

LAMPIRAN

Lampiran 1. Berita Acara Bimbingan Skripsi



**UNIVERSITAS PGRI ADI BUANA SURABAYA
FAKULTAS SAINS DAN KESEHATAN
PROGRAM STUDI S-1 FARMASI**

Kampus I : Jl. Ngagel Dadi III-B 37 Telp. (031) 5041097 Fax. (031) 5042804 Surabaya 60245
II : Jl. Dukuh Menanggal XII, Telp/ Fax. (031) 8289637 Surabaya, 60234

LEMBAR BIMBINGAN PROPOSAL SKRIPSI/SKRIPSI*

Nama : NOOR Hanifah
 NIM : 199010014
 Judul : ANALISIS KADAR LOGAM BERAT Pb DAN Hg PADA SAMPEL RIMPAN JAHÉ MERAH (zingiber Officinale var Rubrum Rhizoma) DENGAN PERLUKUAN PENYIPEMAN AIR PDAM DAN AIR SUMUR
 Nama DPU : Inan Ayu Kusuma Pramughinta, S.Si., M.Si. ✓
 Nama DPA : apt. Amanda Sapithri S., M.Si.

No.	Hari/Tgl	Kegiatan yang diselesaikan/ dikonsultasikan	Hasil	Keterangan, paraf/tdt DPU/DPA
1.	15/05/23	Bimbingan hasil	Data pengolahan secara statistik	<u>Inan</u>
2.	23/05/23	Revisi Bab IV	Revisi Bab IV	<u>Inan</u>
3.	30/05/23	Bimbingan Bab 1-IV	Revisi Bab 1-IV	<u>Inan</u>
4.	5/06/23	Bimbingan Bab V	Revisi Bab V	<u>Inan</u>
5.	7/06/23	Bimbingan Bab V	Revisi Bab V	<u>Inan</u>
6.	12/06/23	Bimbingan Revisi Bab IV	revisi Bab IV	<u>Inan</u>
7.	15/06/23	Revisi Alat bahan	Revisi Alat bahan	<u>Inan</u>



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LEMBAR BIMBINGAN PROPOSAL SKRIPSI/SKRIPSI*

Nama : NOOR Hanifah
 NIM : 199010019
 Judul : ANALISIS KADAR LOGAM BERAT Pb DAN Hg PADA SAMPEL RIMPAN JAHÉ MERAH (*Zingiber Officinale* var *Pubrum Rhizoma*) DENGAN PERLUKUAN PENYIEMAMAN AIR PDAM DAN AIR SUMUR
 Nama DPU : Infan Ayu Kusuma Pramuhinta, S. Si., M. Si
 Nama DPA : apt. Amanda Safithri S., M. Si. ✓

No.	Hari/Tgl	Kegiatan yang diselesaikan/ dikonsultasikan	Hasil	Keterangan, paraf/ttd DPU/DPA
1.	11/23 /05	Bimbingan Hasil	Data pengolahan secara statistik	Me. Amanda
2.	23/23 /05	Bimbingan Bab IV	Revisi Bab IV	Me. Amanda
3.	20/23 /05	Revisi Bab IV	Revisi Bab IV	Me. Amanda
4.	5/23 /06	Bimbingan Bab V	Revisi Bab V	Me. Amanda
5.	7/23 /06	Bimbingan Bab V	ACC Bab V	Me. Amanda
6.	12/23 /06	Bimbingan Revisi Bab IV	Revisi Bab IV	Me. Amanda
7.	15/23 /06	Revisi Rumusan Masalah.	Revisi Rumusan Masalah.	Me. Amanda

Lampiran 2. Format Revisi Skripsi

FORM REVISI PROPOSAL SKRIPSI/SKRIPSI*

Nama : Noor Hanifah
 NIM : 194010014
 Judul : Analisis Kadar Logam Berat Pb Dan Hg
 Pada Sampel Rimpang Jahe Merah
 (Zingiber Officinale Var Rubrum) Dengan
 Perlakuan Penyiraman Air PDAM dan Air Sumur

Telah menghadap pada :	Tanggal	TTD
Dosen Pembimbing Utama Intan Ayu Kusuma Pramushinta, S. Si., M. Si NIDN 0731058803	10 Juli 2023	
Dosen Pembimbing Anggota Apt. Amanda Safitri S., M. Si NIDN	11 Juli 2023	
Dosen Penguji Apt. Prisma Trida Hardani, S. Farm., M. Farm NIDN 0706069105	11 Juli 2023	

*Pilih salah satu

Lampiran 3. Larutan Panjang Gelombang dan Larutan Standar Logam Berat Timbal (Pb) dan merkuri (Hg)



(a)



(b)



(c)



(c)

Gambar (a) larutan panjang gelombang logam berat timbal (Pb); (b) larutan standar logam berat timbal (Pb); (c) larutan panjang gelombang logam berat merkuri (Hg); (d) larutan standar logam berat merkuri (Hg).

