**Lampiran 1.** Analisis Kualitatif Hidrokuinon Dengan Reaksi Warna Dengan Fecl3

0,1 gr sampel

Dimasukkan kedalam erlenmeyer

Dilarutkan dengan 5 ml etanol 96 %

Ditambahkan 4 tetes FeCl3 1 %

Jika terbentuk warna hijau

Positif mengandung hidrokuinon

**Lampiran 2.** Analisis Kualitatif Hidrokuinon Dengan Reaksi Warna Dengan Reagen Benedict

Positif mengandung hidrokuinon

Ditambahkan 4 tetes reagen benedict

Jika terbentuk warna merah

Dilarutkan dengan 5 ml etanol 96 %

Dimasukkan kedalam erlenmeyer

0,1 gr sampel

**Lampiran 3.** Pembuatan Larutan Baku

Ditimbang 100 mg hidrokuinon

Dimasukkan kedalam beaker glass 50 ml

Dilarutkan dengan etanol 96 %

Dipindahkan kedalam labu ukur 100 ml

Ditambahkan etanol 96% sampai garis tanda

Larutan dikocok hingga homogen

Larutan baku hidrokuinon

**Lampiran 4.** Perhitungan Konsentrasi Penentuan Panjang Gelombang Maksimum Larutan Hidrokuinon

Larutan baku

1000 ppm



+ etanol 96%

sampai tanda batas (C = 1000 ppm)

LIB I

100 ml



+ etanol 96%

sampai tanda batas (C = 100 ppm)

LIB II

100 ml

Perhitungan konsentrasi

1 ppm = 1 mg/L

= 0,001 μg/1000 ml

Berat sampel Hidrokuinon = 100 mg

Konsentrasi (C) = =

10 ml diadkan dengan etanol 96 % sampai 100 ml

Konsentrasi (C) = =

**Lampiran 5.** Pembuatan Kurva Baku Hidrokuinon



(C = 100 ppm)

LIB II

100 ml

1 ml 2 ml 3 ml 4 ml 5 ml 

100 ml 100 ml 100 ml 100 ml 100 ml

5 ppm

4 ppm

3 ppm

2 ppm

1 ppm

Perhitungan Konsentrasi

1. Larutan standart 1 ppm

LIB 100 ppm yang diencerkan menjadi 1 ppm dalam 100 ml

M1 .V1 = M2 .V2

100 ml = 1. 100 ml

V1 = 1 ml

1. Larutan standart 2 ppm

LIB 100 ppm yang diencerkan menjadi 2 ppm dalam 100 ml

M1 .V1 = M2 .V2

100 ml = 2. 100 ml

V1 = 2 ml

**Lampiran 5** (lanjutan)

1. Larutan standart 3 ppm

LIB 100 ppm yang diencerkan menjadi 3 ppm dalam 100 ml

M1 .V1 = M2 .V2

100 ml = 3. 100 ml

V1 = 3 ml

1. Larutan standart 4 ppm

LIB 100 ppm yang diencerkan menjadi 4 ppm dalam 100 ml

M1 .V1 = M2 .V2

100 ml = 4. 100 ml

V1 = 4 ml

1. Larutan standart 5 ppm

LIB 100 ppm yang diencerkan menjadi 5 ppm dalam 100 ml

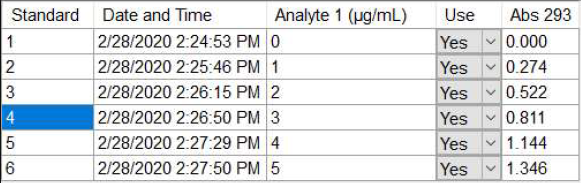
M1 .V1 = M2 .V2

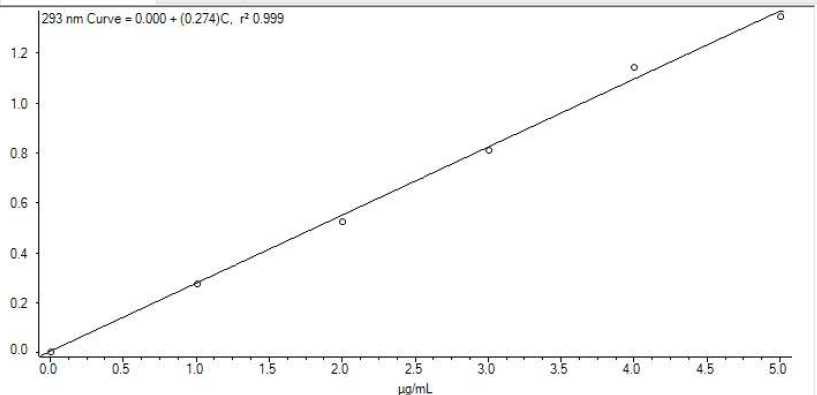
100 ml = 5. 100 ml

V1 = 5 ml

**Lampiran 6.** Data Hasil Spektrofotometri UV

1. Kurva Kalibrasi Hidrokuinon



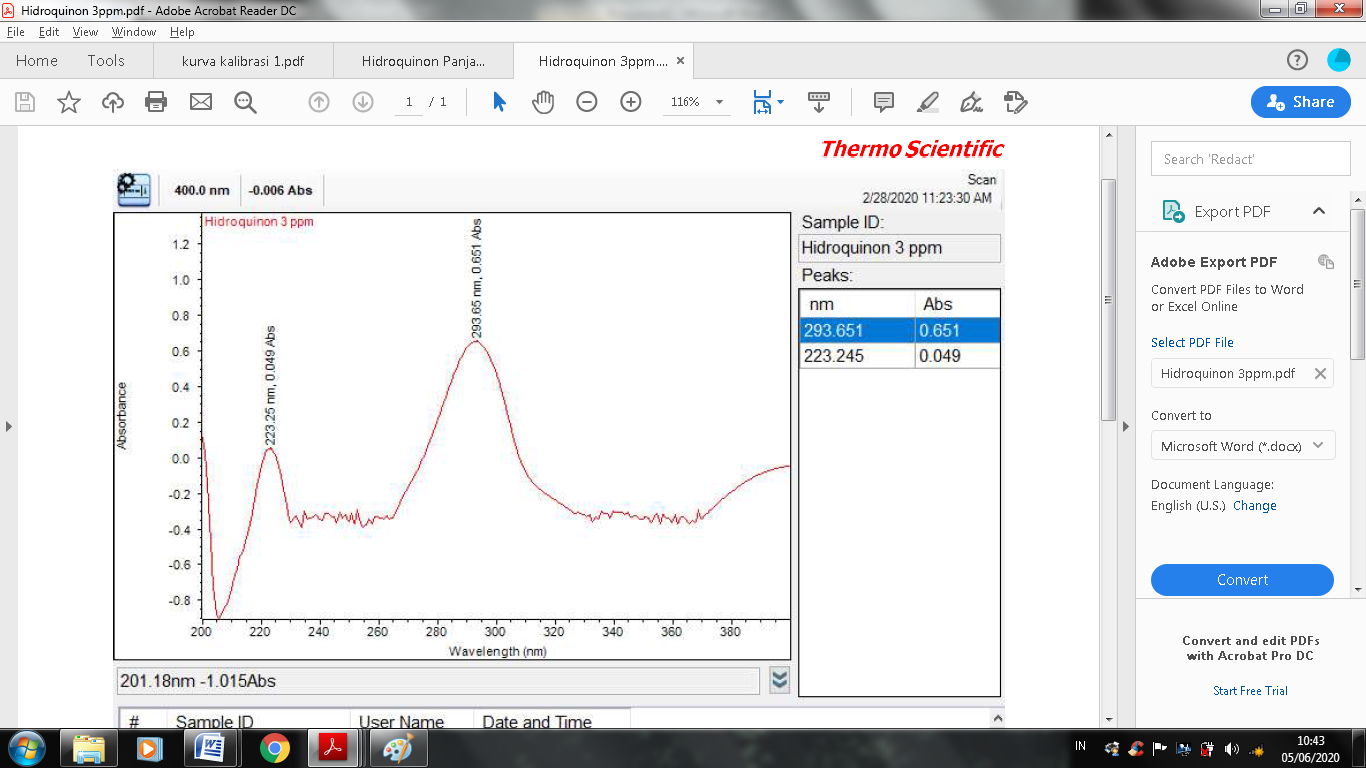


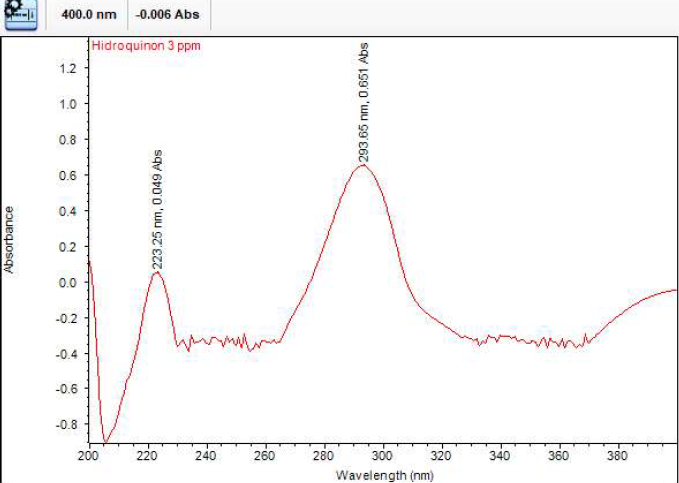
Y = 0,274X + 0,0047

r2 = 0,999460

**Lampiran 6.** (Lanjutan)

1. Kurva Panjang Gelombang Maksimum





**Lampiran 6.** (Lanjutan)

1. Data Absorbansi Penetapan Kadar Hidrokuinon ( Sampel E )

|  |  |  |
| --- | --- | --- |
| Sampel | Absorbansi | Kadar (μg/mL) |
| Sampel E-1 | 0,758 | 2,768 |
| Sampel E-2 | 0,758 | 2,768 |
| Sampel E-3 | 0,758 | 2,770 |
| Sampel E-4 | 0,758 | 2,769 |
| Sampel E-5 | 0,758 | 2,771 |
| Sampel E-6 | 0,758 | 2,768 |

