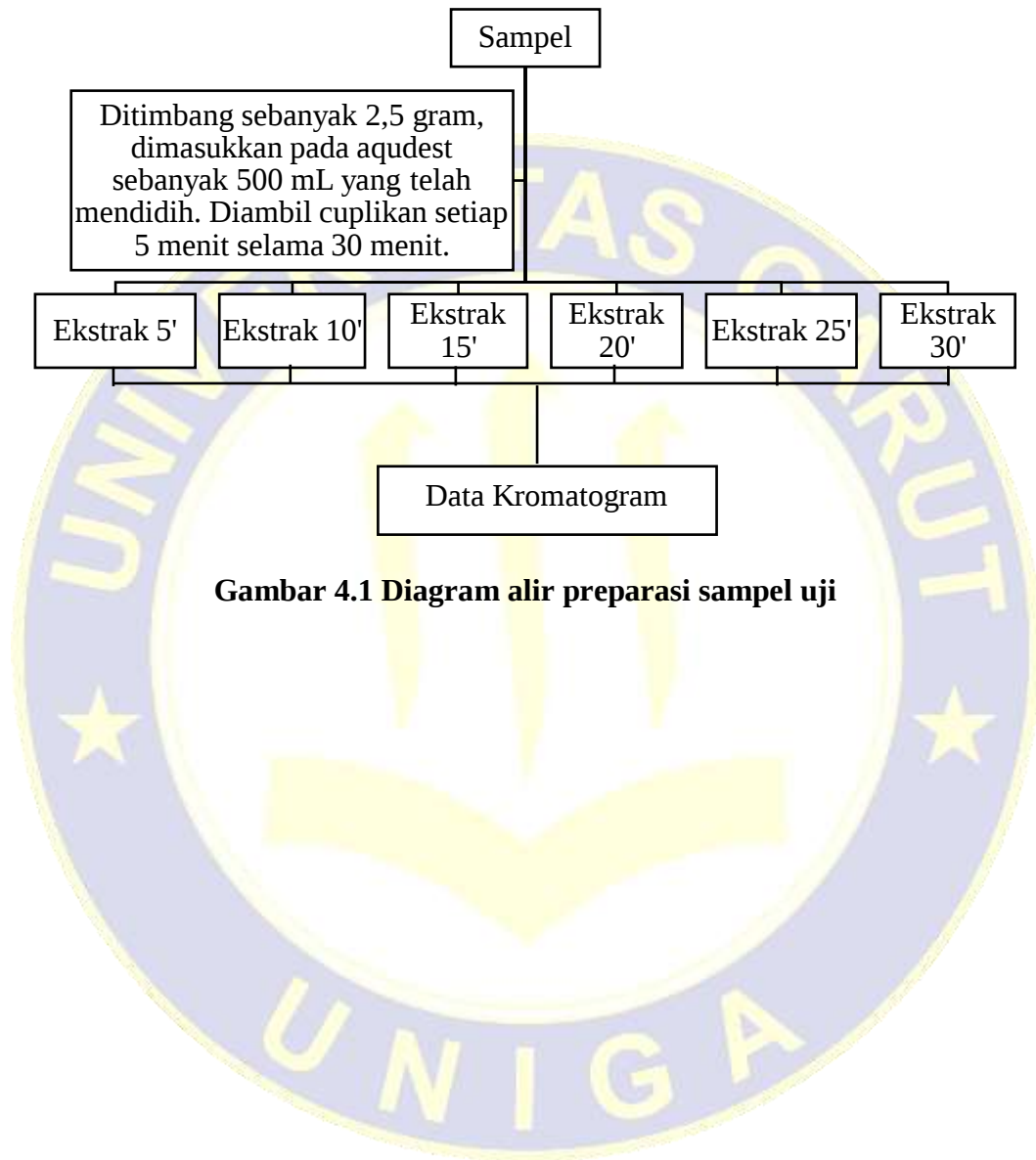


DAFTAR PUSTAKA

1. Sunaryo, 2015, **“Kimia Farmasi”**, EGC, Jakarta, Hlm. 300-311.
2. Kamiensky M., Koegh J, 2006, **“Vitamin and Minerals”**, In : Pharmacology Demystified, Mc GrawHill Companies, Inc, New York, Hlm. 137,138,144.
3. Munson, J.W., 1984, **“Pharmaceutical Analysis : Part B Modern Methods”**, Penerjemah Harjana, 1991, **“Analisis Farmasi Metode Modern”**, Airlangga University Press, Surabaya, Hlm. 335, 369-385
4. Harmita, 2014, **“Analisis Fisikokimia: Kromatografi”**, EGC, Jakarta, Hlm.1-64.
5. BPOM RI, 2010, **“Serial Data Ilmiah Terkini Tumbuhan Obat Rosella (*Hibiscus Sabdariffa* L.)”**, BPOM RI, Jakarta, Hlm.1-16.
6. DEPKES RI, 2005, **“Kandungan Kelopak Bunga Rosella, DEPKES RI. No SPP.1065/35.15/05”**, Departemen Kesehatan RI, Jakarta.
7. “Informasi Spesies”, <http://www.plantamor.com/index.php?plant=677>, Diakses 12 Agustus, 2016, Jam 5 : 45.
8. Rahmawati, Reni, 2011, **“Budidaya Rosela”**, Pustaka Baru Press, Yogyakarta.
9. Da-Costa-Rocha et al., 2014, **“Review *Hibiscus Sabdariffa* L.-A Phytochemical and Pharmacological Review”**, Food Chemistry, p.425-439.
10. Winarsi, Hery, 2007, **“Antioksidan Alami dan Radikal Bebas, Potensi dan Aplikasinya dalam Kesehatan”**, Kanisius, Yogyakarta, Hlm. 11-37.
11. Rohman, Abdul, 2009, **“Kromatografi untuk Analisis Obat”**, Graha Ilmu, Yogyakarta, Hlm. 111-119.
12. Harmita Harmita, 2004, **“Petunjuk Pelaksanaan Validasi Metode dan Cara Perhitungannya”**, Majalah Ilmu Kefarmasian, Vol.1, No.3, ISSN : 1693-9883, Hlm.117-132.

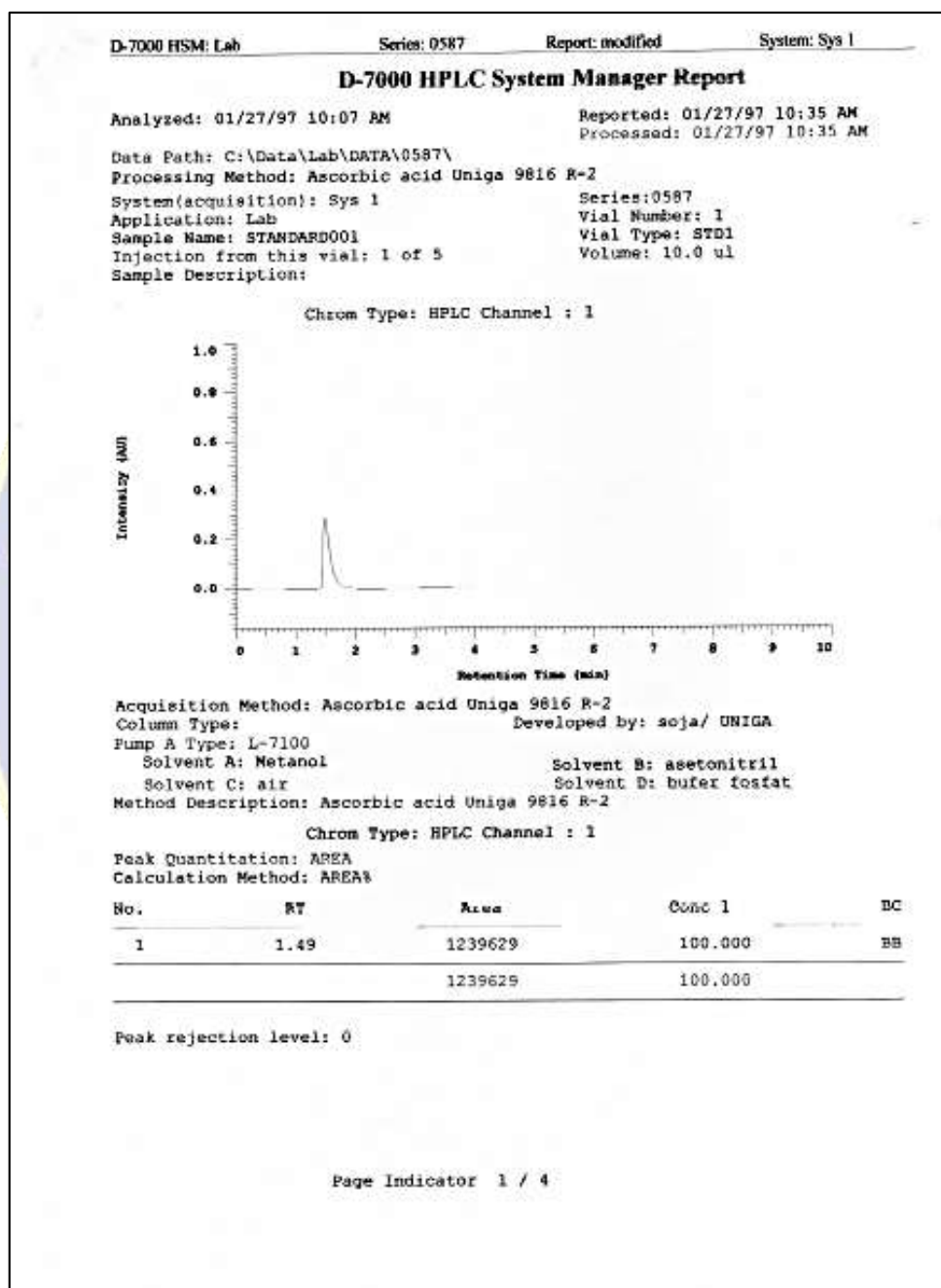
13. Gazdik, Zbynek, et al., 2008, **“Determination of Vitamin C (Ascorbic Acid) Using High Performance Liquid Chromatography Coupled with Electrochemical Detection”**, SENSORS, ISSN : 1424-8220, p.7097-7112.