Lampiran 4. Hasil Analisis Larutan Standar Logam Berat Timbal (Pb)

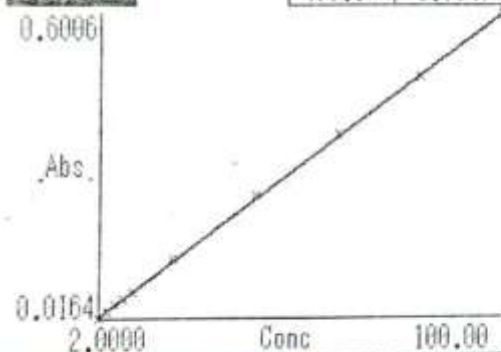
No.	Conc.	Abs	No.	Abs
1	2.0000	0.0164	1	
2	4.0000	0.0310		
3	6.0000	0.0434		
4	8.0000	0.0549		
5	10.000	0.0661		
6	20.000	0.1296		
7	40.000	0.2528		
8	60.000	0.3706		
9	80.000	0.4795		
10	100.00	0.6006		

Press START to Measure.

Curve Change Delete Add

2023/04/11 13:57:01

Curve 473.0nm 0.5947A



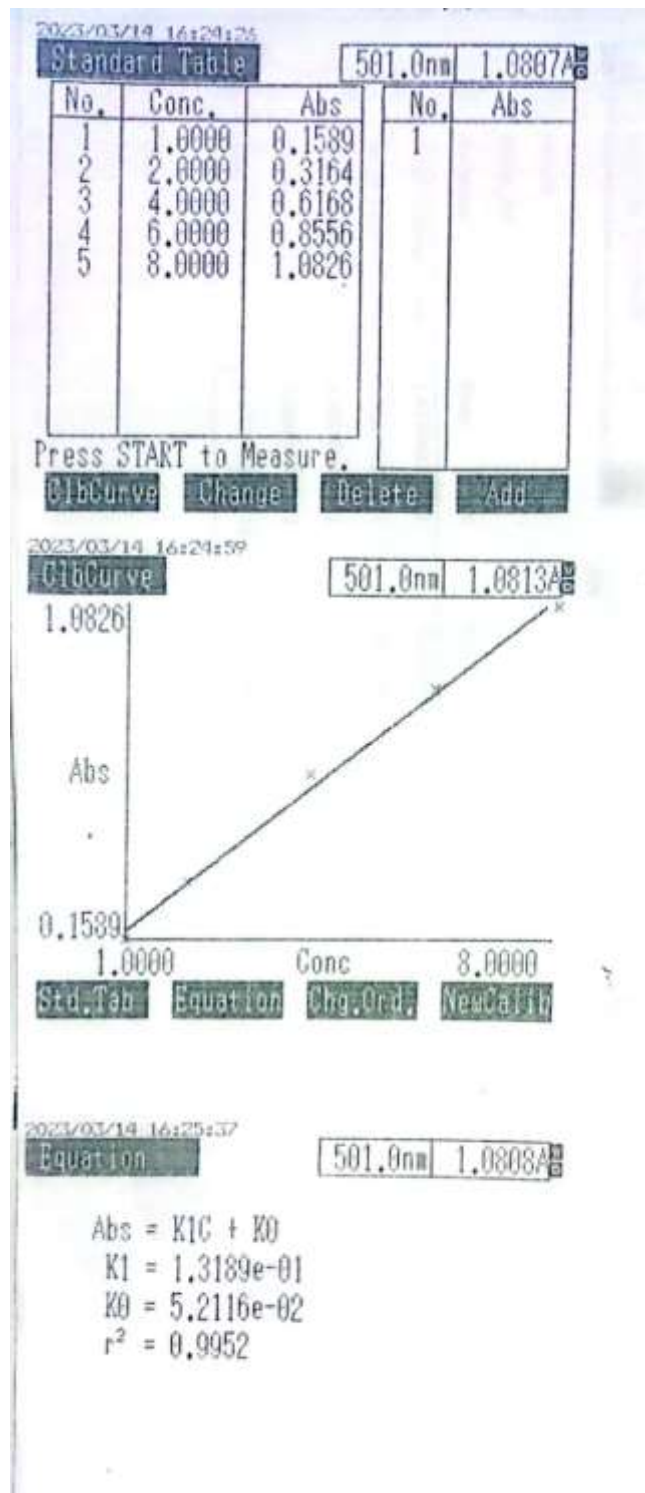
Std. Tab Equation Che. Ord. NewCallb

2023/04/11 13:57:02

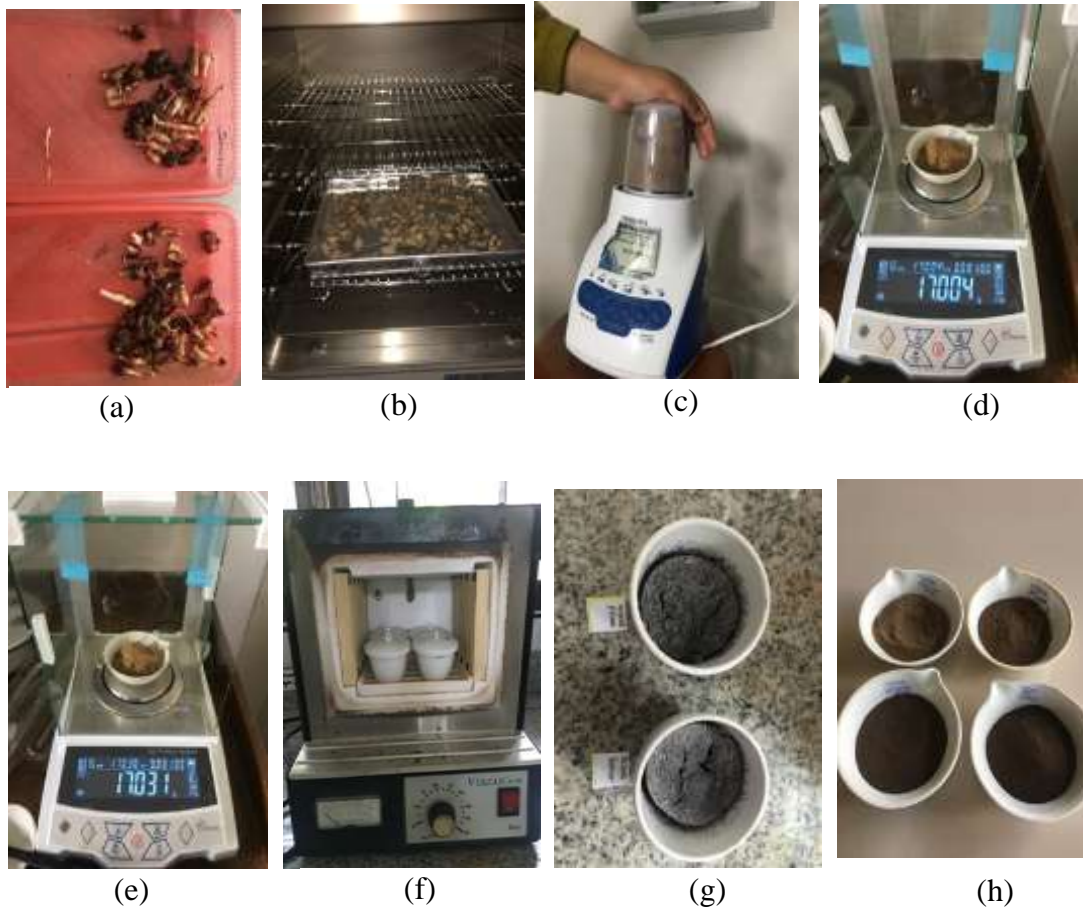
Equation 473.0nm 0.5932A

$$\begin{aligned} \text{Abs} &= K1C + K0 \\ K1 &= 5.9484e-03 \\ K0 &= 8.1918e-03 \\ r^2 &= 0.9997 \end{aligned}$$

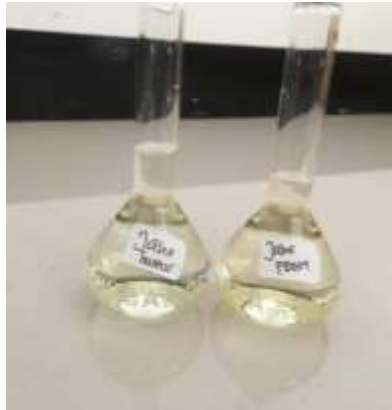
Lampiran 5. Hasil Analisis Larutan Standar Logam Berat Merkuri (Hg)



Lampiran 6. Preparasi sampel jahe merah dan tanah



Gambar (a) jahe merah utuh dengan perlakuan penyiraman air sumur dan air PDAM; (b) pengeringan jahe merah menggunakan oven; (c) penghalusan jahe merah menggunakan blender; (d) penimbangan jahe merah perlakuan penyiraman air sumur; (e) penimbangan jahe merah perlakuan penyiraman air PDAM; (f) destruksi kering sampel jahe merah dan sampel tanah menggunakan *furnace*; (g) hasil destruksi sampel jahe merah; (h) hasil sampel tanah terdiri dari perlakuan penyiraman air sumur sebelum dengan sesudah dan penyiraman air PDAM sebelum dengan sesudah.

Lampiran 7. Larutan sampel jahe merah dan tanah

(a)



(b)



(c)



(d)

Gambar (a) larutan sampel jahe merah pada logam berat timbal (Pb); (b) larutan sampel tanah pada logam berat timbal (Pb); (c) larutan sampel jahe merah pada logam berat merkuri (Hg); (d) larutan sampel tanah pada logam berat merkuri (Hg).