1. Data Absorbansi Penetapan Kadar Hidrokuinon ( Sampel N )

|  |  |  |
| --- | --- | --- |
| Sampel | Absorbansi | Kadar (μg/mL) |
| Sampel N-1 | 0,755 | 2,759 |
| Sampel N-2 | 0,755 | 2,760 |
| Sampel N-3 | 0,755 | 2,758 |
| Sampel N-4 | 0,757 | 2,767 |
| Sampel N-5 | 0,757 | 2,767 |
| Sampel N-6 | 0,756 | 2,761 |

**Lampiran 7.** Perhitungan Persamaan Regresi

|  |  |  |
| --- | --- | --- |
| No | Konsentrasi (x) | Absorbansi |
| 1 | 0 | 0,00 |
| 2 | 1 | 0,274 |
| 3 | 2 | 0,522 |
| 4 | 3 | 0,811 |
| 5 | 4 | 1,144 |
| 6 | 5 | 1,346 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | X | Y | x2 | y2 | xy |
| 1 | 0 | 0,00 | 0 | 0 | 0 |
| 2 | 1 | 0,274 | 1 | 0,075 | 0,274 |
| 3 | 2 | 0,522 | 4 | 0,272 | 1,044 |
| 4 | 3 | 0,811 | 9 | 0,657 | 2,433 |
| 5 | 4 | 1,144 | 16 | 1,308 | 4,576 |
| 6 | 5 | 1,346 | 25 | 1,811 | 6,730 |
| Σ | 15 | 4,097 | 55 | 4,123 | 15,057 |
|  | x̄ = 2,5 | y̅ = 0,6828 | x̄2 = 9,166 | y̅2 = 0,6871 | = 2,5059 |

= =

=

=

=

b = y̅ - ax̄

= 0,6828 – (2,5)(0,275)

=0,0047

Maka, persamaan regresinya adalah

y = ax + b

= 0,275 + 0,0047

**Lampiran 7 (**lanjutan)

r2 =

=

=

=

= 0,999460

**Lampiran 8.** Perhitungan Kadar Hidrokuinon Pada Sampel E

Sampel yang dipipet = 10 ml

Serapan (a) = 0,758

Persamaan regresi (y) = 0,275x + 0,0047

Kadar hidrokuinon (x) 0,758 = 0,275x + 0,0047

x =

= 2,7392

Rumus perhitungan kadar hidrokuinon

K =

K =

K = 273,92

Keterangan :

K = kadar hidrokuinon dalam sampel

X = Konsentrasi

V = Volume sampel (ml)

Fp = Faktor pengenceran

Bs = Berat sampel

**Lampiran 9.** Perhitungan Kadar Hidrokuinon Pada Sampel N

Sampel yang dipipet = 10 ml

Serapan (a) = 0,755

Persamaan regresi (y) = 0,275x + 0,0047

Kadar hidrokuinon (x) 0,755 = 0,275x + 0,0047

x =

= 2,7283

Rumus perhitungan kadar hidrokuinon

K =

K =

K = 272,83

Keterangan :

K = kadar hidrokuinon dalam sampel

X = Konsentrasi

V = Volume sampel (ml)

Fp = Faktor pengenceran

Bs = berat sampel

**Lampiran 10.** Analisis Data Statistik Sampel E

|  |  |  |  |
| --- | --- | --- | --- |
| No | Kadar (x) | x- x̄ | (x- x̄)2 |
| 1 | 2,768 | -0,001 | 0,000001 |
| 2 | 2,768 | -0,001 | 0,000001 |
| 3 | 2,770 | 0,001 | 0,000001 |
| 4 | 2,769 | 0,000 | 0,00 |
| 5 | 2,771 | 0,002 | 0,000004 |
| 6 | 2,768 | -0,001 | 0,000001 |
|  | Σx = 16,614 |  | Σ = 0,00009 |
|  | x̄ = 2,769 |  |  |

SD =

=

= 0,00134

RSD =

=

= 0,00048

Pada interval kepercayaan 99 % dengan nilai α = 0,01 maka, ttabel = t , dk = = 0,005 dan dk = 5 maka, diperoleh nilai ttabel yaitu 4,0321. Data diterima jika thitung < ttabel.

t hitung = ││

t hitung  data 1 **=**  = = 1,8518

t hitung  data 2 = = = 1,8518

t hitung  data 3 = = = 1,8518

t hitung  data 4 = = = 0

t hitung  data 5 = = = 3

t hitung  data 6 = = = 1,8518

Kadar Hidrokuinon : x̄ ± t (, dk x SD/ )

: 2,769 ± (4,0321 x 0,00054)

: 2,769 ± 0,002177

**Lampiran 11.** Analisis Data Statistik Sampel N

|  |  |  |  |
| --- | --- | --- | --- |
| No | Kadar (x) | x- x̄ | (x- x̄)2 |
| 1 | 2,759 | -0,003 | 0,00009 |
| 2 | 2,760 | -0,002 | 0,000004 |
| 3 | 2,758 | -0,004 | 0,000016 |
| 4 | 2,767 | 0,005 | 0,000025 |
| 5 | 2,767 | 0,005 | 0,000025 |
| 6 | 2,761 | -0,001 | 0,000001 |
|  | Σx = 16,614 |  | Σ = 0,00008 |
|  | x̄ = 2,769 |  |  |

SD =

=

= 0,004

RSD =

=

= 0,0014

Pada interval kepercayaan 99 % dengan nilai α = 0,01 maka, ttabel = t , dk = = 0,005 dan dk = 5 maka, diperoleh nilai ttabel yaitu 4,0321. Data diterima jika thitung < ttabel.

t hitung = ││

t hitung  data 1 **=**  = = 1,8404

t hitung  data 2 = = = 1,2269

**Lampiran 11 (**lanjutan)

t hitung  data 3 = = = 2,4539

t hitung  data 4 = = = 3,0674

t hitung  data 5 = = = 3,0674

t hitung  data 6 = = = 0,6134

Kadar Hidrokuinon : x̄ ± t (, dk x SD/ )

: 2,762 ± (4,0321 x 0,004/2,449)

: 2,762 ± 0,006572

**Lampiran 12**. Penentuan LOD dan LOQ E

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Konsentrasi  (X) | Absorbansi  (y) | Yi | y-yi | (y-yi)2 |
| 1 | 0 | 0 | 0,0047 | -0,0047 | 0,00002209 |
| 2 | 1 | 0,755 | 0,2797 | 0,4753 | 0,2259 |
| 3 | 2 | 0,755 | 0,5547 | 0,2003 | 0,4012 |
| 4 | 3 | 0,757 | 0,8297 | -0,0727 | 0,0052 |
| 5 | 4 | 0,757 | 1,1047 | -0,3477 | 0,1208 |
| 6 | 5 | 0,756 | 1,3797 | -0,6237 | 0,3890 |
| n = 6 |  |  |  |  |  |

Persamaan Regresi y = 0,275x + 0,0047

Y0 = 0,275 (0) + 0,0047 = 0,0047

Y1 = 0,275 (1) + 0,0047 = 0,2797

Y2 = 0,275 (2) + 0,0047 = 0,5547

Y3 = 0,275 (3) + 0,0047 = 0,8297

Y4 = 0,275 (4) + 0,0047 = 1,1047

Y5 = 0,275 (5) + 0,0047 = 1,3797

Simpangan baku () =

= = 0,2671

LOD = 3 ()/ slope = 3 (0,2671)/ 0,275 = 2,91

LOQ = 10 ()/ slope = 10 (0,2671)/ 0,275 = 9,75

**Lampiran 13.** Penentuan LOD dan LOQ N

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Konsentrasi  (X) | Absorbansi  (y) | yi | y-yi | (y-yi)2 |
| 1 | 0 | 0 | 0,0047 | -0,0047 | 0,00002209 |
| 2 | 1 | 0,758 | 0,2797 | 0, 4783 | 0,2287 |
| 3 | 2 | 0,758 | 0,5547 | 0,2033 | 0,0413 |
| 4 | 3 | 0,758 | 0,8297 | -0,0717 | 0,00514 |
| 5 | 4 | 0,758 | 1,1047 | -0,3467 | 0,1202 |
| 6 | 5 | 0,758 | 1,3797 | -0,6217 | 0,38965 |
| n = 6 |  |  |  |  |  |