LAMPIRAN 1**DIAGRAM ALIR PREPARASI SAMPEL UJI****Gambar 4.1 Diagram alir preparasi sampel uji**

LAMPIRAN 2

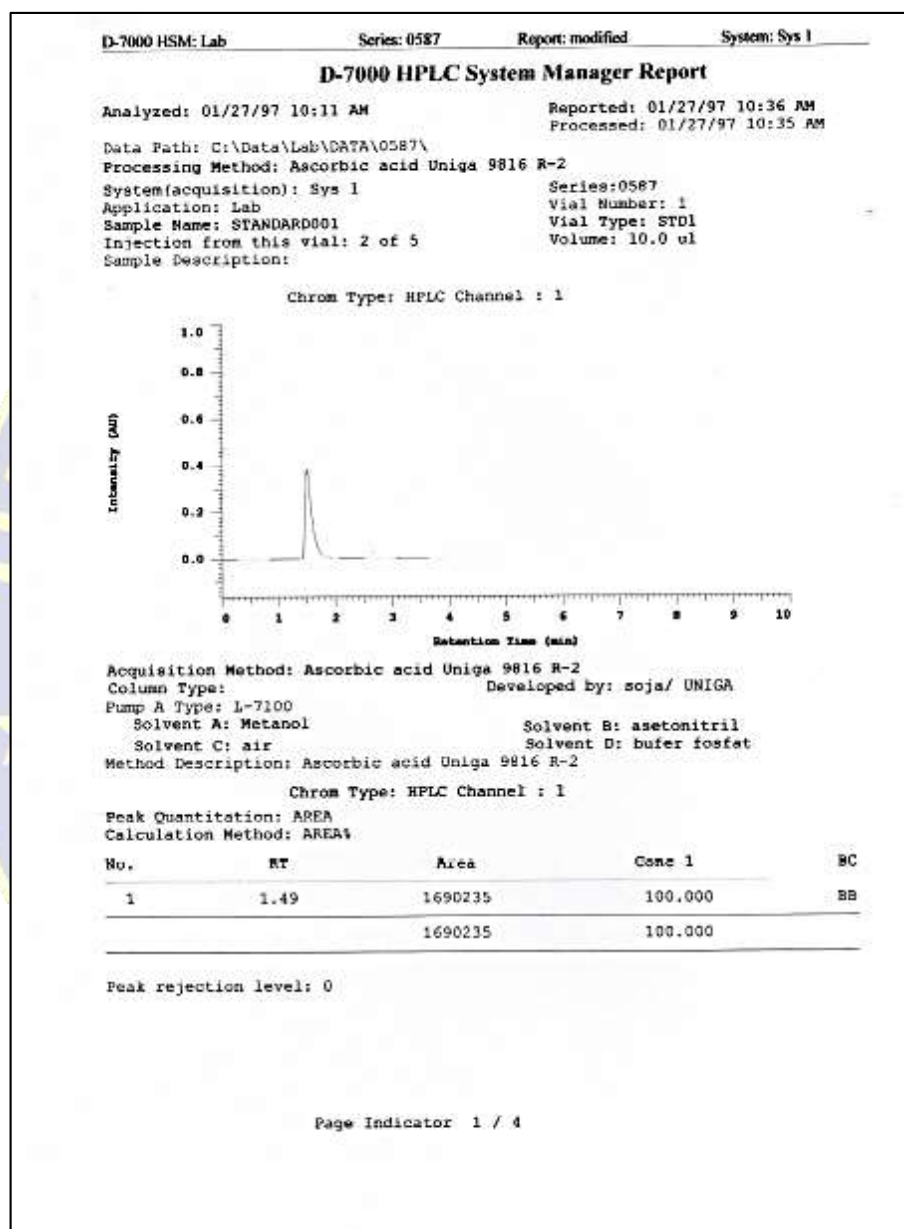
(LANJUTAN)



Gambar 5.3 Kromatogram larutan standar vitamin C konsentrasi 3 ppm

LAMPIRAN 2

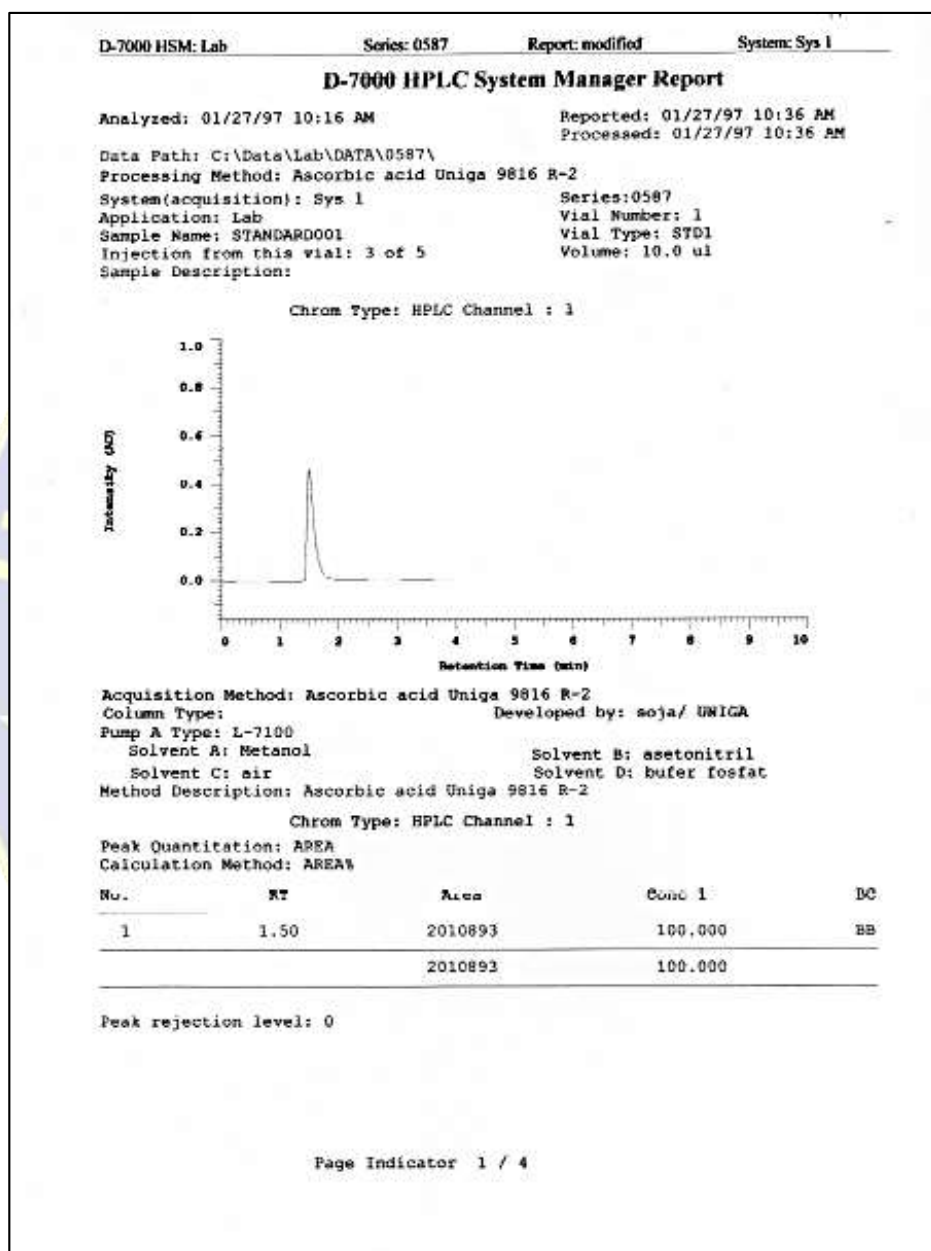
(LANJUTAN)



