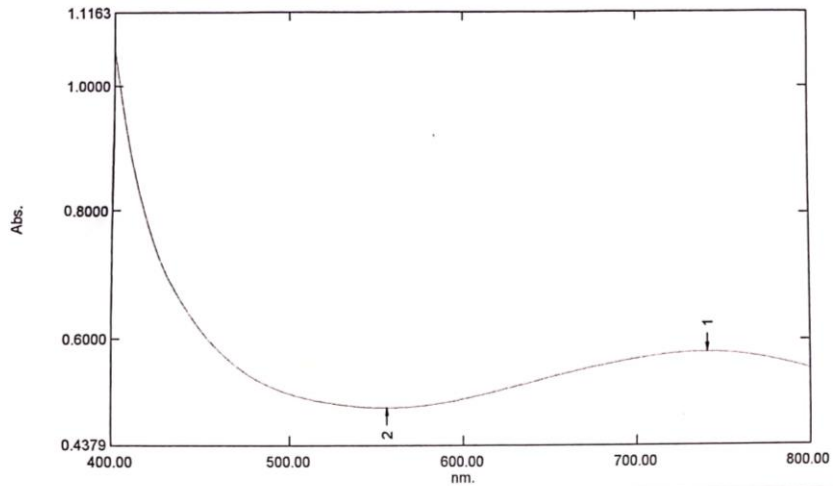
Lampiran 10. Hasil panjang gelombang maksimum

Panjang gelombang maksimum = 741 nm

Spectrum Peak Pick Report

04/25/2022 10:15:49 AM

Data Set: File_220425_101125 - RawData



[Measurement Properties]
 Wavelength Range (nm.): 400.00 to 800.00
 Scan Speed: Fast
 Sampling Interval: 1.0
 Auto Sampling Interval: Disabled
 Scan Mode: Single

No.	P/V	Wavelength	Abs.	Description
1		741.00	0.5807	
2		556.00	0.4944	

[Instrument Properties]
 Instrument Type: UV-1800 Series
 Measuring Mode: Absorbance
 Slit Width: 1.0 nm
 Light Source Change Wavelength: 340.0 nm
 S/R Exchange: Normal

[Attachment Properties]
 Attachment: None

[Operation]
 Threshold: 0.0010000
 Points: 4
 InterPolate: Disabled
 Average: Disabled

[Sample Preparation Properties]
 Weight:
 Volume:
 Dilution:
 Path Length:
 Additional Information:

Lampiran 11. Hasil *operating time**Operating time (OT) = 40-45 menit*

Time (Minute)	Absorbansi
0,000	0,770
1,000	0,768
2,000	0,768
3,000	0,768
4,000	0,767
5,000	0,768
6,000	0,766
7,000	0,767
8,000	0,766
9,000	0,767
10,000	0,767
11,000	0,767
12,000	0,760
13,000	0,758
14,000	0,756
15,000	0,758
16,000	0,762
17,000	0,767
18,000	0,767
19,000	0,766
20,000	0,767
21,000	0,764
22,000	0,765

Time (Minute)	Absorbansi
23,000	0,761
24,000	0,763
25,000	0,764
26,000	0,763
27,000	0,764
28,000	0,763
29,000	0,764
30,000	0,764
31,000	0,764
32,000	0,765
33,000	0,765
34,000	0,766
35,000	0,765
36,000	0,764
37,000	0,765
38,000	0,764
39,000	0,764
40,000	0,765
41,000	0,765
42,000	0,765
43,000	0,765
44,000	0,765
45,000	0,765

Lampiran 12. Hasil absorbansi ekstrak kasar enzim SOD temu hitam



No.	Sampel	Absorbansi	Rata-rata Absorbansi
1.	Ekstrak kasar	0,508 0,507 0,506	0,507
2.	Konsentrasi amonium sulfat		
	a. Konsentrasi 25%	0,370 0,375 0,372	0,372
	b. Konsentrasi 50%	0,407 0,412 0,406	0,408
	c. Konsentrasi 75%	0,428 0,432 0,427	0,429
	d. Konsentrasi 100%	0,526 0,525 0,524	0,525