Persamaan regresi y = 0,275x + 0,0047

Y0 = 0,275 (0) + 0,0047 = 0,0047

Y1 = 0,275 (1) + 0,0047 = 0,2797

Y2 = 0,275 (2) + 0,0047 = 0,5547

Y3 = 0,275 (3) + 0,0047 = 0,8297

Y4 = 0,275 (4) + 0,0047 = 1,1047

Y5 = 0,275 (5) + 0,0047 = 1,3797

Simpangan baku () =

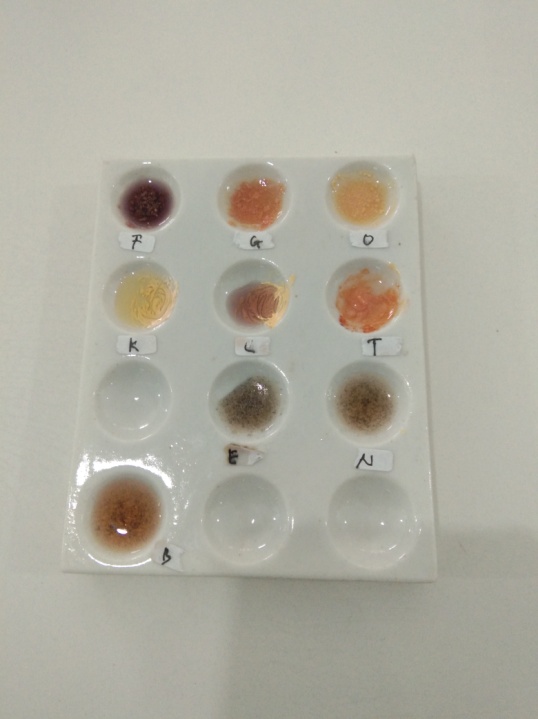
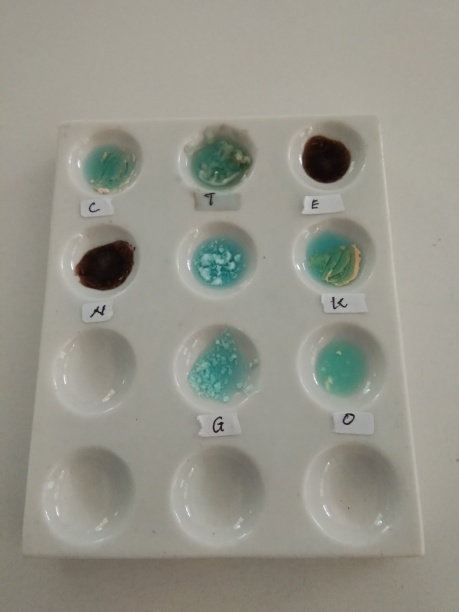
= = 0,2210

LOD = 3 ()/ slope = 3 (0,22)/ 0,275 = 2,410

LOQ = 10 ()/ slope = 10 (0,22)/ 0,275 = 8,03

**Lampiran 14.** Uji Warna Pereaksi FeCl3

**Lampiran 15.** Uji Warna Pereaksi Reagen Benedict

**Lampiran 16.** Berat Sampel E **Lampiran 17**. Berat Sampel N

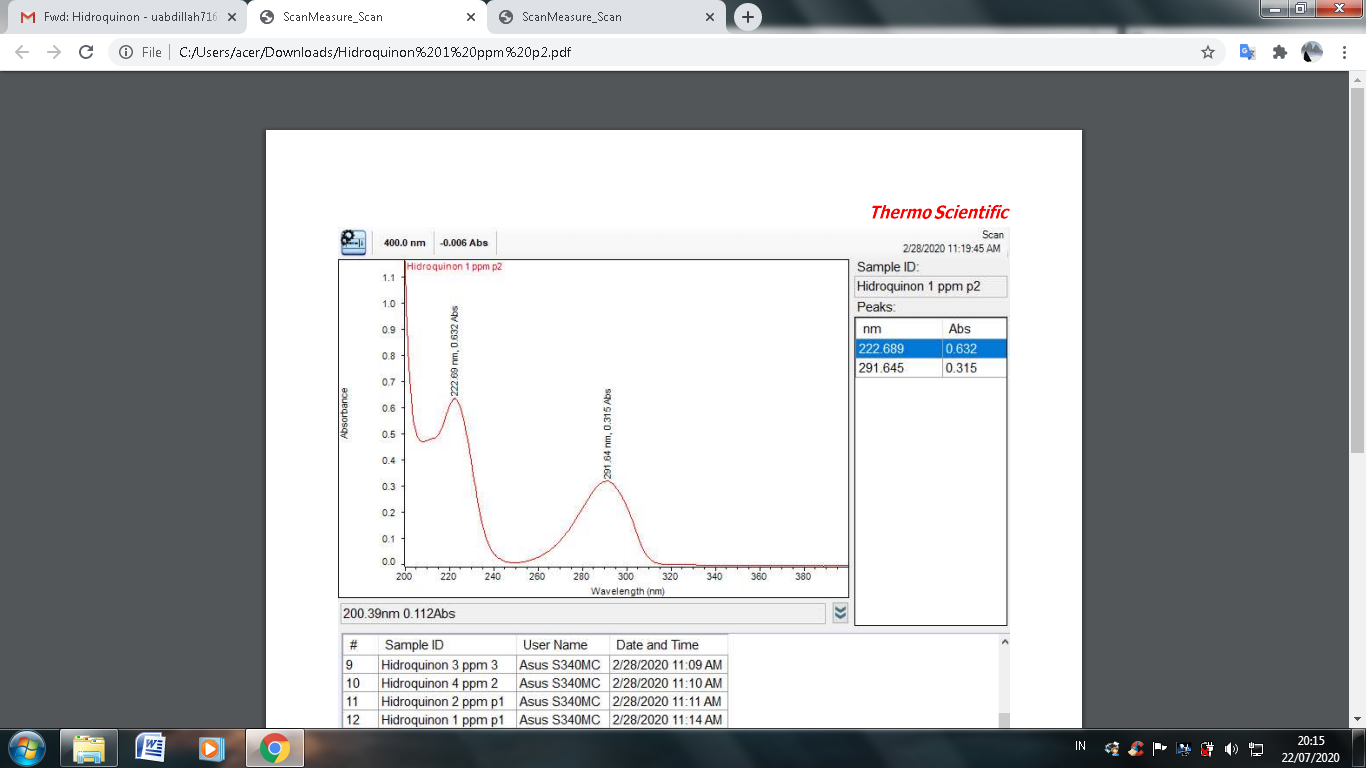
**Lampiran 18.** Larutan Induk Baku Hidrokuinon



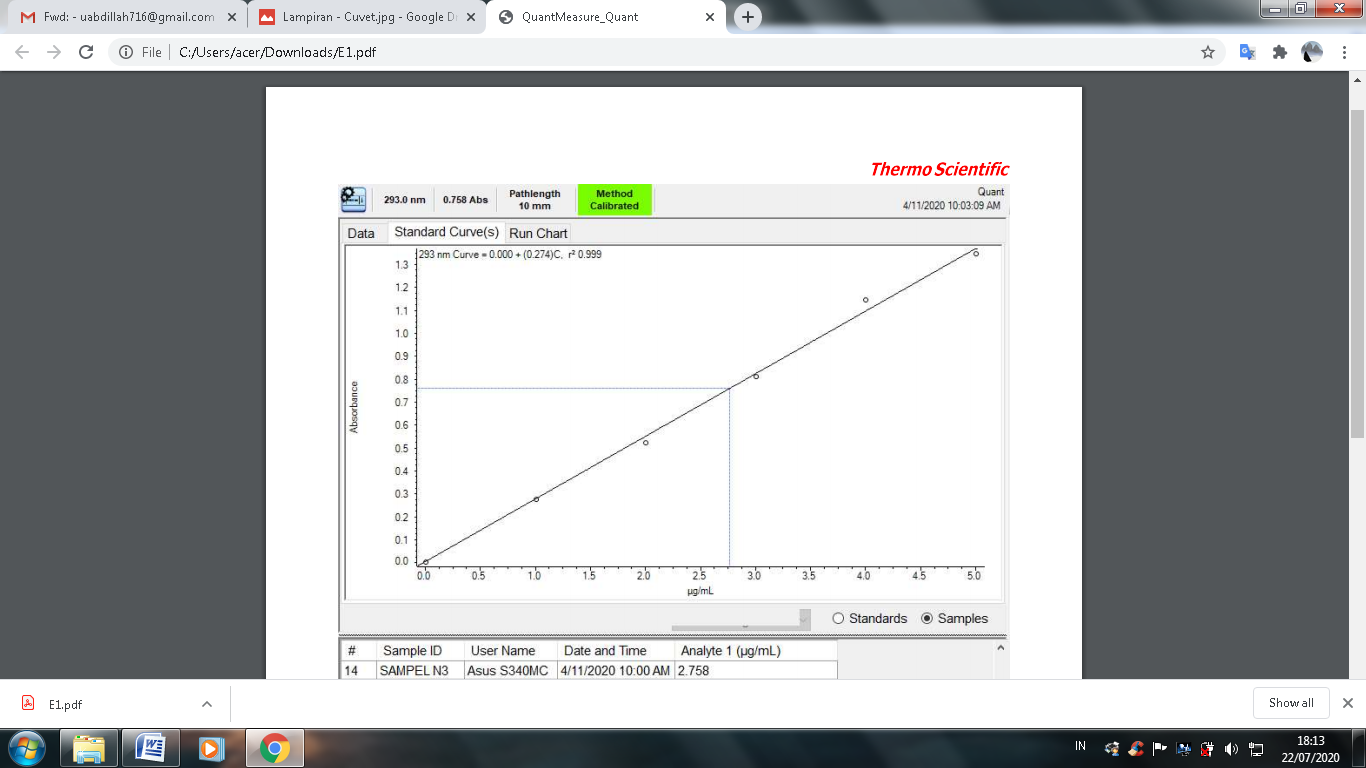
**Lampiran 19.** Seri Larutan Baku Hidrokuinon