Gambar 5.4 Kromatogram larutan standar vitamin C konsentrasi 4 ppm

LAMPIRAN 2

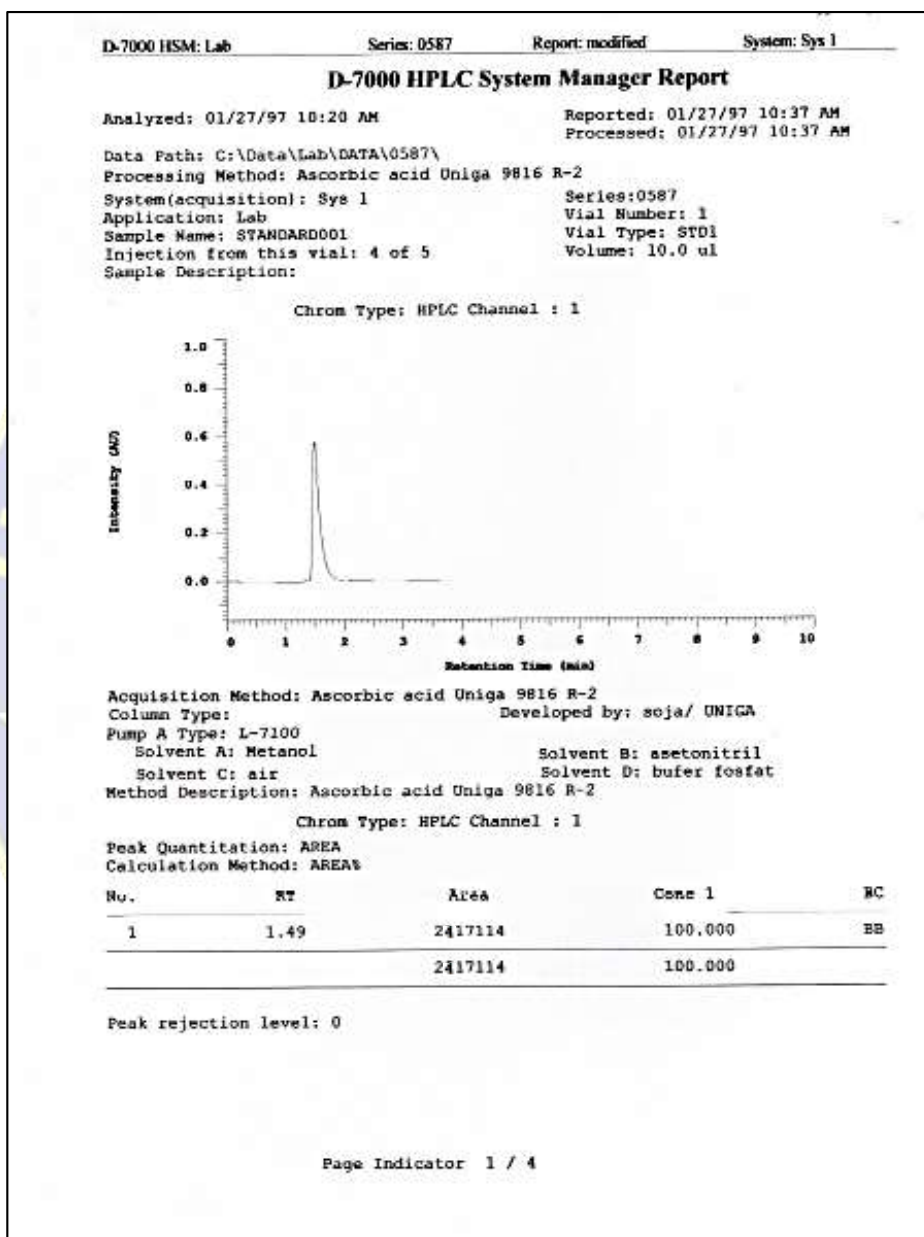
(LANJUTAN)



Gambar 5.5 Kromatogram larutan standar vitamin C konsentrasi 5 ppm

LAMPIRAN 2

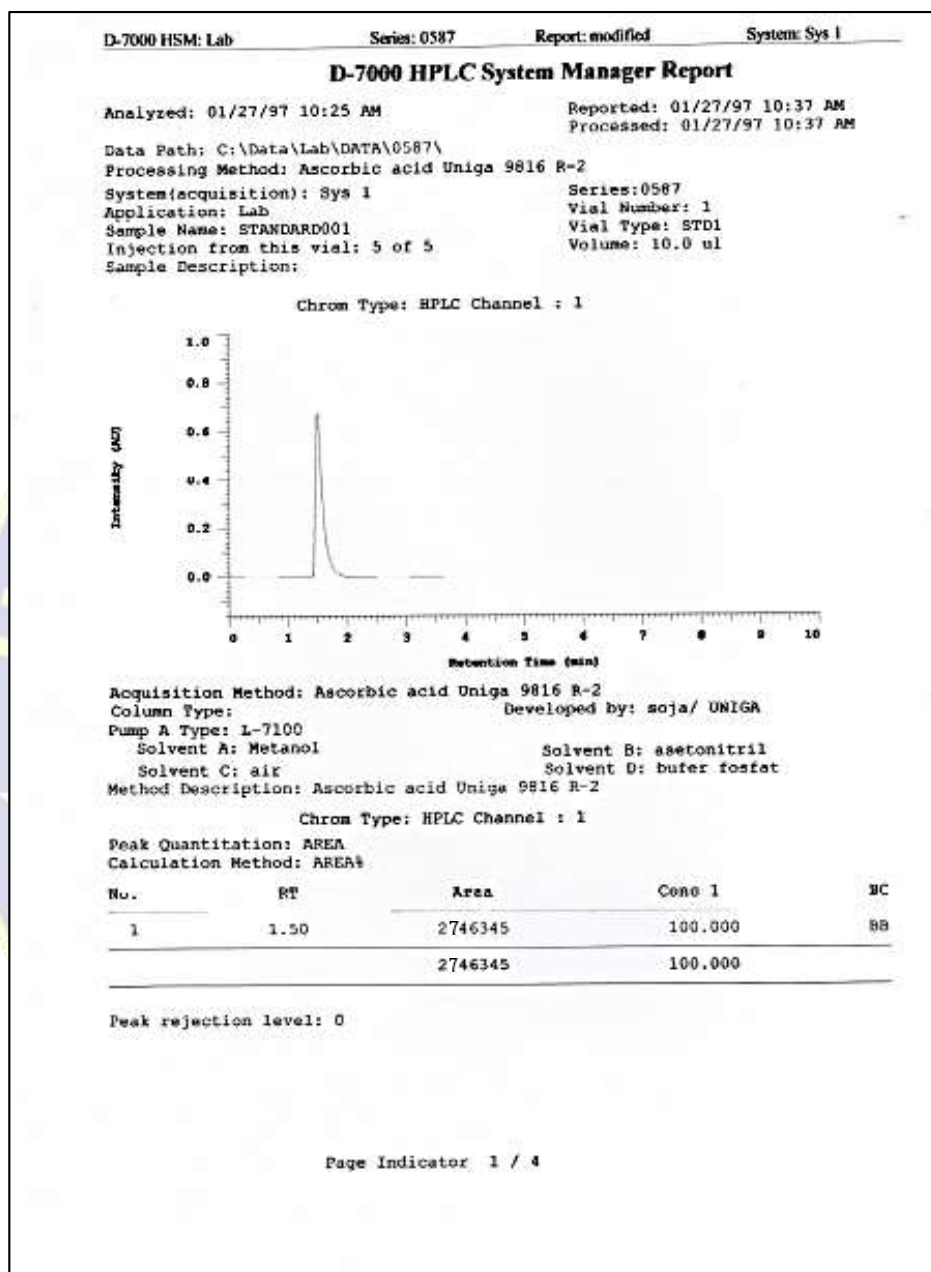
(LANJUTAN)