Lampiran 13. Perhitungan protein total ekstrak kasar enzim SOD temu hitam

$$y = 0,053 + 0,005x$$

$$x = \frac{y-0,053}{0,005}$$

1. Ekstrak kasar

a. Replikasi I

$$\begin{aligned} x &= \frac{0,508 - 0,053}{0,005} \\ &= 91 \mu\text{g/ml} \\ &= 91 \times \text{fp} \\ &= 91 \times 100 \\ &= 9.100 \mu\text{g/ml} \\ &= 0,910 \text{ mg/ml} \end{aligned}$$

c. Replikasi III

$$\begin{aligned} x &= \frac{0,506 - 0,053}{0,005} \\ &= 90,6 \mu\text{g/ml} \\ &= 90,6 \times \text{fp} \\ &= 90,6 \times 100 \\ &= 9.060 \mu\text{g/ml} \\ &= 0,906 \text{ mg/ml} \end{aligned}$$

b. Replikasi II

$$\begin{aligned} x &= \frac{0,507 - 0,053}{0,005} \\ &= 90,8 \mu\text{g/ml} \\ &= 90,8 \times \text{fp} \\ &= 90,8 \times 100 \\ &= 9.080 \mu\text{g/ml} \\ &= 0,908 \text{ mg/ml} \end{aligned}$$

2. Konsentrasi amonium sulfat

a. Konsentrasi 25%

a) Replikasi I

$$\begin{aligned} x &= \frac{0,370 - 0,053}{0,005} \\ &= 63,4 \mu\text{g/ml} \\ &= 63,4 \times \text{fp} \\ &= 63,4 \times 100 \\ &= 6.340 \mu\text{g/ml} \\ &= 0,634 \text{ mg/ml} \end{aligned}$$

c) Replikasi III

$$\begin{aligned} x &= \frac{0,372 - 0,053}{0,005} \\ &= 63,8 \mu\text{g/ml} \\ &= 63,8 \times \text{fp} \\ &= 63,8 \times 100 \\ &= 6.380 \mu\text{g/ml} \\ &= 0,638 \text{ mg/ml} \end{aligned}$$

b) Replikasi II

$$\begin{aligned} x &= \frac{0,375 - 0,053}{0,005} \\ &= 64,4 \mu\text{g/ml} \\ &= 64,4 \times \text{fp} \\ &= 64,4 \times 100 \\ &= 6.440 \mu\text{g/ml} \\ &= 0,644 \text{ mg/ml} \end{aligned}$$

b. Konsentrasi 50%

a) Replikasi I

$$\begin{aligned}
 x &= \frac{0,407 - 0,053}{0,005} \\
 &= 70,8 \text{ } \mu\text{g/ml} \\
 &= 70,8 \text{ x fp} \\
 &= 70,8 \text{ x } 100 \\
 &= 7.080 \text{ } \mu\text{g/ml} \\
 &= 0,708 \text{ mg/ml}
 \end{aligned}$$

b) Replikasi II

$$\begin{aligned}
 x &= \frac{0,412 - 0,053}{0,005} \\
 &= 71,7 \text{ } \mu\text{g/ml} \\
 &= 71,7 \text{ x fp} \\
 &= 71,7 \text{ x } 100 \\
 &= 7.170 \text{ } \mu\text{g/ml} \\
 &= 0,717 \text{ mg/ml}
 \end{aligned}$$

c. Konsentrasi 75%

a) Replikasi I

$$\begin{aligned}
 x &= \frac{0,423 - 0,053}{0,005} \\
 &= 74,9 \text{ } \mu\text{g/ml} \\
 &= 74,9 \text{ x fp} \\
 &= 74,9 \text{ x } 100 \\
 &= 7.490 \text{ } \mu\text{g/ml} \\
 &= 0,749 \text{ mg/ml}
 \end{aligned}$$

b) Replikasi II

$$\begin{aligned}
 x &= \frac{0,432 - 0,053}{0,005} \\
 &= 75,7 \text{ } \mu\text{g/ml} \\
 &= 75,7 \text{ x fp} \\
 &= 75,7 \text{ x } 100 \\
 &= 7.570 \text{ } \mu\text{g/ml} \\
 &= 0,757 \text{ mg/ml}
 \end{aligned}$$