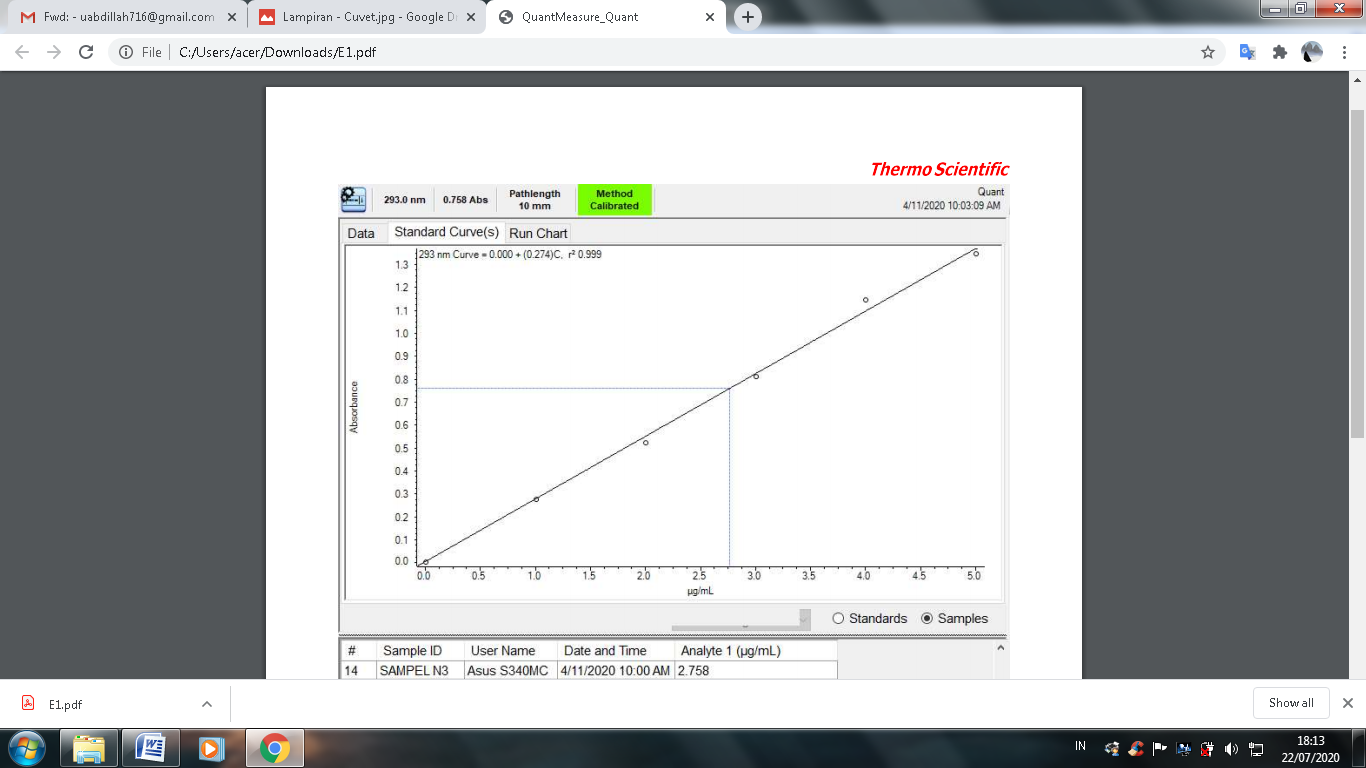
**Lampiran 20.** Panjang gelombang maksimum sampel E



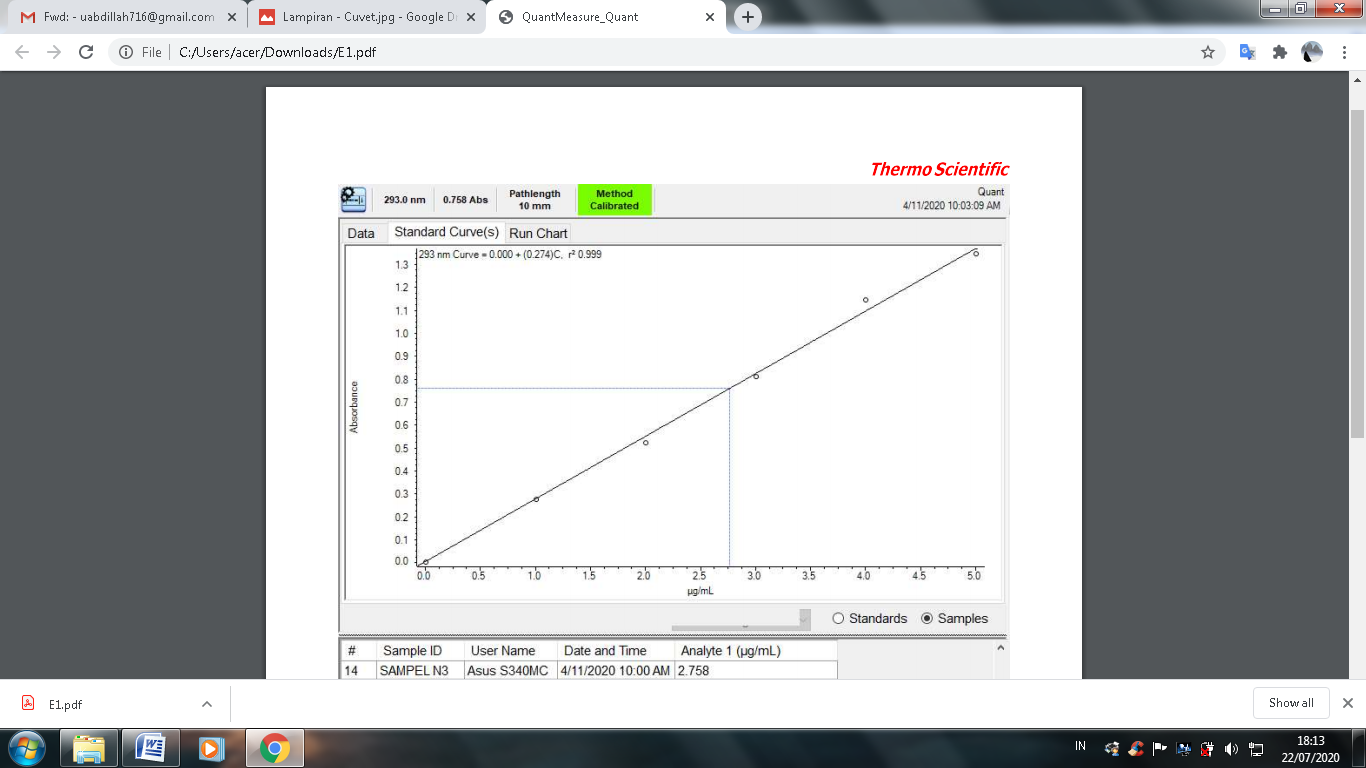
**Lampiran 21.** Kurva Absorbansi Sampel E1