Gambar 5.6 Kromatogram larutan standar vitamin C konsentrasi 6 ppm

LAMPIRAN 2

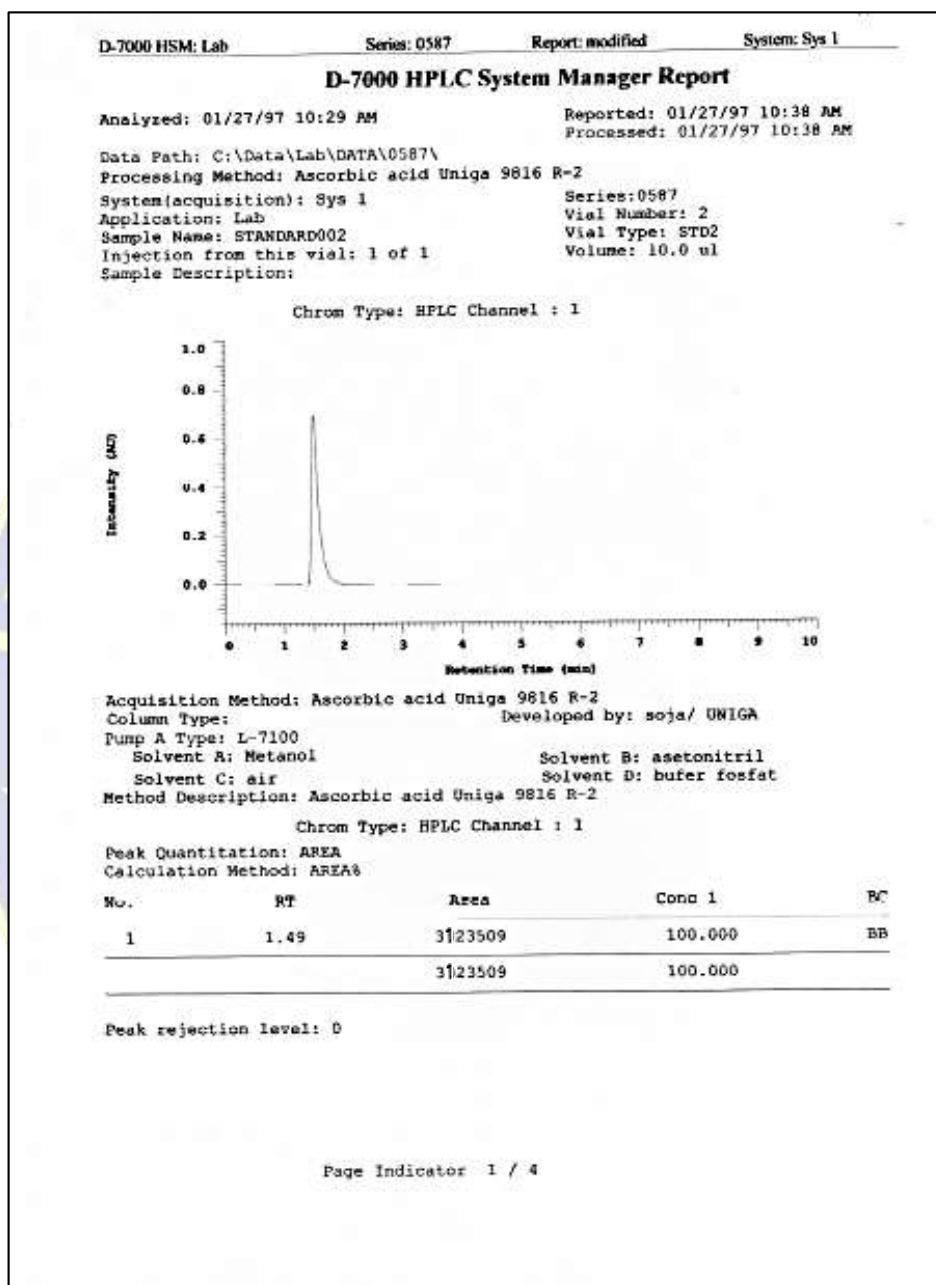
(LANJUTAN)



Gambar 5.7 Kromatogram larutan standar vitamin C konsentrasi 7 ppm

LAMPIRAN 2

(LANJUTAN)



Gambar 5.8 Kromatogram larutan standar vitamin C konsentrasi 8 ppm

LAMPIRAN 3

PERHITUNGAN UJI PRESISI

$$\text{Konsentrasi Rata-rata } x = \frac{x_1 + x_2 + x_3 + x_4 + x_5 + x_6 + x_7}{7}$$

$$= 4,183$$

$$\text{Standar Deviasi (SD)} = \frac{n \sum x^2 - (\sum x)^2}{n(n-1)}$$

$$= \frac{7(67,429) - (21,722)^2}{7(7-1)}$$

$$= 0,145$$

$$\%RSD = \frac{SD}{x} \times 100\%$$

$$= \frac{0,145}{4,183} \times 100\% = 3,478\%$$

$$\text{Ketelitian Alat} = 100\% - \frac{SD}{x}$$

$$= 100\% - \frac{0,124}{3,103}$$

$$= 99,965\%$$

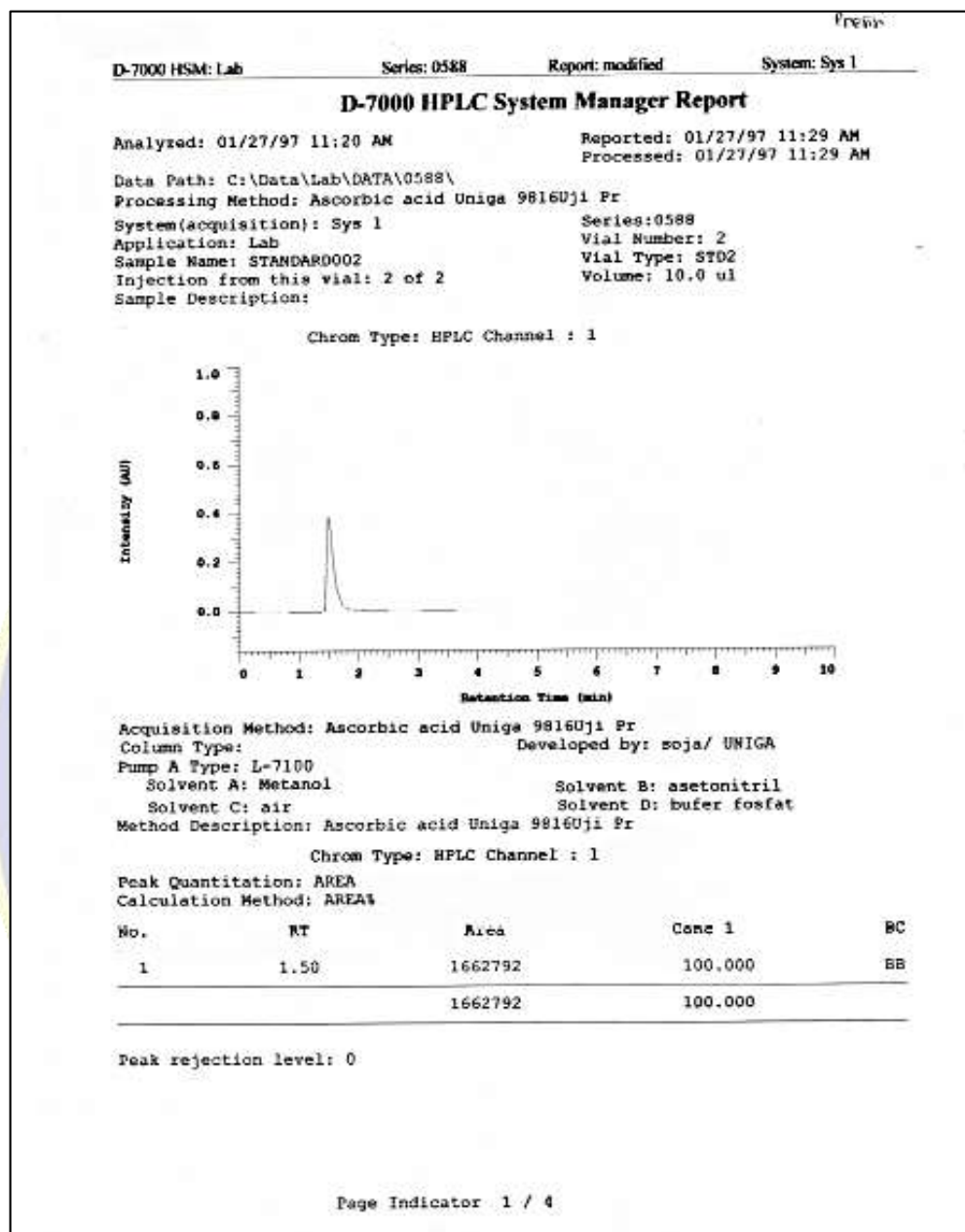
Keterangan :