c) Replikasi III

$$\begin{aligned}
 x &= \frac{0,406 - 0,053}{0,005} \\
 &= 70,6 \text{ } \mu\text{g/ml} \\
 &= 70,6 \text{ x fp} \\
 &= 70,6 \text{ x } 100 \\
 &= 7.060 \text{ } \mu\text{g/ml} \\
 &= 0,706 \text{ mg/ml}
 \end{aligned}$$

c) Replikasi III

$$\begin{aligned}
 x &= \frac{0,429 - 0,053}{0,005} \\
 &= 75,1 \text{ } \mu\text{g/ml} \\
 &= 75,1 \text{ x fp} \\
 &= 75,1 \text{ x } 100 \\
 &= 7.510 \text{ } \mu\text{g/ml} \\
 &= 0,751 \text{ mg/ml}
 \end{aligned}$$

d. Konsentrasi 100%

a) Replikasi I

$$\begin{aligned}x &= \frac{0,526 - 0,053}{0,005} \\&= 94,6 \mu\text{g/ml} \\&= 94,6 \times \text{fp} \\&= 94,6 \times 100 \\&= 9.460 \mu\text{g/ml} \\&= 0,946 \text{ mg/ml}\end{aligned}$$

b) Replikasi II

$$\begin{aligned}x &= \frac{0,525 - 0,053}{0,005} \\&= 94,4 \mu\text{g/ml} \\&= 94,4 \times \text{fp} \\&= 94,4 \times 100 \\&= 9.440 \mu\text{g/ml} \\&= 0,944 \text{ mg/ml}\end{aligned}$$

c) Replikasi III

$$\begin{aligned}x &= \frac{0,524 - 0,053}{0,005} \\&= 94,2 \mu\text{g/ml} \\&= 94,2 \times \text{fp} \\&= 94,2 \times 100 \\&= 9.420 \mu\text{g/ml} \\&= 0,942 \text{ mg/ml}\end{aligned}$$

Lampiran 14. Hasil SPSS protein total

Sampel	Kadar (1) mg/ml	Kadar (2) mg/ml	Kadar (3) mg/ml	Rata-rata ± SD
Ekstrak kasar	0,910	0,908	0,906	0,908 ± 0,002
Konsentrasi amonium sulfat				
Konsentrasi 25%	0,634	0,644	0,638	0,639 ± 0,005
Konsentrasi 50%	0,708	0,717	0,706	0,710 ± 0,005
Konsentrasi 75%	0,749	0,757	0,751	0,752 ± 0,004
Konsentrasi 100%	0,946	0,944	0,942	0,944 ± 0,002

Tests of Normality							
	Kelompok	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Kadar_Protein	Ekstrak kasar	.175	3	.	1.000	3	1.000
	Konsentrasi 25%	.219	3	.	.987	3	.780
	Konsentrasi 50%	.321	3	.	.881	3	.328
	Konsentrasi 75%	.191	3	.	.997	3	.900
	Konsentrasi 100%	.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

Oneway

Test of Homogeneity of Variances			
Kadar_Protein			
Levene Statistic	df1	df2	Sig.
1.405	4	10	.301

ANOVA					
Kadar_Protein					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.205	4	.051	2616.680	.000
Within Groups	.000	10	.000		
Total	.205	14			

Post Hoc Tests

Multiple Comparisons						
Dependent Variable: Kadar_Protein						
Tukey HSD						
(I) Kelompok	(J) Kelompok	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Ekstrak kasar	Konsentrasi 25%	.269333*	.003615	.000	.25744	.28123
	Konsentrasi 50%	.197667*	.003615	.000	.18577	.20956
	Konsentrasi 75%	.156667*	.003615	.000	.14477	.16856
	Konsentrasi 100%	-.036000*	.003615	.000	-.04790	-.02410
Konsentrasi 25%	Ekstrak kasar	-.269333*	.003615	.000	-.28123	-.25744
	Konsentrasi 50%	-.071667*	.003615	.000	-.08356	-.05977
	Konsentrasi 75%	-.112667*	.003615	.000	-.12456	-.10077
	Konsentrasi 100%	-.305333*	.003615	.000	-.31723	-.29344
Konsentrasi 50%	Ekstrak kasar	-.197667*	.003615	.000	-.20956	-.18577
	Konsentrasi 25%	.071667*	.003615	.000	.05977	.08356
	Konsentrasi 75%	-.041000*	.003615	.000	-.05290	-.02910
	Konsentrasi 100%	-.233667*	.003615	.000	-.24556	-.22177
Konsentrasi 75%	Ekstrak kasar	-.156667*	.003615	.000	-.16856	-.14477
	Konsentrasi 25%	.112667*	.003615	.000	.10077	.12456
	Konsentrasi 50%	.041000*	.003615	.000	.02910	.05290
	Konsentrasi 100%	-.192667*	.003615	.000	-.20456	-.18077
Konsentrasi 100%	Ekstrak kasar	.036000*	.003615	.000	.02410	.04790
	Konsentrasi 25%	.305333*	.003615	.000	.29344	.31723
	Konsentrasi 50%	.233667*	.003615	.000	.22177	.24556
	Konsentrasi 75%	.192667*	.003615	.000	.18077	.20456

