L A M P I R A N

LAMPIRAN

Lampiran 1. Surat Perijinan Penelitian di Laboratorium Universitas Setia Budi

UNIVERSITAS SETIA BUDI

UPT- LABORATORIUM

Nomor : 0272/UPT-lab/11.07.2022
Lamp. : -
Hal : Ijin Penelitian di Laboratorium

Kepada Yth. Bapak,Ibu Laboran dan PU

Di Tempat

Dengan hormat,

Sehubungan dengan penyelesaian penelitian mahasiswa, maka kami UPT laboratorium menyetujui untuk praktikum kepada :

Nama/NIM	: Zulinda Ulfa Putri/25195693A
Fakultas	: Farmasi
Nomor Lab & Masa Berlaku	: 7&8 selama 29 hari (tgl 11 Juli – 19 Agustus 2022)
Nomor Lab & Masa Berlaku	: 4 selama 14 hari (tgl 15 Agustus – 2 September 2022)

***Note : jam mengikuti jadwal lab apabila ada praktikum reguler penelitian dilarang masuk**

Atas perhatian dan kerjasamanya, kami ucapkan terimakasih.

Catatan : Membawa bukti transfer yang sudah difotokopi dan diperbesar sebanyak 4 lembar dan Selama praktikum mahasiswa yang bersangkutan harus memakai APD lengkap (jas praktek, masker, sepatu)

Surakarta, 6 Juli 2022
Ka UPT Laboratorium

Asik Gunawan

Jl.Let Jend Sutoyo, Mojosongo,Solo 57127, Telp.0271-852518, fax 0271 – 853275
Home page : Error! Hyperlink reference not valid. : info @setiabudi.ac.id

Lampiran 2. Surat Perijinan Penelitian di Laboratorium Universitas Sebelas Maret

UNIVERSITAS SETIA BUDI
FAKULTAS FARMASI

Nomor : 870 / H6 - 04 / 31.08.2022
Lamp. : -
H a l : Ijin Pengujian Kadar Kadmium

Kepada :
Yth. Bapak / Ibu Direktur / Kepala / Pimpinan
UPT LAB. UNS
Jebres, Surakarta

Dengan hormat,

Berkaitan dengan tugas penelitian mahasiswa Program Studi S1 Farmasi Fakultas Farmasi Universitas Setia Budi, maka dengan ini kami mengajukan permohonan ijin bagi mahasiswa kami :

N a m a : Zulinda Ulfa Putri
NIM : 25195693A
No Tlpn / WA : -
Judul Penelitian : Uji Mikrobiologi dan Penetapan Kadar Kadmium (Cd) Krim Pemutih yang belum Terdaftar pada BPOM

Untuk keperluan / memperoleh Data)* :
Melakukan Praktek Pengujian Kadar Kadmium

Besar harapan kami atas terkabulnya permohonan ini yang tentunya akan berguna bagi pembangunan nusa dan bangsa khususnya kemajuan dibidang pendidikan.

Demikian atas kerja samanya disampaikan banyak terima kasih.