Lampiran 8. Perhitungan Larutan Induk, Larutan Baku dan Larutan Standar

a. Larutan induk Pb dan Hg 1000 ppm sebanyak 100 ml

$$\begin{aligned} \text{Pb} = \text{ppm} &= \frac{mg}{L} \\ 1000 &= \frac{mg}{0,1 L} \\ mg &= 10 \\ &= 0,01 \text{ g} \end{aligned}$$

$$\begin{aligned} \text{Hg} = \text{ppm} &= \frac{mg}{L} \\ 1000 &= \frac{mg}{0,1 L} \\ mg &= 10 \\ &= 0,01 \text{ g} \end{aligned}$$

b. Larutan panjang gelombang Pb 40 ppm dan Hg 10 ppm dalam 25 ml

$$\begin{aligned} \text{Pb} = M_1 \times V_1 &= M_2 \times V_2 \\ 1000 \text{ ppm} \times V_1 &= 40 \text{ ppm} \times 25 \text{ ml} \\ V_1 &= \frac{1000}{1000} \text{ ppm} \\ V_1 &= 1 \text{ ml} \end{aligned}$$

$$\begin{aligned} \text{Hg} = M_1 \times V_1 &= M_2 \times V_2 \\ 1000 \text{ ppm} \times V_1 &= 10 \text{ ppm} \times 25 \text{ ml} \\ V_1 &= \frac{250}{1000} \text{ ppm} \\ V_1 &= 0,25 \text{ ml} \end{aligned}$$

c. Larutan Standar Pb dengan konsentrasi 2;4;6;8;10;20;40;60;80 dan 100 ppm sebanyak 50ml

$$\begin{aligned} 1. \quad 100 \text{ ppm} = M_1 \times V_1 &= M_2 \times V_2 \\ 1000 \text{ ppm} \times V_1 &= 100 \text{ ppm} \times 50 \text{ ml} \\ V_1 &= \frac{5000}{1000} \text{ ppm} \\ V_1 &= 5 \text{ ml} \end{aligned}$$

$$\begin{aligned} 2. \quad 80 \text{ ppm} = M_1 \times V_1 &= M_2 \times V_2 \\ 100 \text{ ppm} \times V_1 &= 80 \text{ ppm} \times 50 \text{ ml} \\ V_1 &= \frac{4000}{100} \text{ ppm} \end{aligned}$$

$$\begin{aligned}
 & V_1 & = & 40 \text{ ml} \\
 3. \quad 60 \text{ ppm} = & M_1 \times V_1 & = & M_2 \times V_2 \\
 & 80 \text{ ppm} \times V_1 & = & 60 \text{ ppm} \times 50 \text{ ml} \\
 & V_1 & = & \frac{3000}{80} \text{ ppm} \\
 & V_1 & = & 37,5 \text{ ml} \\
 4. \quad 40 \text{ ppm} = & M_1 \times V_1 & = & M_2 \times V_2 \\
 & 60 \text{ ppm} \times V_1 & = & 40 \text{ ppm} \times 50 \text{ ml} \\
 & V_1 & = & \frac{2000}{60} \text{ ppm} \\
 & V_1 & = & 33,3 \text{ ml} \\
 5. \quad 20 \text{ ppm} = & M_1 \times V_1 & = & M_2 \times V_2 \\
 & 40 \text{ ppm} \times V_1 & = & 20 \text{ ppm} \times 50 \text{ ml} \\
 & V_1 & = & \frac{1000}{40} \text{ ppm} \\
 & V_1 & = & 25 \text{ ml} \\
 6. \quad 10 \text{ ppm} = & M_1 \times V_1 & = & M_2 \times V_2 \\
 & 20 \text{ ppm} \times V_1 & = & 10 \text{ ppm} \times 50 \text{ ml} \\
 & V_1 & = & \frac{500}{20} \text{ ppm} \\
 & V_1 & = & 25 \text{ ml} \\
 7. \quad 8 \text{ ppm} = & M_1 \times V_1 & = & M_2 \times V_2 \\
 & 10 \text{ ppm} \times V_1 & = & 8 \text{ ppm} \times 50 \text{ ml} \\
 & V_1 & = & \frac{400}{10} \text{ ppm} \\
 & V_1 & = & 40 \text{ ml} \\
 8. \quad 6 \text{ ppm} = & M_1 \times V_1 & = & M_2 \times V_2 \\
 & 8 \text{ ppm} \times V_1 & = & 6 \text{ ppm} \times 50 \text{ ml} \\
 & V_1 & = & \frac{300}{8} \text{ ppm} \\
 & V_1 & = & 37,5 \text{ ml} \\
 9. \quad 4 \text{ ppm} = & M_1 \times V_1 & = & M_2 \times V_2 \\
 & 8 \text{ ppm} \times V_1 & = & 4 \text{ ppm} \times 50 \text{ ml} \\
 & V_1 & = & \frac{200}{6} \text{ ppm} \\
 & V_1 & = & 33,3 \text{ ml}
 \end{aligned}$$

$$\begin{aligned}
 10. \quad 2 \text{ ppm} &= M_1 \times V_1 &= M_2 \times V_2 \\
 &4 \text{ ppm} \times V_1 &= 2 \text{ ppm} \times 50 \text{ ml} \\
 &V_1 &= \frac{100}{4} \text{ ppm} \\
 &V_1 &= 25 \text{ ml}
 \end{aligned}$$