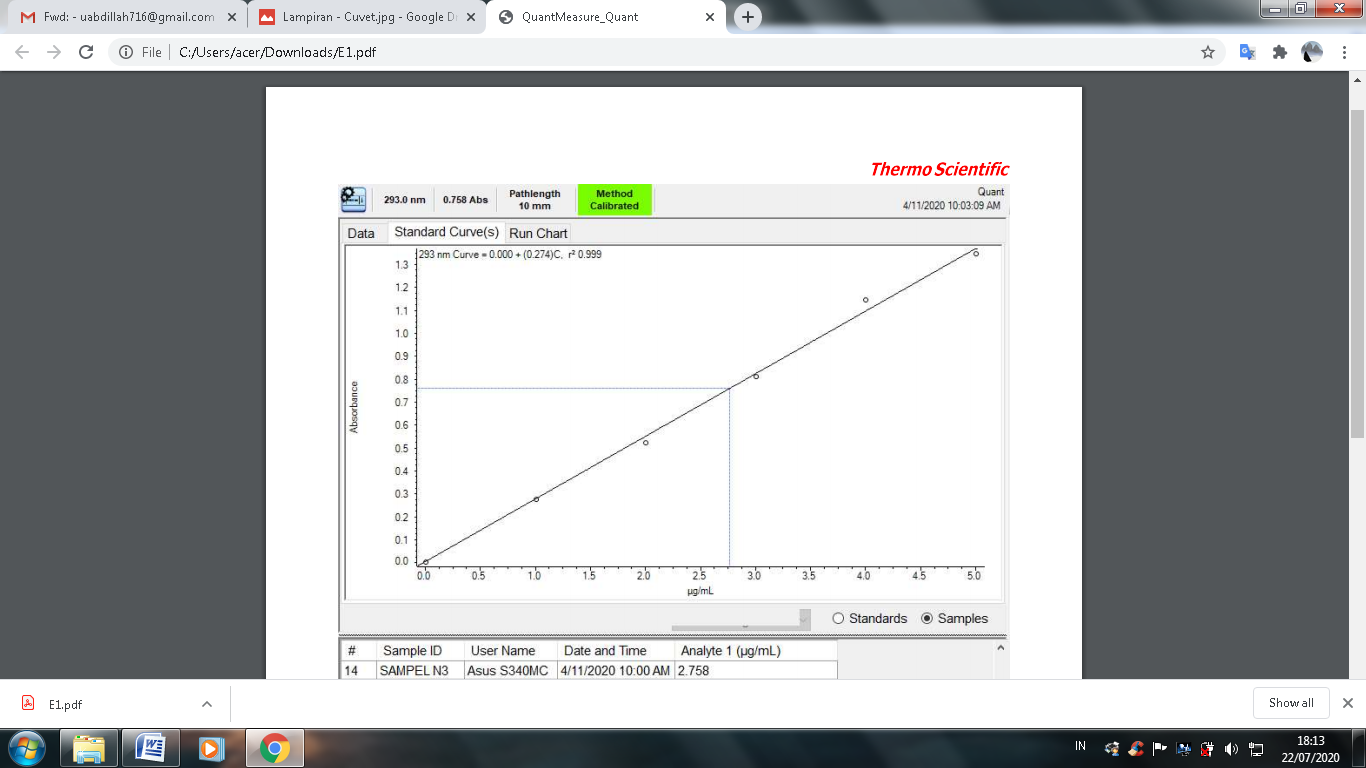
**Lampiran 22.** Kurva Absorbansi Sampel E2

****

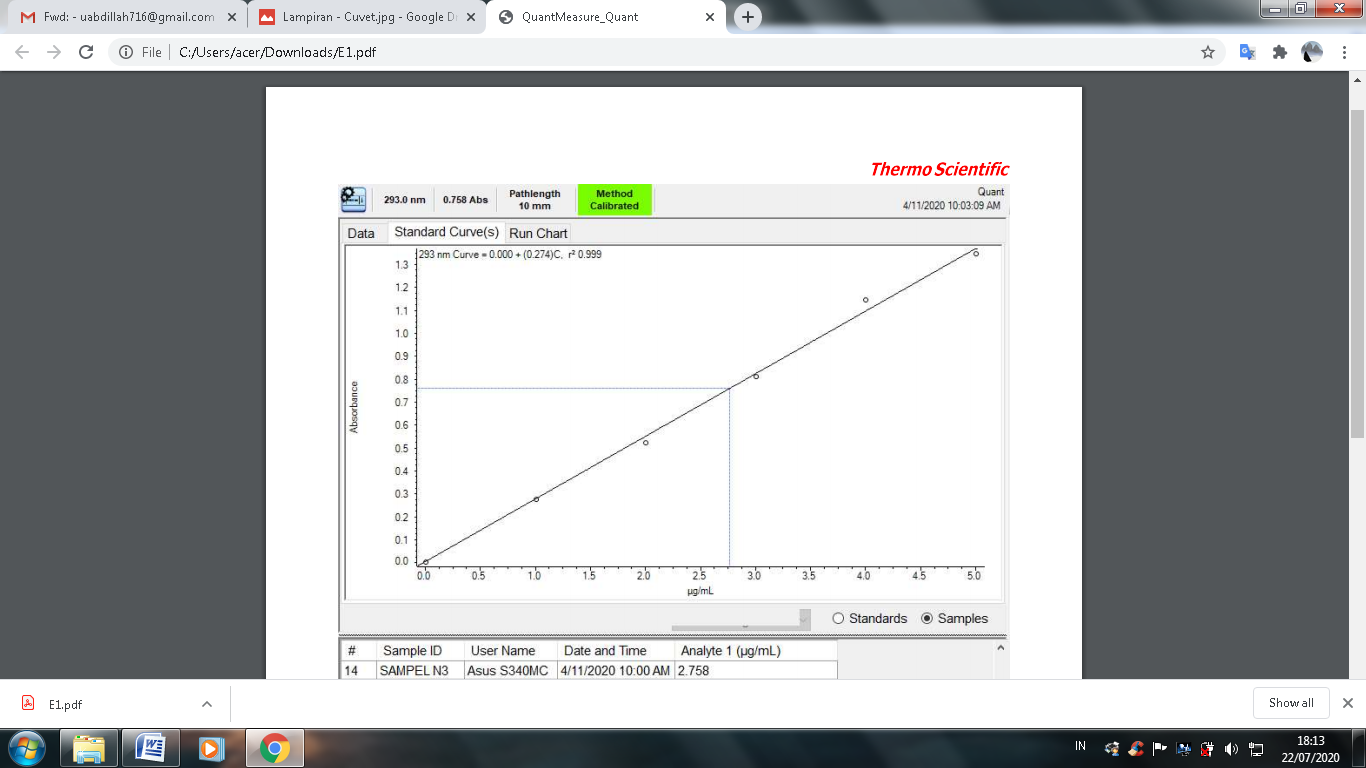
**Lampiran 23.** Kurva Absorbansi Sampel E3

****

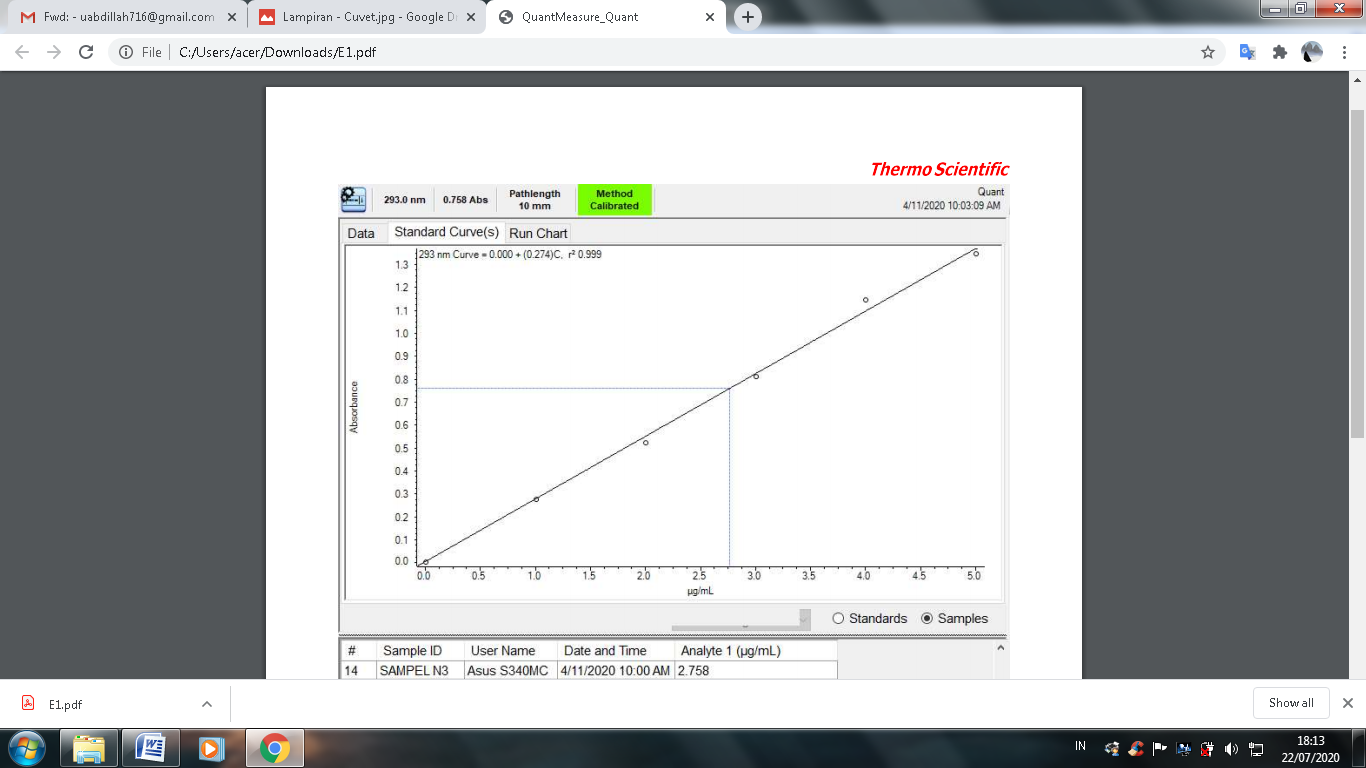
**Lampiran 24.** Kurva Absorbansi Sampel E4