% RSD = Persen Standar Deviasi

SD = Standar Deviasi

LAMPIRAN 3

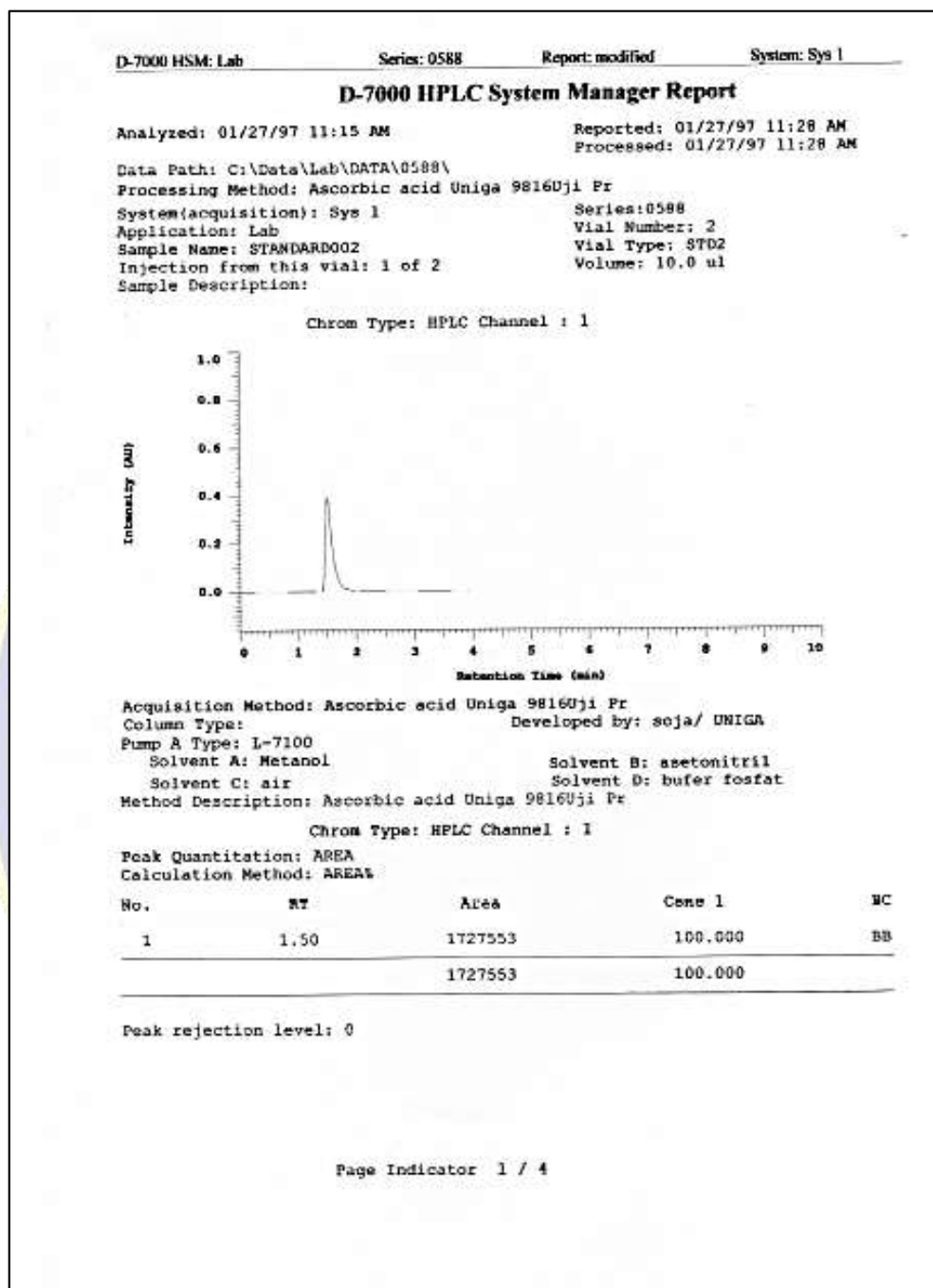
(LANJUTAN)



Gambar 5.9 Kromatogram uji presisi larutan standar 4 ppm replikasi 1

LAMPIRAN 3

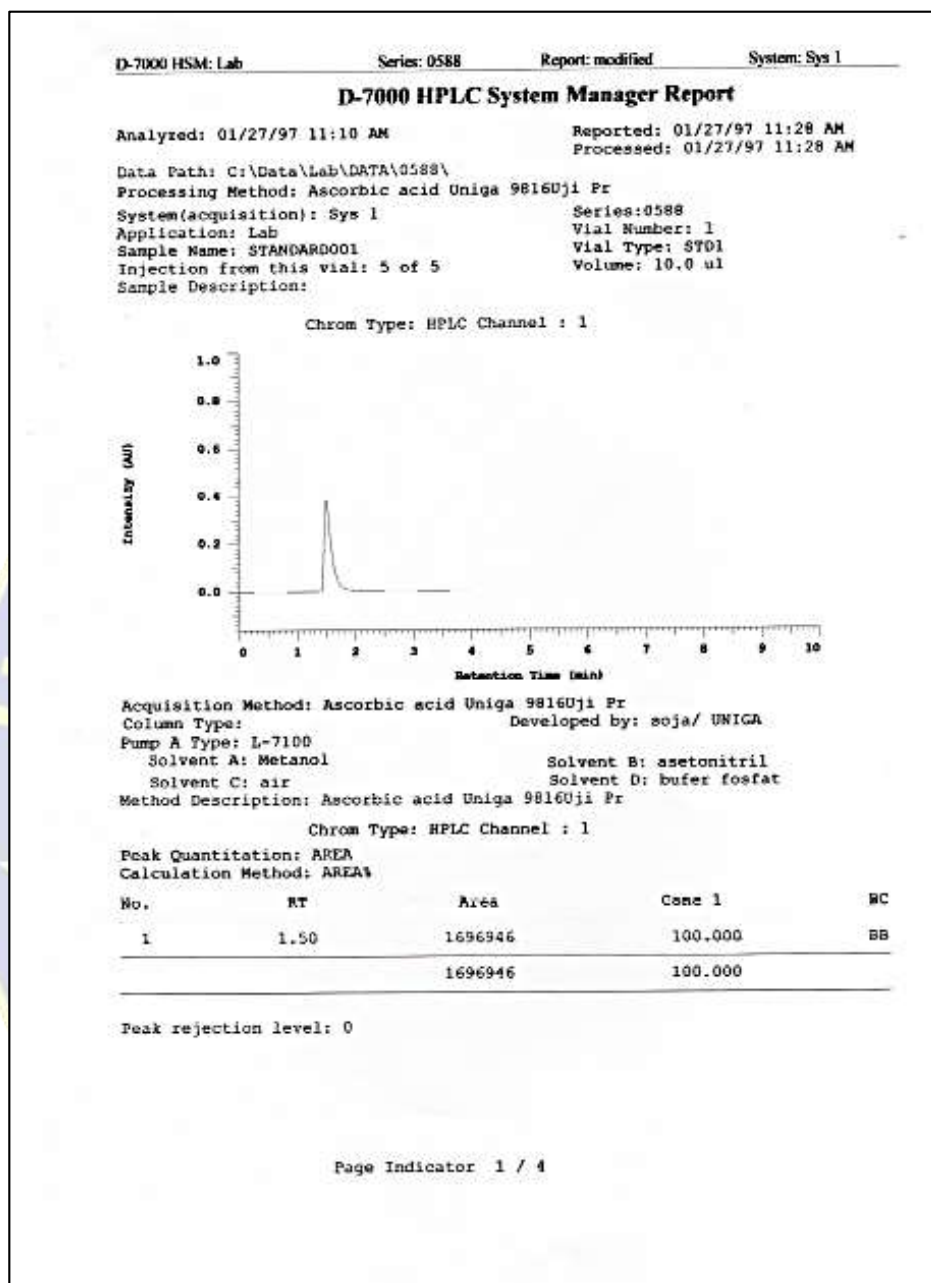
(LANJUTAN)