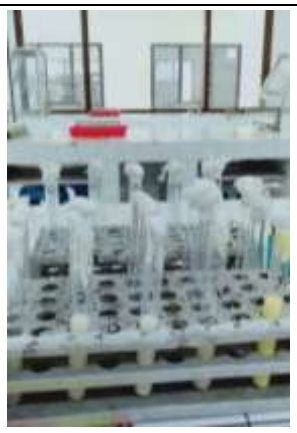
Surakarta, 31 Agustus 2022
Dekan,

Prof. Dr. Apt. R.A. Oetari, SU., MM., M.Sc.
NIS. 01200409162098

Lampiran 3. Perhitungan Pembuatan Larutan Standar Kadmium

1. Larutan standar kadmium 1000 ppm dalam labu ukur 100 ml
   $V_1 \times M_1 = V_2 \times M_2$
   V1 x 1000 ppm = 100 ml x 100 ppm
   V_1 = 10 ml
2. Larutan standar kadmium 100 ppm menjadi 10 ppm dalam labu ukur 100 ml
   $V_1 \times M_1 = V_2 \times M_2$
   V_1 x 100 ppm = 100 ml x 10 ppm
   V_1 = 10 ml
3. Seri konsentrasi dari larutan 10 ppm dalam labu ukur 50 ml
   a) Konsentrasi 0,05 ppm
      $V_1 \times M_1 = V_2 \times M_2$
      V_1 x 10 ppm = 50 ml x 0,05 ppm
      V_1 = 0,25 ml
   b) Konsentrasi 0,1 ppm
      $V_1 \times M_1 = V_2 \times M_2$
      V_1 x 0,5 ppm = 50 ml x 0,1 ppm
      V_1 = 0,5 ml
   c) Konsentrasi 0,25 ppm
      $V_1 \times M_1 = V_2 \times M_2$
      V_1 x 10 ppm = 50 ml x 0,25 ppm
      V_1 = 1,25 ml
   d) Konsentrasi 0,5 ppm
      $V_1 \times M_1 = V_2 \times M_2$
      V_1 x 10 ppm = 50 ml x 0,5 ppm
      V_1 = 2,5 ml
   e) Konsentrasi 1,0 ppm
      $V_1 \times M_1 = V_2 \times M_2$
      V_1 x 10 ppm = 50 ml x 1,0 ppm
      V_1 = 5 ml

Lampiran 4. Persiapan Uji Angka Lempeng Total

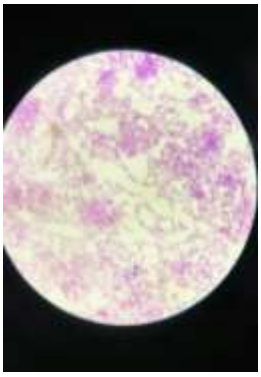
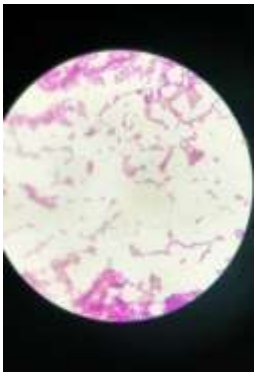
 **Sampel krim pemutih**	 **Alat dan bahan yang digunakan**
 **Penimbangan media PCA**	 **Proses pembuatan media PCA**
 **Media PCA (pH 7)**	 **Pengenceran sampel**

Lampiran 5. Hasil Koloni Bakteri

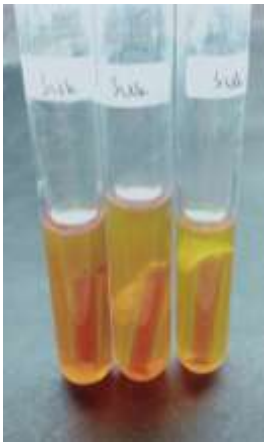
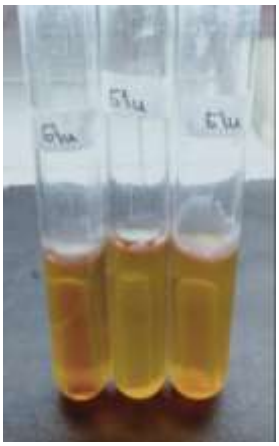
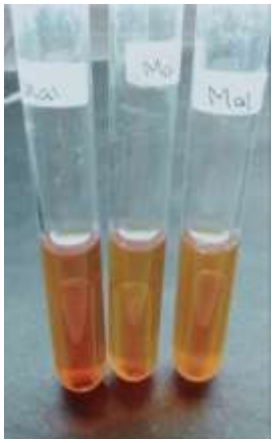
 **Koloni bakteri sampel A 10^{-1} replikasi 1,2,3**	 **Koloni bakteri sampel A 10^{-2} replikasi 1,2,3**	 **Koloni bakteri sampel A 10^{-3} replikasi 1,2,3**
 **Koloni bakteri sampel B 10^{-1} replikasi 1,2,3**	 **Koloni bakteri sampel B 10^{-2} replikasi 1,2,3**	 **Koloni bakteri sampel B 10^{-3} replikasi 1,2,3**
 **Koloni bakteri sampel C 10^{-1} replikasi 1,2,3**	 **Koloni bakteri sampel C 10^{-2} replikasi 1,2,3**	 **Koloni bakteri sampel C 10^{-3} replikasi 1,2,3**