****

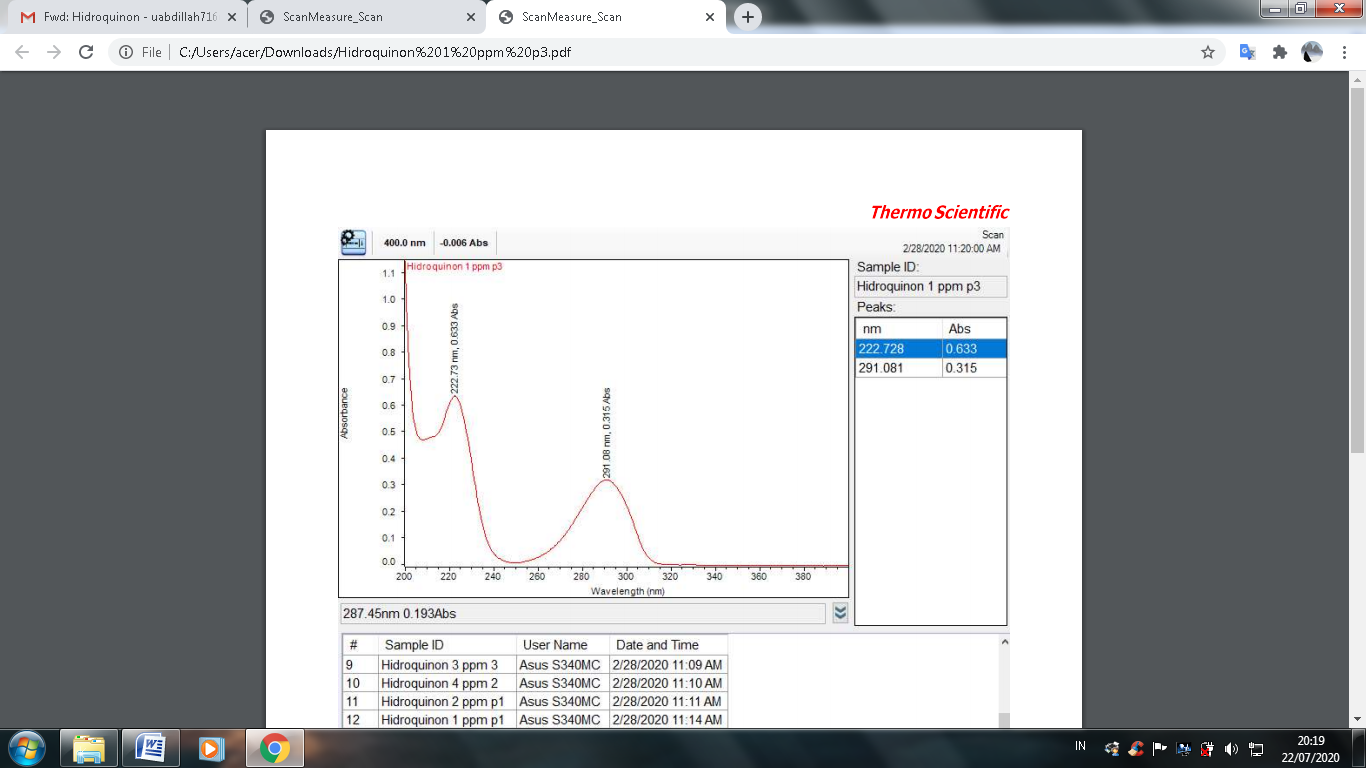
**Lampiran 25.** Kurva Absorbansi Sampel E5

****

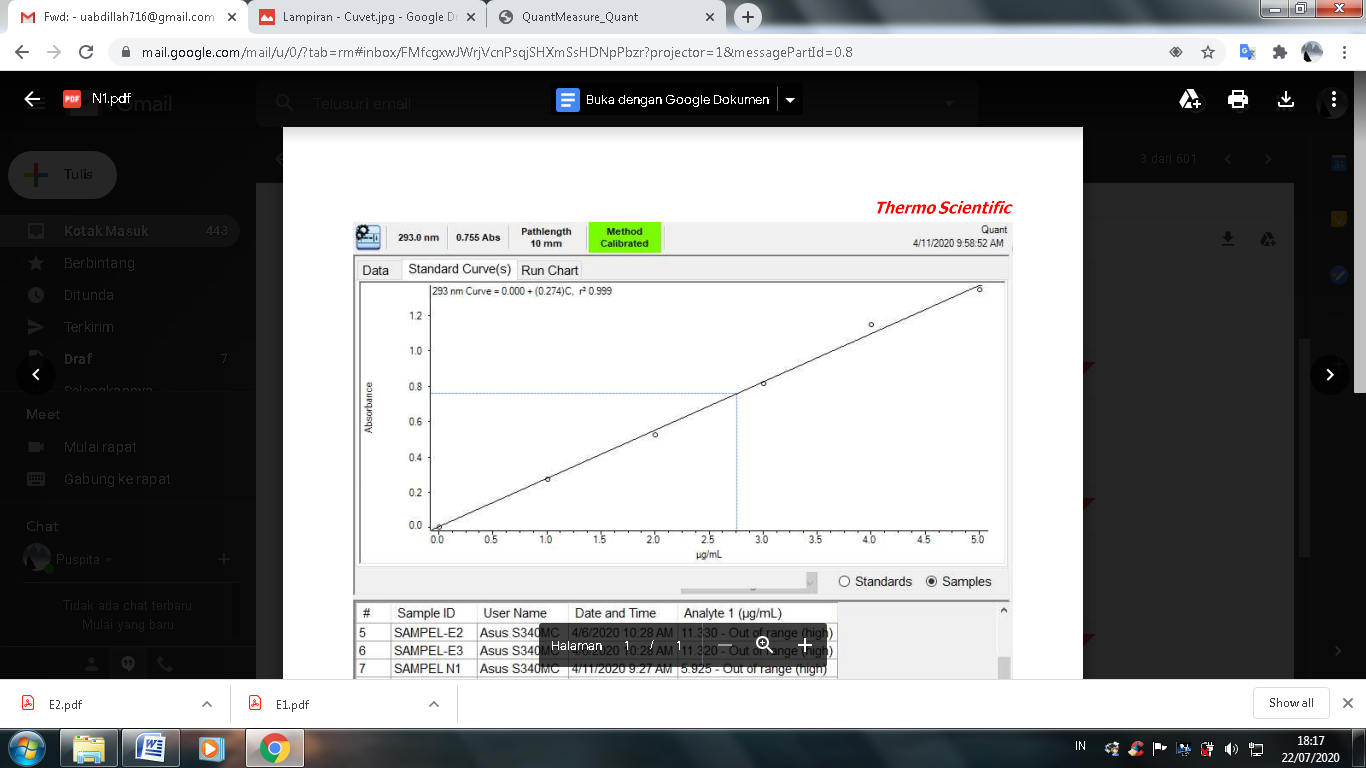
**Lampiran 26.** Kurva Absorbansi Sampel E6