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

Lampiran 15. Tanda bukti uji aktivitas SOD



UNIVERSITAS GADJAH MADA
PUSAT STUDI PANGAN DAN GIZI

Alamat : Gedung PAU-UGM, Jalan Teknika Utara, Berek, Yogyakarta 55281, Phone/Fax. (0274) 589242
http://cfns.ugm.ac.id, E-mail : cfns@ugm.ac.id

LAPORAN HASIL UJI

(Analysis Certificate)

No.PSPG/198/V/2022

Nomor Pengujian <i>(Analysis Report Number)</i>	: PS/207/V/2022
Nama Pelanggan doyono <i>(Name of client)</i>	: Tita Novarini
Alamat dan Telpon Pelanggan <i>(Address and phon of client)</i>	:
Nama dan Bentuk Sampel Uji yang diminta <i>(Analysys requested)</i>	: Padatan SOD
Tanggal Penerimaan sampel	: 20 Mei 2022
Tanggal diserahkan ke lab.	: 20 Mei 2022
Metode Uji <i>(Analysis Method)</i>	: WST-1
Hasil Uji <i>(Analysis Result)</i>	:

Hasil analisis terlampir

Yogyakarta, 27 Mei 2022
Publik Servis PSPG – UGM

Sriyono

Lampiran 16. Hasil uji aktivitas SOD

PS / 207 / V / 2022			
No	Kode	Abs	SOD %
1	K (+).1	0,044	87,30
	K (+).2	0,042	90,48
	K (+).3	0,043	88,89
2	K (-).1	0,098	1,59
	K (-).2	0,099	0,00
	K (-).3	0,097	3,18
3	Ex Kasar.1	0,054	71,43
	Ex Kasar.2	0,051	76,19
	Ex Kasar.3	0,047	82,54
4	25%.1	0,083	25,40
	25%.2	0,085	22,22
	25%.3	0,084	23,81
5	50%.1	0,061	60,32
	50%.2	0,058	65,08
	50%.3	0,055	69,84
6	75%.1	0,050	77,78
	75%.2	0,055	69,84
	75%.3	0,059	63,49
7	100%.1	0,047	82,54
	100%.2	0,043	88,89
	100%.3	0,050	77,78
		1	0,166
		2	0,036
		3	0,103

Lampiran 17. Perhitungan persen inhibisi

$$\% \text{ Inhibisi} = \frac{(A_{\text{blanko 1}} - A_{\text{blanko 3}}) - (A_{\text{sampel}} - A_{\text{blanko 2}})}{(A_{\text{blanko 1}} - A_{\text{blanko 3}})} \times 100\%$$

1. Kontrol positif

a. Replikasi I

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,044 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,008}{0,063} \times 100\% \\ &= 87,302\% \end{aligned}$$

b. Replikasi II

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,042 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,006}{0,063} \times 100\% \\ &= 90,476\% \end{aligned}$$

c. Replikasi III

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,043 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,007}{0,063} \times 100\% \\ &= 88,889\% \end{aligned}$$

2. Kontrol negatif

a. Replikasi I

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,098 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,062}{0,063} \times 100\% \\ &= 1,587\% \end{aligned}$$

b. Replikasi II

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,099 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,063}{0,063} \times 100\% \\ &= 0,000\% \end{aligned}$$

c. Replikasi III

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,097 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,061}{0,063} \times 100\% \\ &= 3,175\% \end{aligned}$$