 **Koloni bakteri sampel D 10^{-1} replikasi 1,2,3**	 **Koloni bakteri sampel D 10^{-2} replikasi 1,2,3**	 **Koloni bakteri sampel D 10^{-3} replikasi 1,2,3**
 **Koloni bakteri sampel E 10^{-1} replikasi 1,2,3**	 **Koloni bakteri sampel E 10^{-2} replikasi 1,2,3**	 **Koloni bakteri sampel E 10^{-3} replikasi 1,2,3**

Lampiran 6. Uji Lanjutan

 **Pewarnaan gram**	 **Pewarnaan gram**
 **Hasil mikroskopis pewarnaan gram**	 **Hasil mikroskopis pewarnaan gram**
 **Pembuatan media gula - gula**	

Lampiran 7. Hasil Uji Biokimia Media Gula - gula

 **Hasil Uji Biokimia Media Sukrosa**	 **Hasil Uji Biokimia Media Glukosa**
 **Hasil Uji Biokimia Media Maltosa**	 **Hasil Uji Biokimia Media Laktosa**

Lampiran 8. Hasil Uji Organoleptik Sampel Krim Pemutih

 **Uji organoleptik sampel A**	 **Uji organoleptik sampel B**
 **Uji organoleptik sampel C**	 **Uji organoleptik sampel D**
 **Uji organoleptik sampel E**	

Lampiran 9. Penimbangan Sampel Krim Pemutih

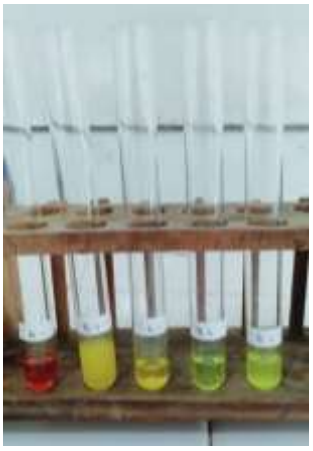
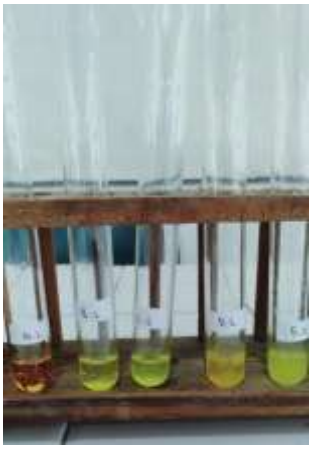
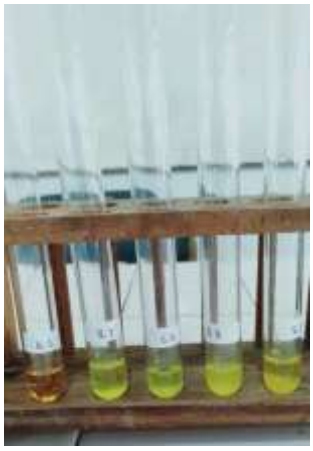
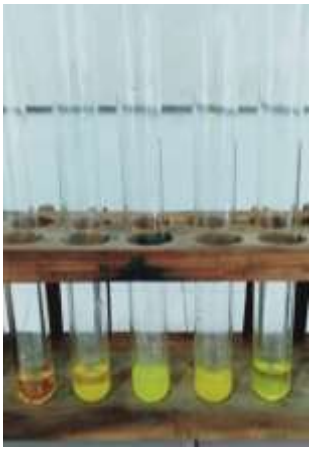
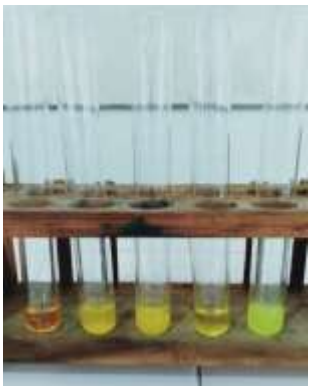
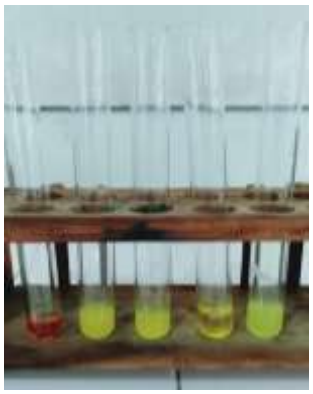
		