11. Larutan Standar Hg dengan konsentrasi 1;2;4;6 dan 8 ppm sebanyak 50 ml

$$\begin{aligned}
 1. \quad 8 \text{ ppm} &= M_1 \times V_1 &= M_2 \times V_2 \\
 &1000 \text{ ppm} \times V_1 &= 8 \text{ ppm} \times 50 \text{ ml} \\
 &V_1 &= \frac{400}{1000} \text{ ppm} \\
 &V_1 &= 0,4 \text{ ml} \\
 2. \quad 6 \text{ ppm} &= M_1 \times V_1 &= M_2 \times V_2 \\
 &8 \text{ ppm} \times V_1 &= 6 \text{ ppm} \times 50 \text{ ml} \\
 &V_1 &= \frac{300}{8} \text{ ppm} \\
 &V_1 &= 37,5 \text{ ml} \\
 3. \quad 4 \text{ ppm} &= M_1 \times V_1 &= M_2 \times V_2 \\
 &6 \text{ ppm} \times V_1 &= 4 \text{ ppm} \times 50 \text{ ml} \\
 &V_1 &= \frac{200}{6} \text{ ppm} \\
 &V_1 &= 33,3 \text{ ml} \\
 4. \quad 2 \text{ ppm} &= M_1 \times V_1 &= M_2 \times V_2 \\
 &4 \text{ ppm} \times V_1 &= 2 \text{ ppm} \times 50 \text{ ml} \\
 &V_1 &= \frac{100}{4} \text{ ppm} \\
 &V_1 &= 25 \text{ ml} \\
 5. \quad 1 \text{ ppm} &= M_1 \times V_1 &= M_2 \times V_2 \\
 &2 \text{ ppm} \times V_1 &= 1 \text{ ppm} \times 50 \text{ ml} \\
 &V_1 &= \frac{50}{2} \text{ ppm} \\
 &V_1 &= 25 \text{ ml}
 \end{aligned}$$

Lampiran 9. Perhitungan kadar logam berat timbal (Pb)

Persamaan Regresi $Y = 0,0059 x + 0,0082$

- a. Kadar logam berat timbal (Pb) pada sampel tanah sebelum penyiraman air sumur, dilakukan dengan cara replikasi 3 kali

$$1. Y = 0,0062 x + 0,0049$$

$$0,0595 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0595 - 0,0082$$

$$X = \frac{0,0513}{0,0059}$$

$$X = 8,69491 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 8,69491 \times 2$$

$$X = 17,38982 \text{ ppm}$$

$$2. Y = 0,0059 x + 0,0082$$

$$0,0578 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0578 - 0,0082$$

$$X = \frac{0,0496}{0,0059}$$

$$X = 8,40677 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 8,40677 \times 2$$

$$X = 16,81354 \text{ ppm}$$

$$3. Y = 0,0059 x + 0,0082$$

$$0,0476 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0476 - 0,0082$$

$$X = \frac{0,0394}{0,0059}$$

$$X = 6,67796 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 6,67796 \times 2$$

$$X = 13,35592 \text{ ppm}$$

b. Kadar logam berat timbal (Pb) pada sampel tanah sesudah penyiraman air sumur, dilakukan dengan cara replikasi 3 kali

$$1. \quad Y = 0,0059 x + 0,0082$$

$$0,0804 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0804 - 0,0082$$

$$X = \frac{0,0722}{0,0059}$$

$$X = 12,23728 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 12,23728 \times 2$$

$$X = 24,47456 \text{ ppm}$$

$$2. \quad Y = 0,0059 x + 0,0082$$

$$0,0836 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0836 - 0,0082$$

$$X = \frac{0,0754}{0,0059}$$

$$X = 12,77966 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 12,77966 \times 2$$

$$X = 25,55932 \text{ ppm}$$

$$3. \quad Y = 0,0059 x + 0,0082$$

$$0,0802 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0802 - 0,0082$$

$$X = \frac{0,072}{0,0059}$$

$$X = 12,20338 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 12,20338 \times 2$$

$$X = 24,40676 \text{ ppm}$$

c. Kadar logam berat timbal (Pb) pada sampel tanah sebelum penyiraman air PDAM, dilakukan dengan cara replikasi 3 kali

$$1. Y = 0,0059 x + 0,0082$$

$$0,0504 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0504 - 0,0082$$

$$X = \frac{0,0422}{0,0059}$$

$$X = 7,15254 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 7,15254 \times 2$$

$$X = 14,30508 \text{ ppm}$$

$$2. Y = 0,0059 x + 0,0082$$

$$0,0511 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0511 - 0,0082$$

$$X = \frac{0,0429}{0,0059}$$

$$X = 7,27118 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 7,27118 \times 2$$

$$X = 14,54236 \text{ ppm}$$

$$3. Y = 0,0059 x + 0,0082$$

$$0,0480 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0480 - 0,0082$$

$$X = \frac{0,0398}{0,0059}$$

$$X = 6,74576 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 6,74576 \times 2$$