****

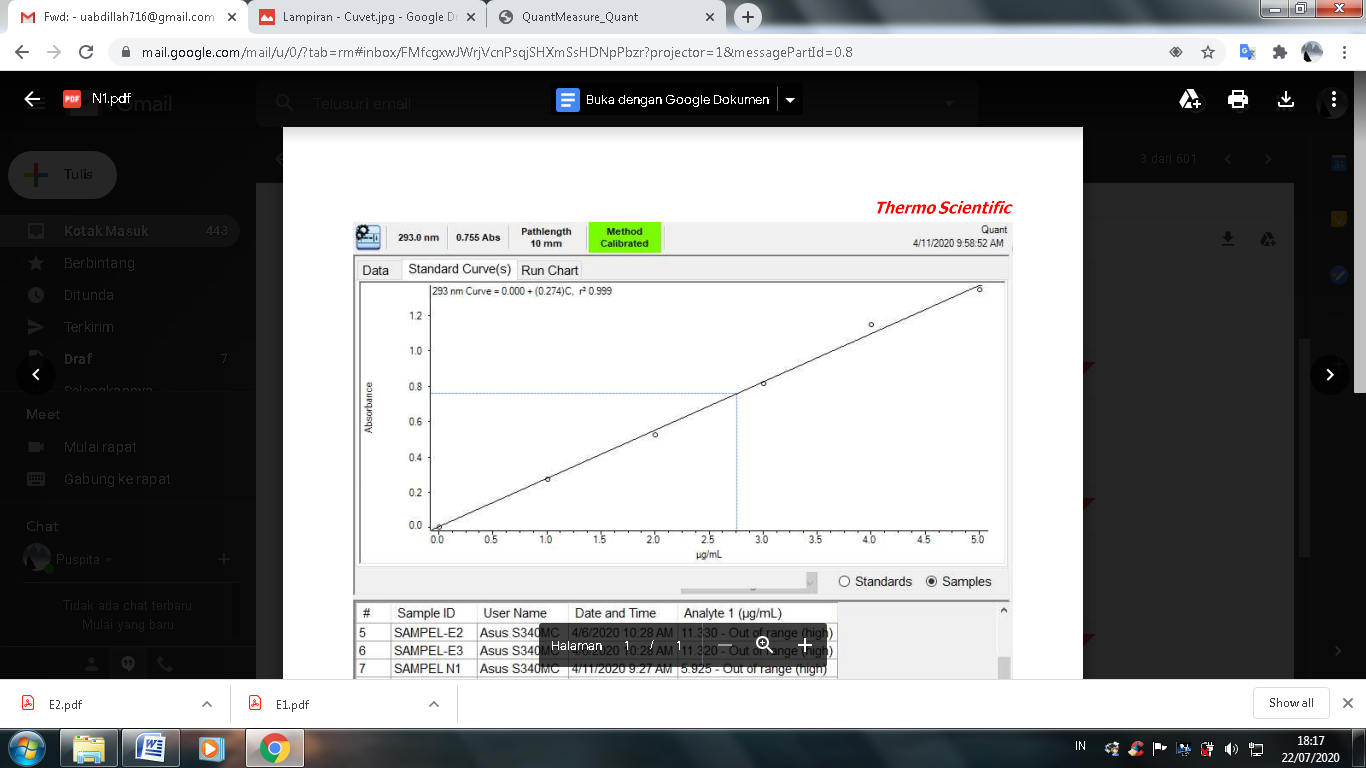
**Lampiran 27.** Panjang gelombang maksimum sampel N

****

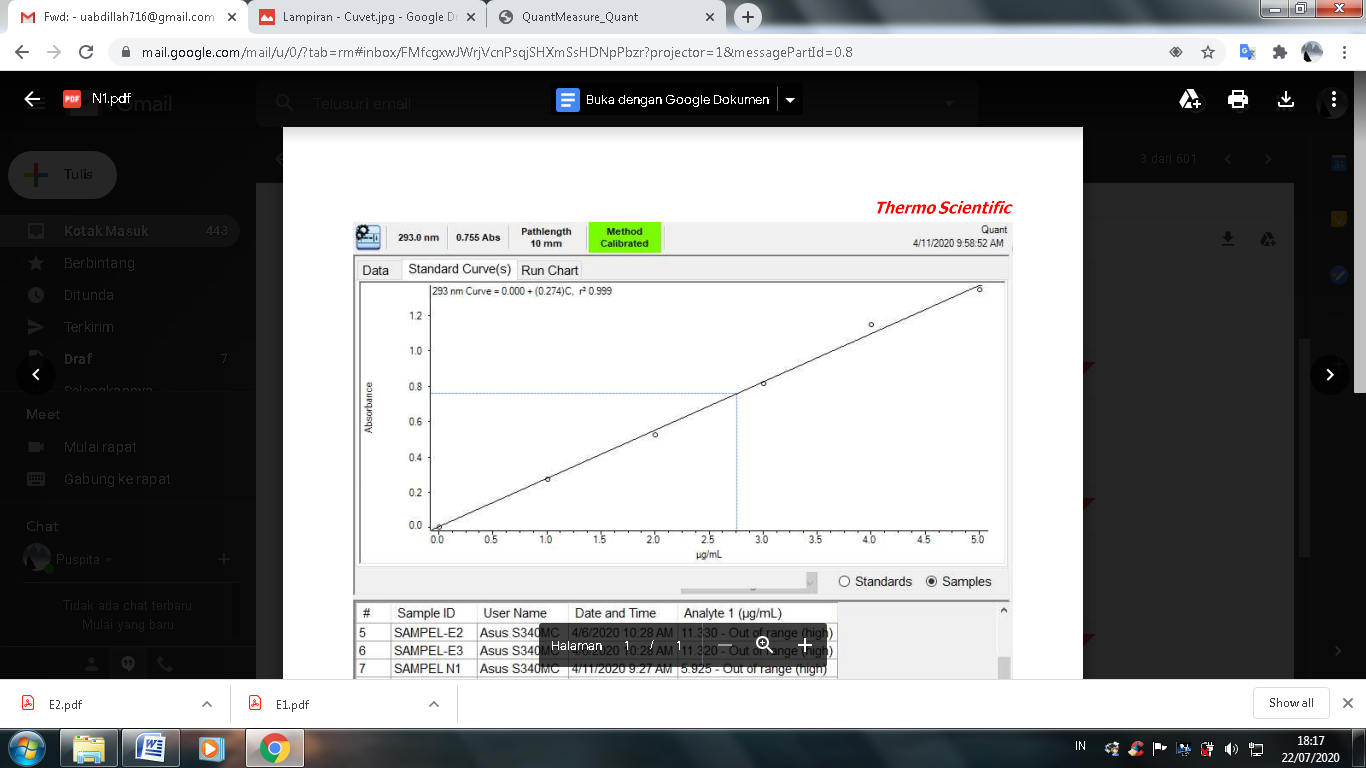
**Lampiran 27.** Kurva Absorbansi Sampel N1

****

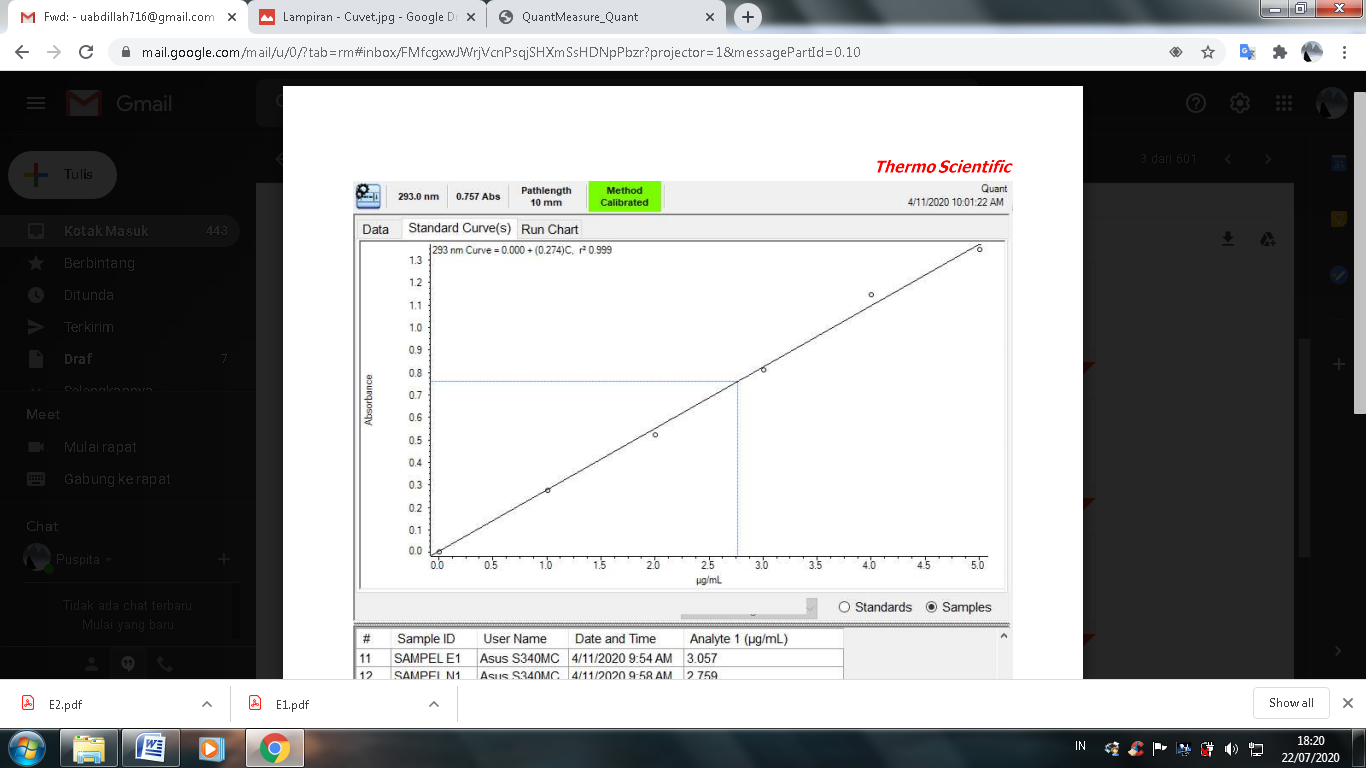
**Lampiran 28.** Kurva Absorbansi Sampel N2