Sampel A1	**Sampel B1**	**Sampel C1**
		
Sampel D1	**Sampel E1**	**Sampel A2**
		
Sampel B2	**Sampel C2**	**Sampel D2**

		
Sampel E2	**Sampel A3**	**Sampel B3**
		
Sampel C3	**Sampel D3**	**Sampel E3**

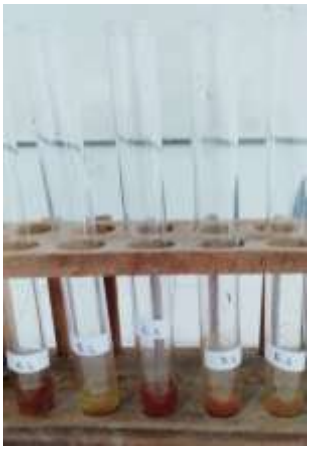
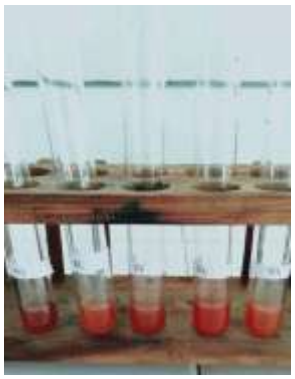
Lampiran 10. Hasil Destruksi Basah

 **Hasil destruksi basah replikasi 1**	 **Hasil destruksi basah replikasi 2**
 **Hasil destruksi basah replikasi 3**	

Lampiran 11. Hasil Uji Kualitatif Menggunakan NaOH

 **Hasil Uji Kualitatif (NaOH) Replikasi 1**	 **Hasil Uji Kualitatif (NaOH) Replikasi 1**
 **Hasil Uji Kualitatif (NaOH) Replikasi 1**	 **Hasil Uji Kualitatif (NaOH) Replikasi 2**
 **Hasil Uji Kualitatif (NaOH) Replikasi 2**	 **Hasil Uji Kualitatif (NaOH) Replikasi 2**

Lampiran 12. Hasil Uji Kualitatif Menggunakan NH4OH + Ditizon

 **Hasil Uji Kualitatif (NH_4OH + Ditizon) Replikasi 1**	 **Hasil Uji Kualitatif (NH_4OH + Ditizon) Replikasi 1**
 **Hasil Uji Kualitatif (NH_4OH + Ditizon) Replikasi 1**	 **Hasil Uji Kualitatif (NH_4OH + Ditizon) Replikasi 2**
 **Hasil Uji Kualitatif (NH_4OH + Ditizon) Replikasi 2**	 **Hasil Uji Kualitatif (NH_4OH + Ditizon) Replikasi 2**

Lampiran 13. Penetapan Kadar

 **Larutan induk kadmium 1000 ppm**	 **Aquabidest**
 **Larutan standar**	 **Alat SSA Ice 3000 Series**
 **Alat SSA Ice 3000 Series**	

Lampiran 14. Uji Statistik SPSS

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	SAMPEL	Statistic	df	Sig.	Statistic	df	Sig.
ALT_24JAM	A	.329	3	.	.868	3	.290
	B	.307	3	.	.903	3	.394
	C	.269	3	.	.950	3	.569
	D	.265	3	.	.953	3	.584
	E	.261	3	.	.957	3	.603

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

ALT_24JAM

Levene Statistic	df1	df2	Sig.
3.271	4	9	.065

ANOVA

ALT_24JAM

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.072	4	1.018	1.172	.385
Within Groups	7.815	9	.868		
Total	11.887	13			

Homogeneous Subsets

ALT_24JAM

Tukey HSD[a,b]

SAMPEL	N	Subset for alpha = 0.05
		1
C	3	1.4337
E	3	1.6931
D	3	1.8488
A	2	2.4518
B	3	2.8885
Sig.		.417

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 2.727.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Lampiran 15. CoA Media PCA