$$X = 13,49152 \text{ ppm}$$

d. Kadar logam berat timbal (Pb) pada sampel tanah sesudah penyiraman air

PDAM, dilakukan dengan cara replikasi 3 kali

$$\begin{aligned}
 1. \quad Y &= 0,0059 x + 0,0082 \\
 0,0625 &= 0,0059 x + 0,0082 \\
 0,0059 x &= 0,0625 - 0,0082 \\
 X &= \frac{0,0543}{0,0059}
 \end{aligned}$$

$$X = 9,20338 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 9,20338 \times 2$$

$$X = 18,40676 \text{ ppm}$$

$$\begin{aligned}
 2. \quad Y &= 0,0059 x + 0,0082 \\
 0,0599 &= 0,0059 x + 0,0082 \\
 0,0059 x &= 0,0599 - 0,0082 \\
 X &= \frac{0,0517}{0,0059}
 \end{aligned}$$

$$X = 8,76271 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 8,76271 \times 2$$

$$X = 17,52542 \text{ ppm}$$

$$\begin{aligned}
 3. \quad Y &= 0,0059 x + 0,0082 \\
 0,0613 &= 0,0059 x + 0,0082 \\
 0,0059 x &= 0,0613 - 0,0082 \\
 X &= \frac{0,0531}{0,0059}
 \end{aligned}$$

$$X = 9 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 9 \times 2$$

$$X = 18 \text{ ppm}$$

- e. Kadar logam berat timbal (Pb) pada sampel jahe merah penyiraman air sumur, dilakukan dengan cara replikasi 3 kali.

$$1. Y = 0,0059 x + 0,0082$$

$$0,0392 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0392 - 0,0082$$

$$X = \frac{0,03100}{0,0059}$$

$$X = 5,25423 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 5,25423 \times 2$$

$$X = 10,50846 \text{ ppm}$$

$$2. Y = 0,0059 x + 0,0082$$

$$0,0296 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0296 - 0,0082$$

$$X = \frac{0,0214}{0,0059}$$

$$X = 3,62711 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 3,62711 \times 2$$

$$X = 7,25422 \text{ ppm}$$

$$3. Y = 0,0059 x + 0,0082$$

$$0,0258 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0258 - 0,0082$$

$$X = \frac{0,0176}{0,0059}$$

$$X = 2,98305 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 2,98305 \times 2$$

$$X = 5,9661 \text{ ppm}$$

- f. Kadar logam berat timbal (Pb) pada sampel jahe merah penyiraman air PDAM, dilakukan dengan cara replikasi 3 kali

$$1. Y = 0,0059 x + 0,0082$$

$$0,0197 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0197 - 0,0082$$

$$X = \frac{0,0117}{0,0059}$$

$$X = 1,98305 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,98305 \times 2$$

$$X = 3,9661 \text{ ppm}$$

$$2. Y = 0,0059 x + 0,0082$$

$$0,0223 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0223 - 0,0082$$

$$X = \frac{0,0141}{0,0059}$$

$$X = 2,38983 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 2,38983 \times 2$$

$$X = 4,77966 \text{ ppm}$$

$$3. Y = 0,0059 x + 0,0082$$

$$0,0216 = 0,0059 x + 0,0082$$

$$0,0059 x = 0,0216 - 0,0082$$

$$X = \frac{0,0134}{0,0059}$$

$$X = 2,27118 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 2,27118 \times 2$$

$$X = 4,54236 \text{ ppm}$$

Lampiran 10. Perhitungan kadar logam berat merkuri (Hg).

Persamaan Regresi $Y = 0,13189 x + 0,0521$

- a. Kadar logam berat merkuri (Hg) pada sampel tanah sebelum penyiraman air sumur, dilakukan dengan cara replikasi 3 kali.

$$1. Y = 0,13189 x + 0,0521$$

$$0,2395 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2395 - 0,0521$$

$$X = \frac{0,0513}{0,13189}$$

$$X = 1,42088 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,42088 \times 2$$

$$X = 2,84176 \text{ ppm}$$

$$2. Y = 0,13189 x + 0,0521$$

$$0,2386 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2395 - 0,0521$$

$$X = \frac{0,1865}{0,13189}$$

$$X = 1,41405 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,41405 \times 2$$

$$X = 2,8281 \text{ ppm}$$

$$3. Y = 0,13189 x + 0,0521$$

$$0,2455 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2455 - 0,0521$$

$$X = \frac{0,1934}{0,13189}$$

$$X = 1,46623 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,46623 \times 2$$

$$X = 2,93246 \text{ ppm}$$

b. Kadar logam berat merkuri (Hg) pada sampel tanah sesudah penyiraman air sumur, dilakukan dengan cara replikasi 3 kali.

$$1. Y = 0,13189 x + 0,0521$$

$$0,2552 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2552 - 0,0521$$

$$X = \frac{0,2031}{0,13189}$$

$$X = 1,53991 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,53991 \times 2$$

$$X = 3,07982 \text{ ppm}$$

$$2. Y = 0,13189 x + 0,0521$$

$$0,2509 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2509 - 0,0521$$

$$X = \frac{0,1988}{0,13189}$$

$$X = 1,50731 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,50731 \times 2$$

$$X = 3,01462 \text{ ppm}$$

$$3. Y = 0,13189 x + 0,0521$$

$$0,2500 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2500 - 0,0521$$

$$X = \frac{0,1979}{0,13189}$$

$$X = 1,50049 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,50049 \times 2$$

$$X = 3,00098 \text{ ppm}$$

c. Kadar logam berat merkuri (Hg) pada sampel tanah sebelum penyiraman air PDAM, dilakukan dengan cara replikasi 3 kali.