Gambar 5.10 Kromatogram uji presisi larutan standar 4 ppm replikasi 2

LAMPIRAN 3

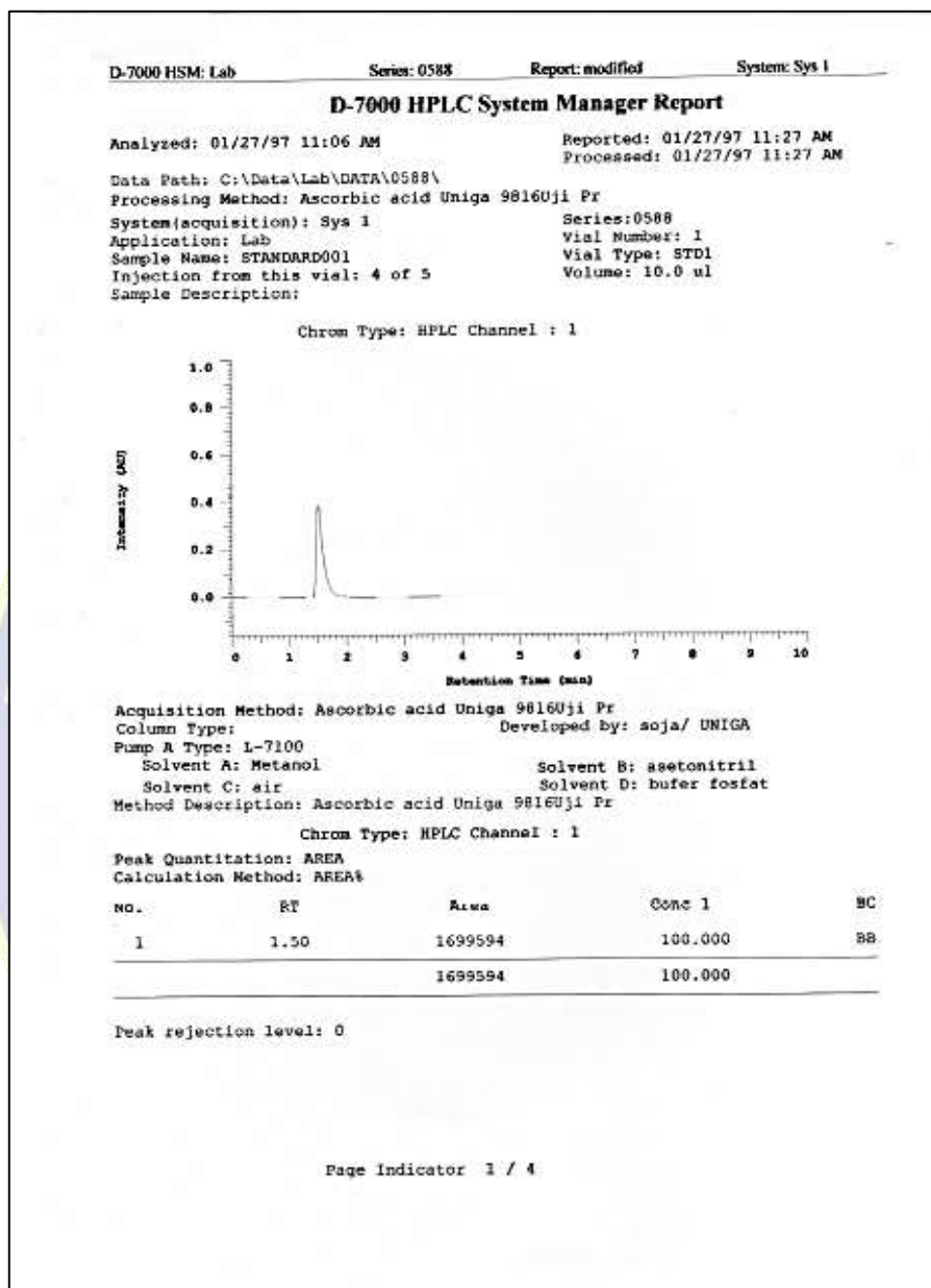
(LANJUTAN)



Gambar 5.11 Kromatogram uji presisi larutan standar 4 ppm replikasi 3

LAMPIRAN 3

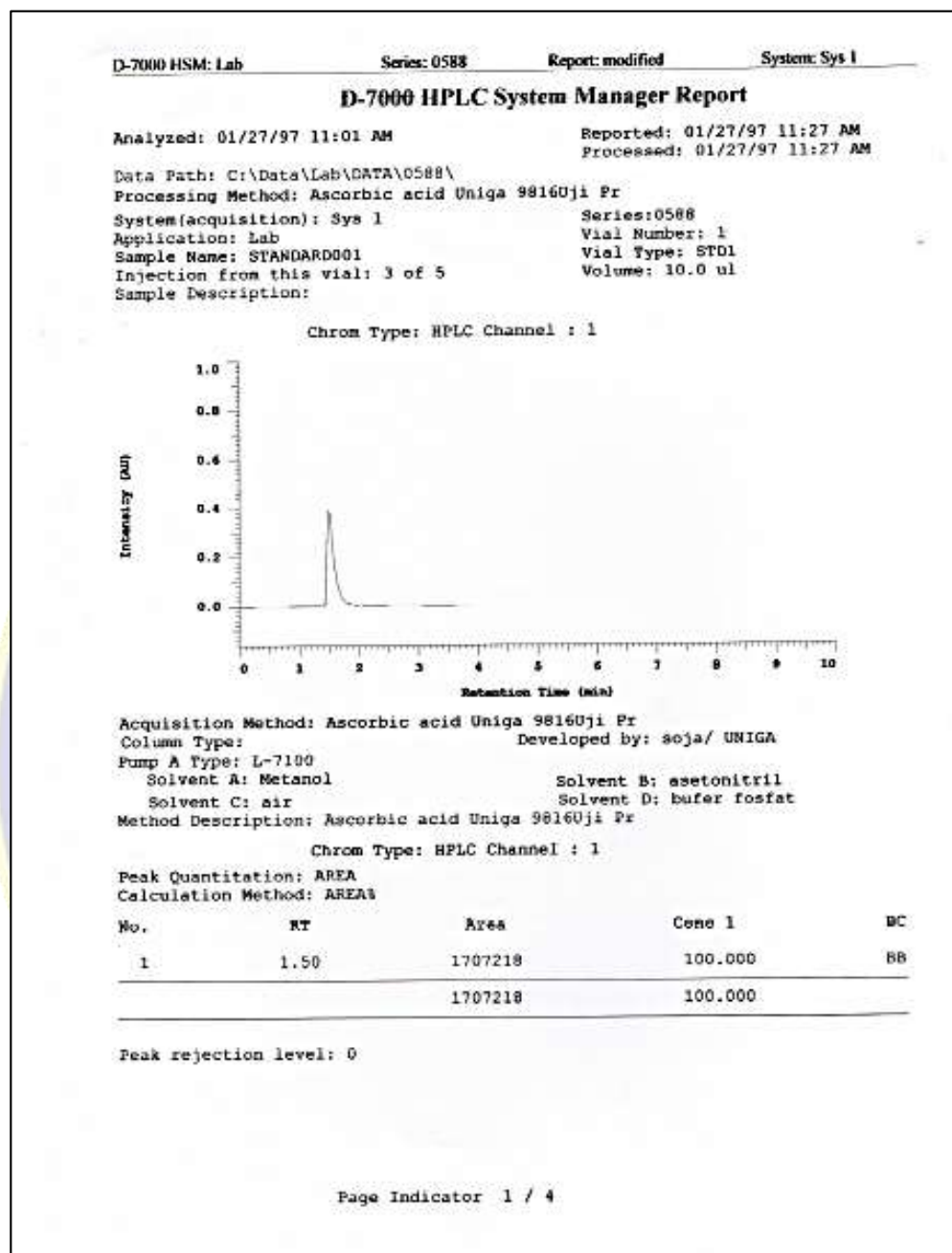
(LANJUTAN)