Certificate of Analysis

Certificate of Analysis ID:	**1054630500_VM923263_EN**
Producer and client:	**Merck KGaA, Frankfurter Str. 250, 64293 Darmstadt, Germany**
Test laboratory:	**Merck KGaA Qualitätskontrolle für mikrobiologische Produkte Frankfurter Str. 250, 64293 Darmstadt, Germany**
Sample identification:	**GranuCult®** **Plate Count Agar acc. ISO 4833, ISO 17410 and FDA-BAM**
Ordering number:	**1.05463.0500**
Lot number:	**VM923263**
Accreditation:	The test laboratory of Merck KGaA is accredited by the German accreditation authority DAkkS as registered test laboratory D-PL-15185-01-00 according to DIN EN ISO/IEC 17025 for the performance testing of media for microbiology according to DIN EN ISO 11133:2014.
Test method:	**Performance testing of solid culture media:** Quantitative method (poured plate technique)
Date of analysis:	2020/05/11
Date of release:	2020/05/15
Minimum shelf life:	2025/04/27
Composition (g/l):	Enzymatic digest of casein 5.0; Yeast extract 2.5; D(+)Glucose 1.0; Agar-agar 14.0.
Preparation & sterilization:	Dissolve 22.5 g in 1 l of purified water. Heat in boiling water and agitate frequently until completely dissolved. Autoclave 15 min at 121 °C.
Application:	For the determination of the total microbial content from food and animal feed, water and other materials.
Storage:	Store at +15 °C to +25 °C, dry and tightly closed. Do not use clumped or discolored medium. Protect from UV light (including sun light).

The reported results refer exclusively to the specified medium, see Certificate of Analysis ID.

Certificate of Analysis

Physical parameters	Specification	Lot value
Appearance (clarity):	clear	clear
Appearance (color):	yellowish to yellowish-brown	yellowish to yellowish-brown
pH-value (25 °C):	6.8 – 7.2	7.0
Solidification behaviour (2 h at 40 °C)	liquid	liquid
Solidification behaviour (4 h at 45 °C)	liquid	liquid

Microbiological Performance

Quantitative method for solid media (poured plate technique)

Test strain	Specification	Reference CFU	Test CFU	Recovery rate
Staphylococcus aureus ATCC® 6538 [WDCM 00032]	≥ 70 %	99	108	109 %
Staphylococcus aureus ATCC® 25923 [WDCM 00034]	≥ 70 %	130	145	112 %
Escherichia coli ATCC® 8739 [WDCM 00012]	≥ 70 %	183	189	103 %
Escherichia coli ATCC® 25922 [WDCM 00013]	≥ 70 %	188	214	114 %
Bacillus subtilis ATCC® 6633 [WDCM 00003]	≥ 70 %	190	220	116 %

Incubation: 72 ± 3 hours at 30 ± 1 °C aerobic

Test strain	Specification	Reference CFU	Test CFU	Recovery rate
Staphylococcus aureus ATCC® 6538	≥ 70 %	179	190	106 %

Test strain	Specification	Reference 10 – 100 CFU	Test CFU	Recovery rate
Lactococcus lactis* ATCC® 19435 [WDCM 00016]	≥ 70 %	43	49	114 %
Listeria monocytogenes* ATCC® 19118	≥ 70 %	17	17	100 %
Lactobacillus acidophilus* ATCC® 4356 [WDCM 00098]	≥ 70 %	24	22	92 %

Incubation: 72 ± 3 hours at 30 ± 1 °C aerobic

Reference medium: Tryptic Soy Agar

Parameters marked with an asterisk have not been tested by an accredited method.

Signature:

Dr. Stefanie Fischer

Head of Quality Control Microbiology

Lampiran 16. Hasil Penetapan Kadar Kadmium (SSA)

Thermo SCIENTIFIC

Operator Name: Sugito
Results File: C:\SOLAARM\DATA\Analisa Cd 03 -10 -2022-2.SLR