3. Ekstrak kasar

a. Replikasi I

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,054 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,018}{0,063} \times 100\% \\ &= 71,429\% \end{aligned}$$

b. Replikasi II

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,051 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,015}{0,063} \times 100\% \\ &= 76,190\% \end{aligned}$$

c. Replikasi III

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,047 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,018}{0,063} \times 100\% \\ &= 82,540\% \end{aligned}$$

4. Konsentrasi amonium sulfat

a. Konsentrasi 25%

a) Replikasi I

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,083 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,047}{0,063} \times 100\% \\ &= 25,397\% \end{aligned}$$

b) Replikasi II

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,085 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,049}{0,063} \times 100\% \\ &= 22,222\% \end{aligned}$$

c) Replikasi III

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,084 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,048}{0,063} \times 100\% \\ &= 23,810\% \end{aligned}$$

b. Konsentrasi 50%

a) Replikasi I

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,061 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,025}{0,063} \times 100\% \\ &= 60,317\%\end{aligned}$$

b) Replikasi II

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,058 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,022}{0,063} \times 100\% \\ &= 65,079\%\end{aligned}$$

c) Replikasi III

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,055 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,019}{0,063} \times 100\% \\ &= 69,841\%\end{aligned}$$

c. Konsentrasi 75%

a) Replikasi I

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,050 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,014}{0,063} \times 100\% \\ &= 77,778\%\end{aligned}$$

b) Replikasi II

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,055 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,019}{0,063} \times 100\% \\ &= 69,841\%\end{aligned}$$

c) Replikasi III

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,059 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,023}{0,063} \times 100\% \\ &= 63,492\%\end{aligned}$$

d. Konsentrasi 100%

a) Replikasi I

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,047 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,011}{0,063} \times 100\% \\ &= 82,540\% \end{aligned}$$

b) Replikasi II

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,043 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,007}{0,063} \times 100\% \\ &= 88,889\% \end{aligned}$$

c) Replikasi III

$$\begin{aligned} \% \text{ Inhibisi} &= \frac{(0,166 - 0,103) - (0,050 - 0,036)}{(0,166 - 0,103)} \times 100\% \\ &= \frac{0,063 - 0,014}{0,063} \times 100\% \\ &= 77,778\% \end{aligned}$$

Lampiran 18. Hasil SPSS uji aktivitas SOD

Sampel	%inhibisi	%inhibisi	%inhibisi	Rata-rata ± SD
	(1) %	(2) %	(3) %	
Kontrol positif	87,302	90,476	88,889	88,889 ± 1,587
Kontrol negatif	1,587	0,000	3,175	1,587 ± 1,587
Ekstrak kasar	71,429	76,190	82,540	76,720 ± 5,574
Konsentrasi amonium sulfat				
Konsentrasi 25%	25,397	22,222	23,810	23,810 ± 1,587
Konsentrasi 50%	60,317	65,079	69,841	65,079 ± 4,762
Konsentrasi 75%	77,778	69,841	63,492	70,370 ± 7,158
Konsentrasi 100%	82,540	88,889	77,778	83,069 ± 5,574

Tests of Normality							
	Kelompok	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Persen_Inhibisi	Kontrol positif	.175	3	.	1.000	3	1.000
	Kontrol negatif	.175	3	.	1.000	3	1.000
	Ekstrak kasar	.205	3	.	.993	3	.843
	Konsentrasi 25%	.175	3	.	1.000	3	1.000
	Konsentrasi 50%	.175	3	.	1.000	3	1.000
	Konsentrasi 75%	.196	3	.	.996	3	.878
	Konsentrasi 100%	.204	3	.	.993	3	.843

a. Lilliefors Significance Correction

Oneway

Test of Homogeneity of Variances			
Persen_Inhibisi			
Levene Statistic	df1	df2	Sig.
1.351	6	14	.299

ANOVA					
Persen_Inhibisi					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	19457.226	6	3242.871	158.062	.000
Within Groups	287.231	14	20.517		
Total	19744.458	20			