$$1. \quad Y = 0,13189 x + 0,0521$$

$$0,2343 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2343 - 0,0521$$

$$X = \frac{0,1822}{0,13189}$$

$$X = 1,38145 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,38145 \times 2$$

$$X = 2,7629 \text{ ppm}$$

$$2. \quad Y = 0,13189 x + 0,0521$$

$$0,2341 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2341 - 0,0521$$

$$X = \frac{0,182}{0,13189}$$

$$X = 1,37993 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,37993 \times 2$$

$$X = 2,75986 \text{ ppm}$$

$$3. \quad Y = 0,13189 x + 0,0521$$

$$0,2354 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2354 - 0,0521$$

$$X = \frac{0,1833}{0,13189}$$

$$X = 1,38979 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,38979 \times 2$$

$$X = 2,77958 \text{ ppm}$$

d. Kadar logam berat merkuri (Hg) pada sampel tanah sesudah penyiraman air PDAM, dilakukan dengan cara replikasi 3 kali.

$$1. Y = 0,13189 x + 0,0521$$

$$0,2540 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2540 - 0,0521$$

$$X = \frac{0,2019}{0,13189}$$

$$X = 1,53082 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,53082 \times 2$$

$$X = 3,06164 \text{ ppm}$$

$$2. Y = 0,13189 x + 0,0521$$

$$0,2522 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2522 - 0,0521$$

$$X = \frac{0,2001}{0,13189}$$

$$X = 1,51717 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,51717 \times 2$$

$$X = 3,03434 \text{ ppm}$$

$$3. Y = 0,13189 x + 0,0521$$

$$0,2500 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2500 - 0,0521$$

$$X = \frac{0,1979}{0,13189}$$

$$X = 1,50049 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,50049 \times 2$$

$$X = 3,00098 \text{ ppm}$$

e. Kadar logam berat merkuri (Hg) pada sampel jahe merah penyiraman air sumur, dilakukan dengan cara replikasi 3 kali.

$$1. Y = 0,13189 x + 0,0521$$

$$0,2024 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2024 - 0,0521$$

$$X = \frac{0,1503}{0,13189}$$

$$X = 1,13958 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,13958 \times 2$$

$$X = 2,27916 \text{ ppm}$$

$$2. Y = 0,13189 x + 0,0521$$

$$0,2035 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2035 - 0,0521$$

$$X = \frac{0,1514}{0,13189}$$

$$X = 1,1479 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,1479 \times 2$$

$$X = 2,2958 \text{ ppm}$$

$$3. Y = 0,13189 x + 0,0521$$

$$0,2090 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2090 - 0,0521$$

$$X = \frac{0,1569}{0,13189}$$

$$X = 1,18962 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 1,18962 \times 2$$

$$X = 2,37924 \text{ ppm}$$

f. Kadar logam berat merkuri (Hg) pada sampel jahe merah penyiraman air PDAM, dilakukan dengan cara replikasi 3 kali.

$$1. Y = 0,13189 x + 0,0521$$

$$0,1762 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,1762 - 0,0521$$

$$X = \frac{0,1241}{0,13189}$$

$$X = 0,94093 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 0,94093 \times 2$$

$$X = 1,88186 \text{ ppm}$$

$$2. Y = 0,13189 x + 0,0521$$

$$0,1751 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,1751 - 0,0521$$

$$X = \frac{0,123}{0,13189}$$

$$X = 0,93259 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali.

$$X = 0,93259 \times 2$$

$$X = 1,86518 \text{ ppm}$$

$$3. Y = 0,13189 x + 0,0521$$

$$0,1786 = 0,13189 x + 0,0521$$

$$0,13189 x = 0,2500 - 0,0521$$

$$X = \frac{0,1265}{0,13189}$$

$$X = 0,95913 \text{ ppm}$$

Hasil kadar dikali 2 karena adanya pengenceran 2 kali

$$X = 0,95913 \times 2$$

$$X = 1,91826 \text{ ppm}$$

Lampiran 11. Hasil Analisa Uji Statistika Metode *Independent Samples T-Test* Logam Berat Merkuri Hg

DATASET ACTIVATE DataSet1.

T-TEST GROUPS=Perlakuan(1 2)

/MISSING=ANALYSIS

/VARIABLES=**Kadar_Hg**

/CRITERIA=CI(.95).