Report Date: 03/10/2022 13:51:17

General Parameters

Method : Analisis Cd
Autosampler : None
Use SFI: No

Operator : Sugito

Instrument Mode: Flame
Dilution: None

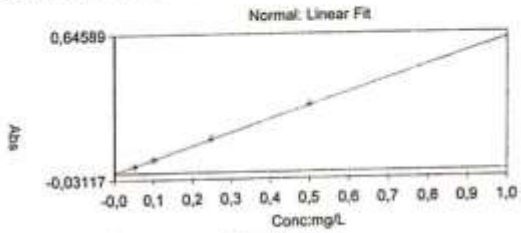
Analysis Details

Analysis Name: Analysis 1 03/10/2022
Operator Name: Sugito

Spectrometer: iCE 3000 AA05202804 v1.30

Solution Results - Cd

Y = 0,61663x + 0,0013
Fit: 0,9998
Characteristic Conc: 0,0071



Sample ID	Signal Abs	Rsd %	Conc mg/L	Corrected Conc mg/L	
Cd Blank	**-0,00040**	**6,6**	**0,0000**		
1	-0,00037	Background: 0,00020			03/10/2022 13:37:40
2	-0,00042	Background: 0,00058			03/10/2022 13:37:44
3	-0,00040	Background: 0,00088			03/10/2022 13:37:49
Cd Standard 1	**0,02976**	**0,5**	**0,0500**		
1	0,02989	Background: 0,00125			03/10/2022 13:38:15
2	0,02978	Background: 0,00174			03/10/2022 13:38:19
3	0,02959	Background: 0,00128			03/10/2022 13:38:24
Cd Standard 2	**0,06175**	**0,9**	**0,1000**		
1	0,06228	Background: 0,00110			03/10/2022 13:38:45
2	0,06183	Background: 0,00148			03/10/2022 13:38:49
3	0,06114	Background: 0,00131			03/10/2022 13:38:53
Cd Standard 3	**0,15965**	**0,7**	**0,2500**		
1	0,16022	Background: 0,00132			03/10/2022 13:39:16
2	0,15843	Background: 0,00135			03/10/2022 13:39:21
3	0,16030	Background: 0,00151			03/10/2022 13:39:25
Cd Standard 4	**0,31382**	**0,5**	**0,5000**		
1	0,31221	Background: 0,00229			03/10/2022 13:39:44
2	0,31499	Background: 0,00208			03/10/2022 13:39:49
3	0,31426	Background: 0,00229			03/10/2022 13:39:53
Cd Standard 5	**0,61511**	**0,4**	**1,0000**		
1	0,61736	Background: 0,00326			03/10/2022 13:42:44
2	0,61517	Background: 0,00248			03/10/2022 13:42:48
3	0,61282	Background: 0,00354			03/10/2022 13:42:53
Cd A1	**0,11065**	**0,7**	**0,1772**	**0,1772**	
1	0,10988	Background: 0,00259			03/10/2022 13:43:26
2	0,11056	Background: 0,00212			03/10/2022 13:43:30
3	0,11150	Background: 0,00178			03/10/2022 13:43:34
Cd A2	**0,09266**	**0,4**	**0,1481**	**0,1481**	
1	0,09287	Background: 0,00207			03/10/2022 13:43:54
2	0,09288	Background: 0,00228			03/10/2022 13:43:58
3	0,09222	Background: 0,00176			03/10/2022 13:44:02

SOLAAR AA Report

Operator Name: Sugito
Results File: C:\SOLAARM\DATA\Analisa Cd 03 -10 -2022-2.SLR
Report Date: 03/10/2022 13:51:17

Solution Results - Cd

Sample ID		Signal Abs	Rsd %	Conc mg/L	Corrected Conc mg/L
Cd A3		0,21903	0,7	0,3530	0,3530
	1	0,22009	Background: 0,00238		03/10/2022 13:44:23
	2	0,21968	Background: 0,00285		03/10/2022 13:44:28
	3	0,21731	Background: 0,00236		03/10/2022 13:44:32
Cd B1		0,25458	0,4	0,4107	0,4107
	1	0,25424	Background: 0,00315		03/10/2022 13:44:56
	2	0,25561	Background: 0,00241		03/10/2022 13:45:01
	3	0,25389	Background: 0,00218		03/10/2022 13:45:05
Cd B2		0,23494	0,7	0,3788	0,3788
	1	0,23658	Background: 0,00254		03/10/2022 13:45:25
	2	0,23484	Background: 0,00271		03/10/2022 13:45:30
	3	0,23339	Background: 0,00209		03/10/2022 13:45:34
Cd B3		0,39408	0,4	0,6369	0,6369
	1	0,39241	Background: 0,00327		03/10/2022 13:45:54
	2	0,39457	Background: 0,00289		03/10/2022 13:45:58
	3	0,39496	Background: 0,00228		03/10/2022 13:46:03
Cd C1		0,17748	1,4	0,2855	0,2855
	1	0,17906	Background: 0,00171		03/10/2022 13:46:23
	2	0,17881	Background: 0,00188		03/10/2022 13:46:28
	3	0,17456	Background: 0,00245		03/10/2022 13:46:32
Cd C2		0,05090	0,7	0,0804	0,0804
	1	0,05061	Background: 0,00169		03/10/2022 13:46:55
	2	0,05078	Background: 0,00195		03/10/2022 13:46:59
	3	0,05130	Background: 0,00215		03/10/2022 13:47:04
Cd C3		0,17471	0,6	0,2811	0,2811
	1	0,17491	Background: 0,00163		03/10/2022 13:47:24
	2	0,17572	Background: 0,00173		03/10/2022 13:47:28
	3	0,17351	Background: 0,00295		03/10/2022 13:47:33
Cd D1		0,43283	0,4	0,6997	0,6997
	1	0,43451	Background: 0,00266		03/10/2022 13:47:52
	2	0,43117	Background: 0,00275		03/10/2022 13:47:57
	3	0,43281	Background: 0,00289		03/10/2022 13:48:01
Cd D2		0,23539	0,4	0,3796	0,3796
	1	0,23442	Background: 0,00246		03/10/2022 13:48:27
	2	0,23572	Background: 0,00302		03/10/2022 13:48:32
	3	0,23605	Background: 0,00229		03/10/2022 13:48:36
Cd D3		0,34936	0,8	0,5644	0,5644
	1	0,34720	Background: 0,00194		03/10/2022 13:48:57
	2	0,35241	Background: 0,00285		03/10/2022 13:49:01
	3	0,34846	Background: 0,00272		03/10/2022 13:49:05
Cd E1		0,51186	0,4	0,8279	0,8279
	1	0,51185	Background: 0,00280		03/10/2022 13:49:27
	2	0,50989	Background: 0,00222		03/10/2022 13:49:31
	3	0,51384	Background: 0,00290		03/10/2022 13:49:35