Post Hoc Tests

Multiple Comparisons						
Dependent Variable: Persen_Inhibisi						
Tukey HSD						
(I) Kelompok	(J) Kelompok	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Kontrol positif	Kontrol negatif	87.301667 [*]	3.698334	.000	74.67339	99.92995
	Ekstrak kasar	12.169333	3.698334	.062	-.45895	24.79761
	Konsentrasi 25%	65.079333 [*]	3.698334	.000	52.45105	77.70761
	Konsentrasi 50%	23.810000 [*]	3.698334	.000	11.18172	36.43828
	Konsentrasi 75%	18.518667 [*]	3.698334	.003	5.89039	31.14695
	Konsentrasi 100%	5.820000	3.698334	.700	-6.80828	18.44828
Kontrol negative	Kontrol positif	-87.301667 [*]	3.698334	.000	-99.92995	-74.67339
	Ekstrak kasar	-75.132333 [*]	3.698334	.000	-87.76061	-62.50405
	Konsentrasi 25%	-22.222333 [*]	3.698334	.000	-34.85061	-9.59405
	Konsentrasi 50%	-63.491667 [*]	3.698334	.000	-76.11995	-50.86339
	Konsentrasi 75%	-68.783000 [*]	3.698334	.000	-81.41128	-56.15472
	Konsentrasi 100%	-81.481667 [*]	3.698334	.000	-94.10995	-68.85339
Ekstrak kasar	Kontrol positif	-12.169333	3.698334	.062	-24.79761	.45895
	Kontrol negatif	75.132333 [*]	3.698334	.000	62.50405	87.76061
	Konsentrasi 25%	52.910000 [*]	3.698334	.000	40.28172	65.53828
	Konsentrasi 50%	11.640667	3.698334	.080	-.98761	24.26895
	Konsentrasi 75%	6.349333	3.698334	.617	-6.27895	18.97761
	Konsentrasi 100%	-6.349333	3.698334	.617	-18.97761	6.27895
Konsentrasi 25%	Kontrol positif	-65.079333 [*]	3.698334	.000	-77.70761	-52.45105
	Kontrol negatif	22.222333 [*]	3.698334	.000	9.59405	34.85061
	Ekstrak kasar	-52.910000 [*]	3.698334	.000	-65.53828	-40.28172
	Konsentrasi 50%	-41.269333 [*]	3.698334	.000	-53.89761	-28.64105
	Konsentrasi 75%	-46.560667 [*]	3.698334	.000	-59.18895	-33.93239
	Konsentrasi 100%	-59.259333 [*]	3.698334	.000	-71.88761	-46.63105
Konsentrasi 50%	Kontrol positif	-23.810000 [*]	3.698334	.000	-36.43828	-11.18172
	Kontrol negatif	63.491667 [*]	3.698334	.000	50.86339	76.11995

	Ekstrak kasar	-11.640667	3.698334	.080	-24.26895	.98761
	Konsentrasi 25%	41.269333*	3.698334	.000	28.64105	53.89761
	Konsentrasi 75%	-5.291333	3.698334	.778	-17.91961	7.33695
	Konsentrasi 100%	-17.990000*	3.698334	.004	-30.61828	-5.36172
Konsentrasi 75%	Kontrol positif	-18.518667*	3.698334	.003	-31.14695	-5.89039
	Kontrol negatif	68.783000*	3.698334	.000	56.15472	81.41128
	Ekstrak kasar	-6.349333	3.698334	.617	-18.97761	6.27895
	Konsentrasi 25%	46.560667*	3.698334	.000	33.93239	59.18895
	Konsentrasi 50%	5.291333	3.698334	.778	-7.33695	17.91961
	Konsentrasi 100%	-12.698667*	3.698334	.048	-25.32695	-.07039
Konsentrasi 100%	Kontrol positif	-5.820000	3.698334	.700	-18.44828	6.80828
	Kontrol negatif	81.481667*	3.698334	.000	68.85339	94.10995
	Ekstrak kasar	6.349333	3.698334	.617	-6.27895	18.97761
	Konsentrasi 25%	59.259333*	3.698334	.000	46.63105	71.88761
	Konsentrasi 50%	17.990000*	3.698334	.004	5.36172	30.61828
	Konsentrasi 75%	12.698667*	3.698334	.048	.07039	25.32695

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