Gambar 5.12 Kromatogram uji presisi larutan standar 4 ppm replikasi 4

LAMPIRAN 3

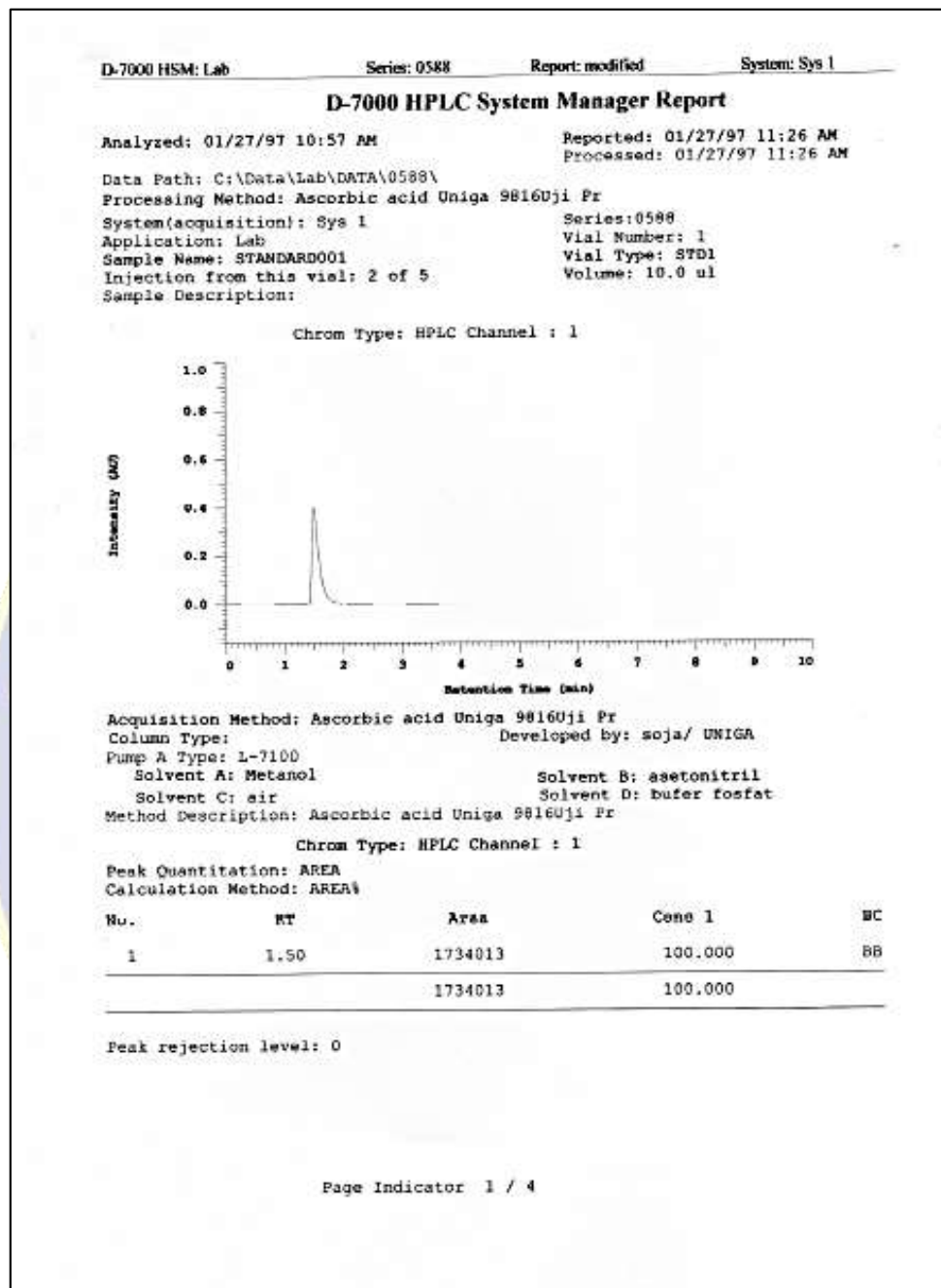
(LANJUTAN)



Gambar 5.13 Kromatogram uji presisi larutan standar 4 ppm replikasi 5

LAMPIRAN 3

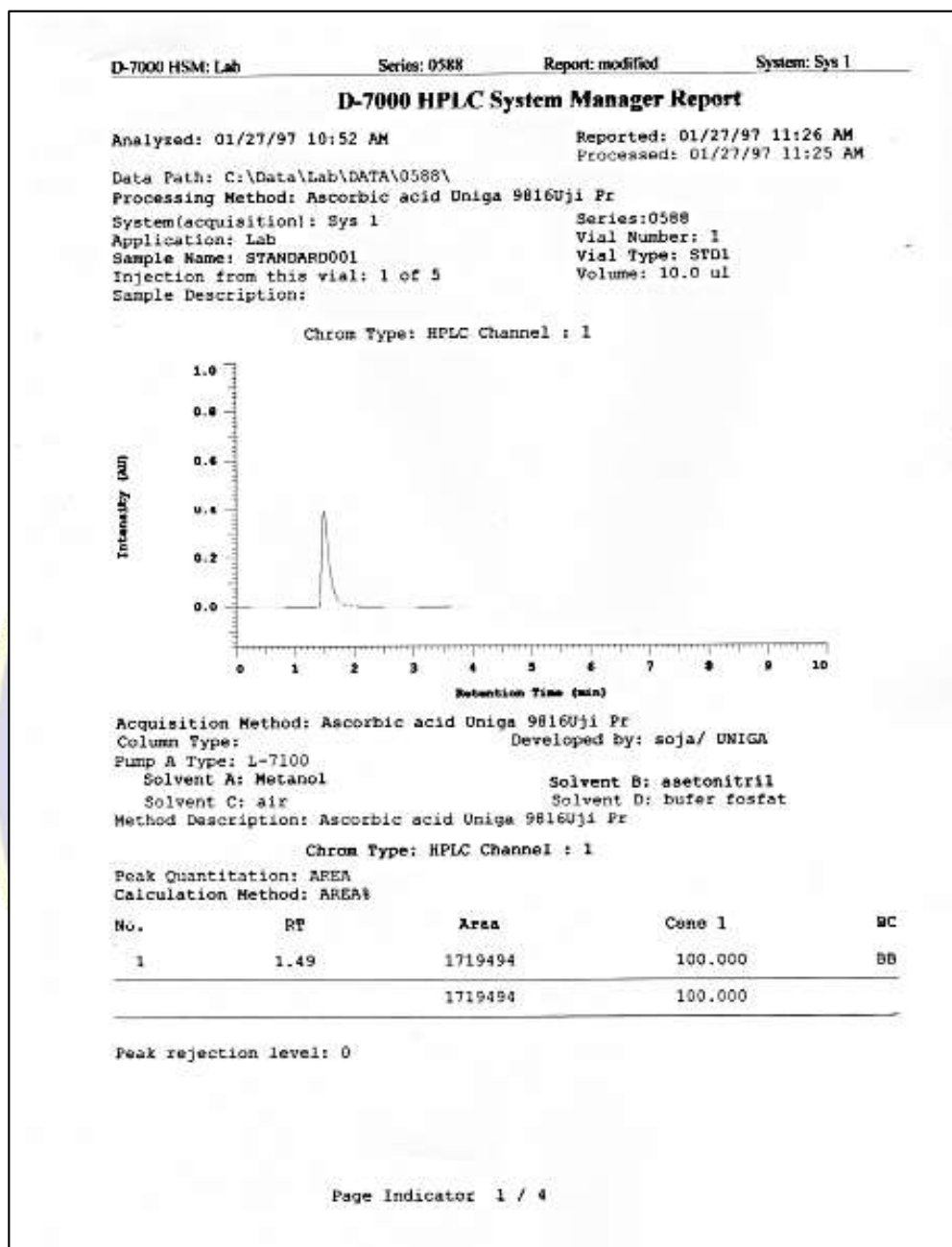
(LANJUTAN)