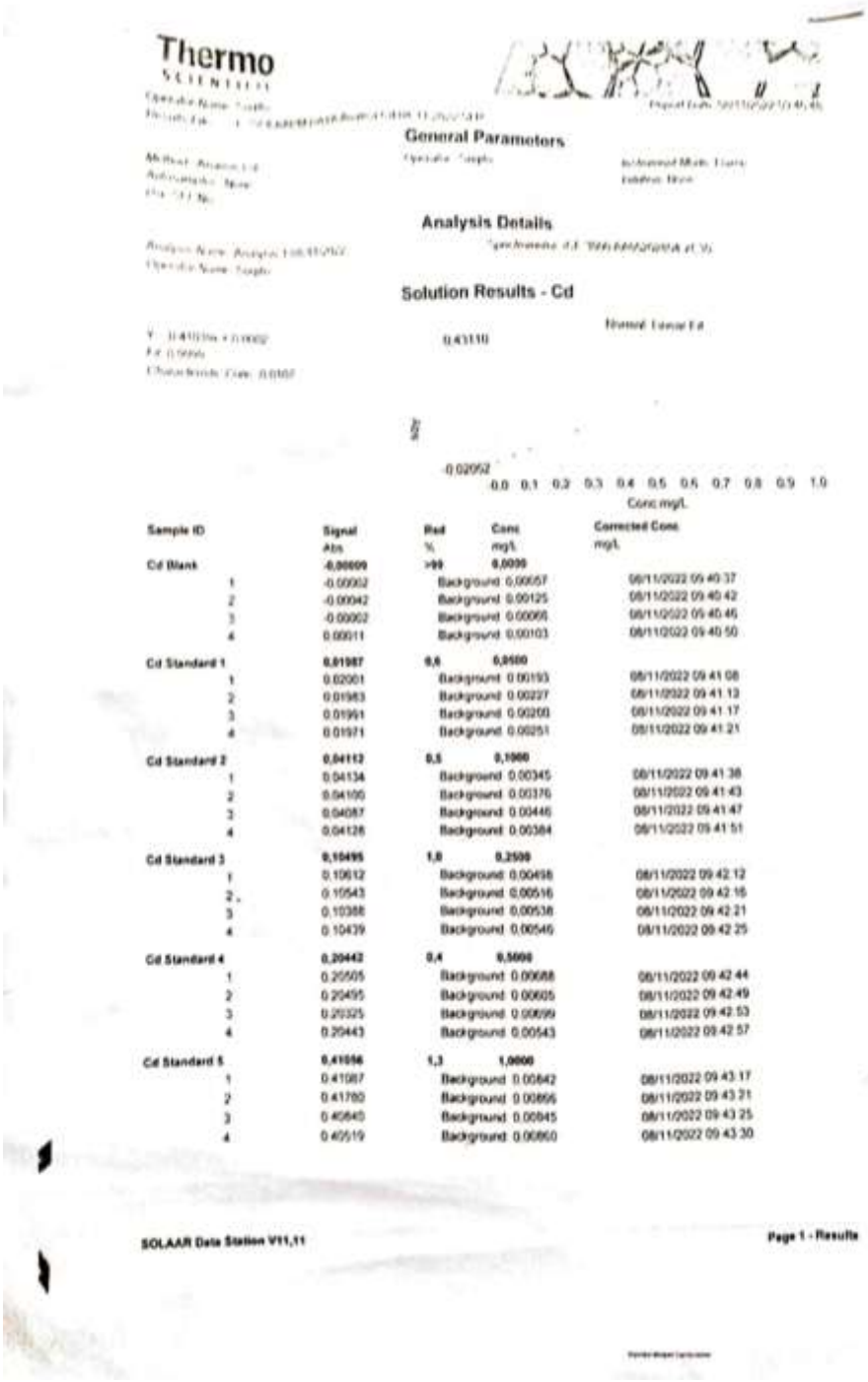
SOLAAR AA Report

Operator Name: Sugito
Results File: C:\SOLAARM\DATA\Analisa Cd 03 -10 -2022-2.SLR
Report Date: 03/10/2022 13:51:17

Solution Results - Cd

Sample ID		Signal Abs	Rsd %	Conc mg/L	Corrected Conc mg/L
Cd E5		0,61354	1,1	0,9928	0,9928
	1	0,60619	Background: 0,00280		03/10/2022 13:50:29
	2	0,61859	Background: 0,00324		03/10/2022 13:50:33
	3	0,61585	Background: 0,00268		03/10/2022 13:50:37

Lampiran 17. Data Presisi dan Akurasi



Thermo
SCIENTIFIC

General Parameters

Analysis Details

Solution Results - Cd

0.43110

0.02052

0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

Conc mg/L

Sample ID	Signal Abs	Rsd %	Conc mg/L	Corrected Conc mg/L	
Cd Blank	**-0.00009**	**>99**	**0,0000**		
1	-0.00002	Background	0.00057		08/11/2022 09:40:37
2	-0.00042	Background	0.00125		08/11/2022 09:40:42
3	-0.00002	Background	0.00095		08/11/2022 09:40:46
4	0.00011	Background	0.00103		08/11/2022 09:40:50
Cd Standard 1	**0,01987**	**0,6**	**0,0500**		
1	0.02001	Background	0.00193		08/11/2022 09:41:08
2	0.01983	Background	0.00227		08/11/2022 09:41:13