****

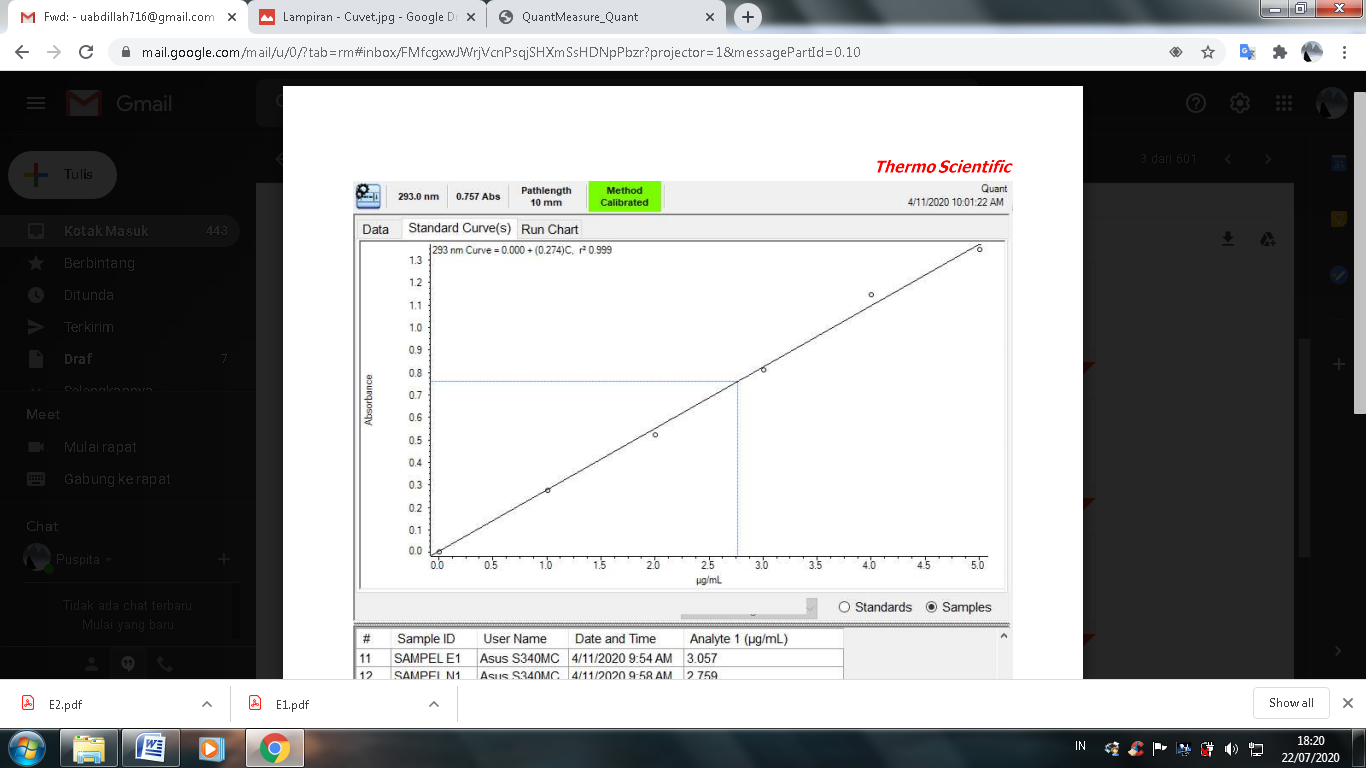
**Lampiran 29.** Kurva Absorbansi Sampel N3

****

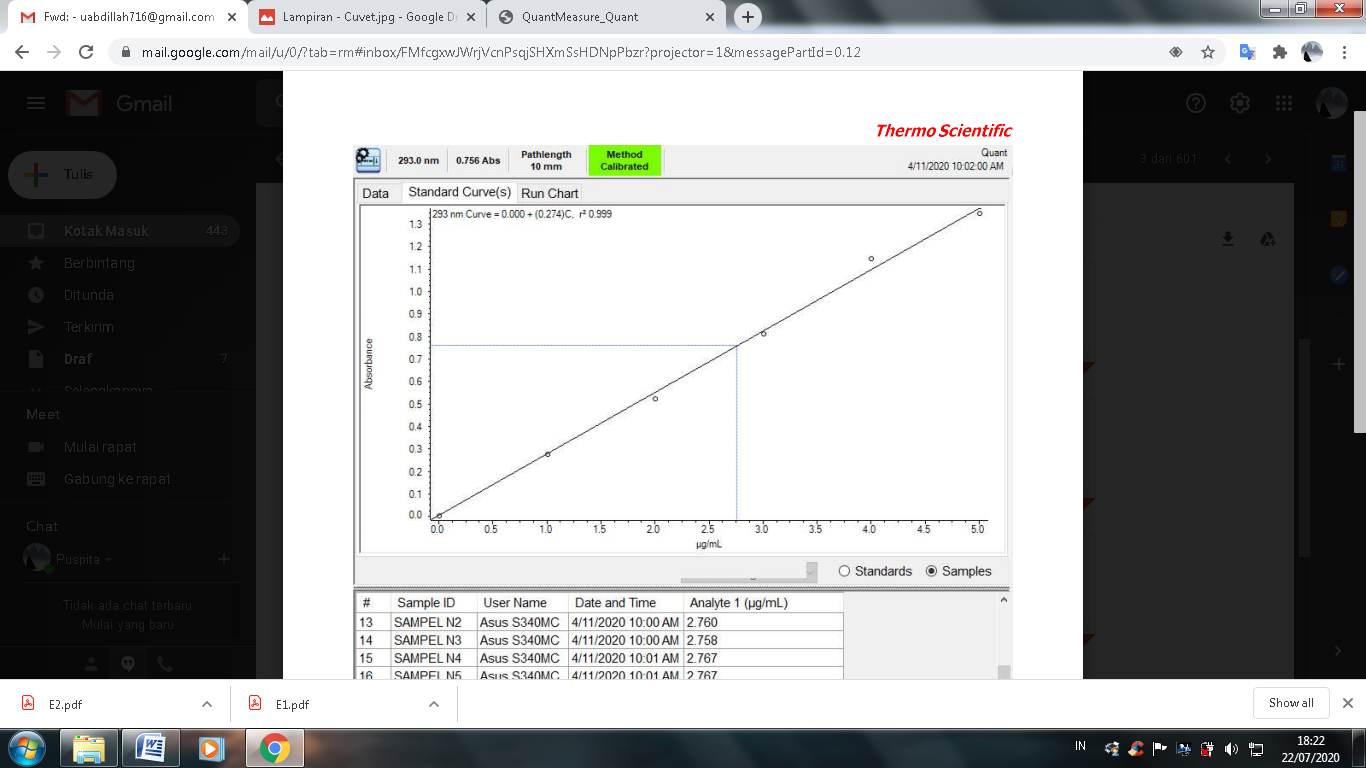
**Lampiran 30.** Kurva Absorbansi Sampel N4

****

**Lampiran 31.** Kurva Absorbansi Sampel N5

****

**Lampiran 32.** Kurva Absorbansi Sampel N6

****

**Lampiran 33.** Tabel Absorbansi dan Kadar sampel E

|  |  |  |
| --- | --- | --- |
| Sampel | Absorbansi | Kadar (μg/mL) |
| Sampel E-1 | 0,758 | 2,768 |
| Sampel E-2 | 0,758 | 2,768 |
| Sampel E-3 | 0,758 | 2,770 |
| Sampel E-4 | 0,758 | 2,769 |
| Sampel E-5 | 0,758 | 2,771 |
| Sampel E-6 | 0,758 | 2,768 |

**Lampiran 34.** Tabel Absorbansi dan Kadar sampel N

|  |  |  |
| --- | --- | --- |
| Sampel | Absorbansi | Kadar (μg/mL) |
| Sampel N-1 | 0,755 | 2,759 |
| Sampel N-2 | 0,755 | 2,760 |
| Sampel N-3 | 0,755 | 2,758 |
| Sampel N-4 | 0,757 | 2,767 |
| Sampel N-5 | 0,757 | 2,767 |
| Sampel N-6 | 0,756 | 2,761 |

**Lampiran 35.** Spektrofotometri UV-Vis



**Lampiran 36.** Cuvet