T-Test

[DataSet1] C:\Users\hanifah\Documents\spps Hg hanifah.sav

Group Statistics

	Perlakuan	N	Mean	Std. Deviation	Std. Error Mean
Kadar_Hg	Sampel Tanah Sebelum Air Sumur	3	2.8674400	.05672168	.03274828
	Sampel Tanah Sebelum Air PDAM	3	2.7674467	.01061714	.00612981

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Kadar_Hg	Equal variances assumed	9.018	.040	3.001	4	.040	.09999333	.03331703	.00749044	.19249623
	Equal variances not assumed			3.001	2.140	.088	.09999333	.03331703	-.03473737	.23472404

T-TEST GROUPS=Perlakuan(1 2)

/MISSING=ANALYSIS

/VARIABLES=Kadar_Hg

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Perlakuan	N	Mean	Std. Deviation	Std. Error Mean
Kadar_Hg	Sampel Tanah Sesudah Air Sumur	3	3.0318067	.04213636	.02432744
	Sampel Tanah Sesudah Air PDAM	3	3.0323200	.03038041	.01754014

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Kadar_Hg	Equal variances assumed	.731	.441	-.017	4	.987	-.00051333	.02999134	-.08378265	.08275598
	Equal variances not assumed			-.017	3.637	.987	-.00051333	.02999134	-.08716500	.08613833

T-TEST GROUPS=Perlakuan(1 2)

/MISSING=ANALYSIS

/VARIABLES=Kadar_Hg

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Perlakuan	N	Mean	Std. Deviation	Std. Error Mean
Kadar_Hg	Sampel Jahe Air Sumur	3	2.3180667	.05362700	.03096156
	Sampel jahe Air PDAM	3	1.8884333	.02714366	.01567140

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Kadar_Hg	Equal variances assumed	2.497	.189	12.381	4	.000	.42963333	.03470174	.33328585	.52598082
	Equal variances not assumed			12.381	2.962	.001	.42963333	.03470174	.31838367	.54088300

Lampiran 12. Hasil Analisa Uji Statistika Metode *Independent Samples T-Test* Logam Berat Timbal (Pb)

GET

FILE='C:\Users\hanifah\Documents\spps Hg hanifah.sav'.

DATASET NAME DataSet1 WINDOW=FRONT.

T-TEST GROUPS=Perlakuan(1 2)

/MISSING=ANALYSIS

/VARIABLES=**Kadar_Pb**

/CRITERIA=CI(.95).

T-Test

[DataSet1] C:\Users\hanifah\Documents\spps Hg hanifah.sav

Group Statistics

	Perlakuan	N	Mean	Std. Deviation	Std. Error Mean
Kadar_Pb	Sampel Tanah Sebeleum Air Sumur	3	15.8530933	2.18172653	1.25962040
	Sampel Tanah Sebelum Air PDAM	3	14.1129867	.55112708	.31819337

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means				95% Confidence Interval of the Difference		
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Kadar_Pb	Equal variances assumed	7.229	.055	1.339	4	.251	1.74010667	1.29918843	-1.86701869	5.34723202
	Equal variances not assumed			1.339	2.254	.299	1.74010667	1.29918843	-3.28715558	6.76736892

T-TEST GROUPS=Perlakuan(1 2)

/MISSING=ANALYSIS

/VARIABLES=Kadar_Pb

/CRITERIA=CI(.95).

T-Test

Group Statistics

	Perlakuan	N	Mean	Std. Deviation	Std. Error Mean
Kadar_Pb	Sampel Tanah Sesudah Air Sumur	3	24.8135467	.64674772	.37339997
	Sampel Tanah Sesudah Air PDAM	3	17.9773933	.44110469	.25467191

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Kadar_Pb	Equal variances assumed	1.087	.356	15.125	4	.000	6.83615333	.45197933	5.58125753	8.09104914
	Equal variances not assumed			15.125	3.530	.000	6.83615333	.45197933	5.51248142	8.15982525

T-TEST GROUPS=Perlakuan(1 2)

/MISSING=ANALYSIS

/VARIABLES=Kadar_Pb

/CRITERIA=CI(.95).


T-Test

Group Statistics

	Perlakuan	N	Mean	Std. Deviation	Std. Error Mean
Kadar_Pb	Sampel Jahe Air Sumur	3	7.9095933	2.34102419	1.35159094
	Sampel Jahe Air PDAM	3	4.4293733	.41838315	.24155362

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Kadar_Pb	Equal variances assumed	6.023	.070	2.535	4	.064	3.48022000	1.37300628	-.33185656	7.29229656
	Equal variances not assumed			2.535	2.128	.119	3.48022000	1.37300628	-2.10041499	9.06085499

Lampiran 13. Sertifikat *Dithizone*


Specification

1.03092.0025 Dithizone for analysis (1,5-diphenylthiocarbazone) Reag. Ph Eur

Specification		
Assay (argentometric)	≥ 98.0	%
Identity (IR-spectrum)	passes test	
Identity (UV/VIS-Spectrum)	passes test	
Absorption maximum λ_{max} (Chloroform)	604 - 607	nm
Spec. Absorptivity A1%/1cm (λ_{max} : 0,005 g/l; chloroform)	≥ 1522	
Absorption ratio (605 nm / 445 nm; 0.005 g/l; chloroform)	≥ 2.5	
Sulfated ash (600 °C)	≤ 0.2	%

Dr. Ralf Burgert
Responsible laboratory manager quality control

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