3	0.01991	Background	0.00200		08/11/2022 09:41:17
4	0.01971	Background	0.00251		08/11/2022 09:41:21
Cd Standard 2	**0,04113**	**0,5**	**0,1000**		
1	0.04134	Background	0.00345		08/11/2022 09:41:38
2	0.04100	Background	0.00376		08/11/2022 09:41:43
3	0.04087	Background	0.00446		08/11/2022 09:41:47
4	0.04126	Background	0.00384		08/11/2022 09:41:51
Cd Standard 3	**0,10495**	**1,0**	**0,2500**		
1	0.10612	Background	0.00498		08/11/2022 09:42:12
2	0.10543	Background	0.00516		08/11/2022 09:42:16
3	0.10388	Background	0.00538		08/11/2022 09:42:21
4	0.10439	Background	0.00546		08/11/2022 09:42:25
Cd Standard 4	**0,20442**	**0,4**	**0,5000**		
1	0.20505	Background	0.00688		08/11/2022 09:42:44
2	0.20495	Background	0.00605		08/11/2022 09:42:49
3	0.20325	Background	0.00699		08/11/2022 09:42:53
4	0.20443	Background	0.00543		08/11/2022 09:42:57
Cd Standard 5	**0,41056**	**1,3**	**1,0000**		
1	0.41087	Background	0.00842		08/11/2022 09:43:17
2	0.41780	Background	0.00856		08/11/2022 09:43:21
3	0.40640	Background	0.00845		08/11/2022 09:43:25
4	0.40519	Background	0.00860		08/11/2022 09:43:30

SOLAAR Data Station V11,11

Page 1 - Results