Gambar 5.14 Kromatogram uji presisi larutan standar 4 ppm replikasi 6

LAMPIRAN 3

(LANJUTAN)



Gambar 5.15 Kromatogram uji presisi larutan standar 4 ppm replikasi 7

LAMPIRAN 4

PERHITUNGAN UJI BATAS DETEKSI

$$\sum (Y_i - Y)^2 = 95249024,48$$

$$n = 5$$

$$S_x^y = \sqrt{\frac{\sum (Y_i - Y)^2}{n - 2}}$$

$$= \sqrt{\frac{95249024,48}{6}}$$

$$= 3984,324$$

$$Y_{BO} = 3 \cdot S \frac{y}{x} + a$$

$$= 3 \cdot 3984,324 + 136058$$

$$= 148010,972$$

$$\text{LOD} \rightarrow X_{BD} = Y_{BD} = bx + a$$

$$148010,972 = 375465x + 136058$$

$$X_{BD} = \mathbf{0,0319 \text{ mg/mL}}$$

Keterangan :

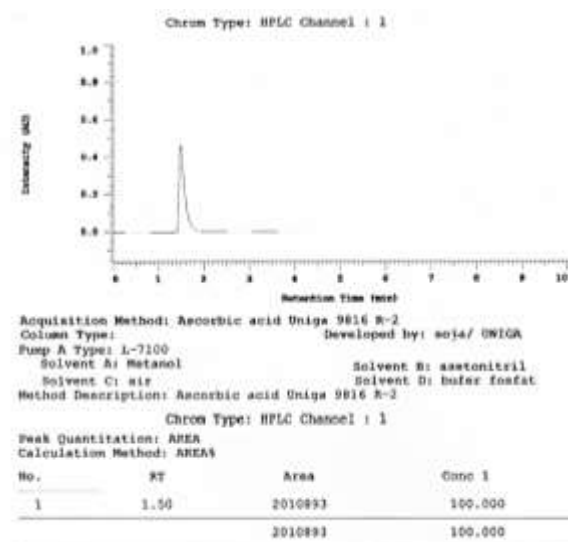
S y/x = Standar Deviasi Regresi

Y_{BD} = Respon Batatas Deteksi

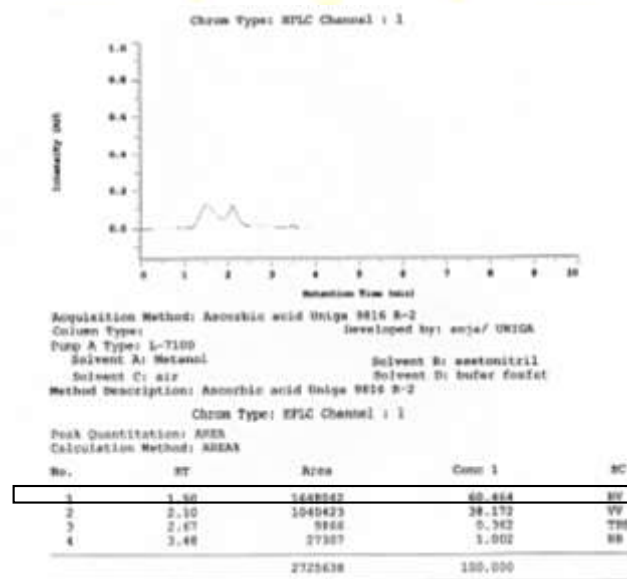
LOD = Limit of Detection

LAMPIRAN 5

UJI KUALITATIF



(a)



(b)

Gambar 5.16 Perbandingan kromatogram dan waktu retensi larutan standar dan ekstrak kelompok bunga rosella.

Keterangan : (a) Larutan Standar;

(b) Ekstrak kelopak bunga Rosella



LAMPIRAN 6
UJI KUANTITATIF

Diperoleh Persamaan regresi linera dari kurva kalibrasi $y = 375465x + 136058$

1. Ekstrak 5 menit : 3,847 ppm = 3,847 mg/L

$$1580636 = 375465x + 136058$$

$$x = \frac{1580636 - 136058}{375465}$$

$$= 3,847 \text{ mg/L}$$

$$\frac{500 \text{ mL}}{1000 \text{ mL}} \times 3,847 = 1,935 \text{ mg/2,5 gram} = 0,774 \text{ mg/gram}$$

2. Ekstrak 10 menit : 3,943 ppm = 3,943 mg/L

$$1616476 = 375465x + 136058$$

$$x = \frac{1616476 - 136058}{375465}$$

$$= 3,943 \text{ mg/L}$$

$$\frac{500 \text{ mL}}{1000 \text{ mL}} \times 3,943 = 1,972 \text{ mg/2,5 gram} = 0,789 \text{ mg/gram}$$

3. Ekstrak 15 menit : 4,276 ppm = 4,276 mg/L

$$1741497 = 375465x + 136058$$

$$x = \frac{1741497 - 136058}{375465}$$

$$= 4,276 \text{ mg}$$

$$\frac{500 \text{ mL}}{1000 \text{ mL}} \times 4,276 = 2,138 \text{ mg/2,5 gram} = 0,856 \text{ mg/gram}$$

LAMPIRAN 6

(LANJUTAN)

4. Ekstrak 20 menit : 4,640 ppm = 4,640 mg/L

$$1878065 = 375465x + 136058$$

$$x = \frac{1878065 - 136058}{375465}$$

$$= 4,640 \text{ mg/L}$$

$$\frac{500 \text{ mL}}{1000 \text{ mL}} \times 4,640 = 2,320 \text{ mg/2,5 gram} = 0,928 \text{ mg/gram}$$

5. Ekstrak 25 menit : 5,034 ppm = 5,034 mg/L

$$2026057 = 375465x + 136058$$

$$x = \frac{2026057 - 136058}{375465}$$

$$= 5,034 \text{ mg/L}$$

$$\frac{500 \text{ mL}}{1000 \text{ mL}} \times 5,034 = 2,517 \text{ mg/2,5 gram} = 1,007 \text{ mg/gram}$$

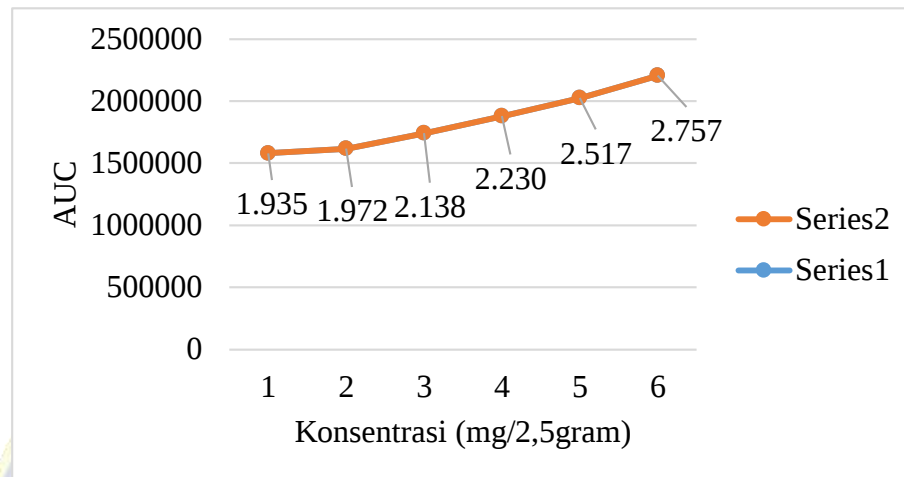
6. Ekstrak 30 menit : 5,514 ppm = 5,514 mg/L

$$2205937 = 375465x + 136058$$

$$x = \frac{2205937 - 136058}{375465}$$

$$= 5,514 \text{ mg/L}$$

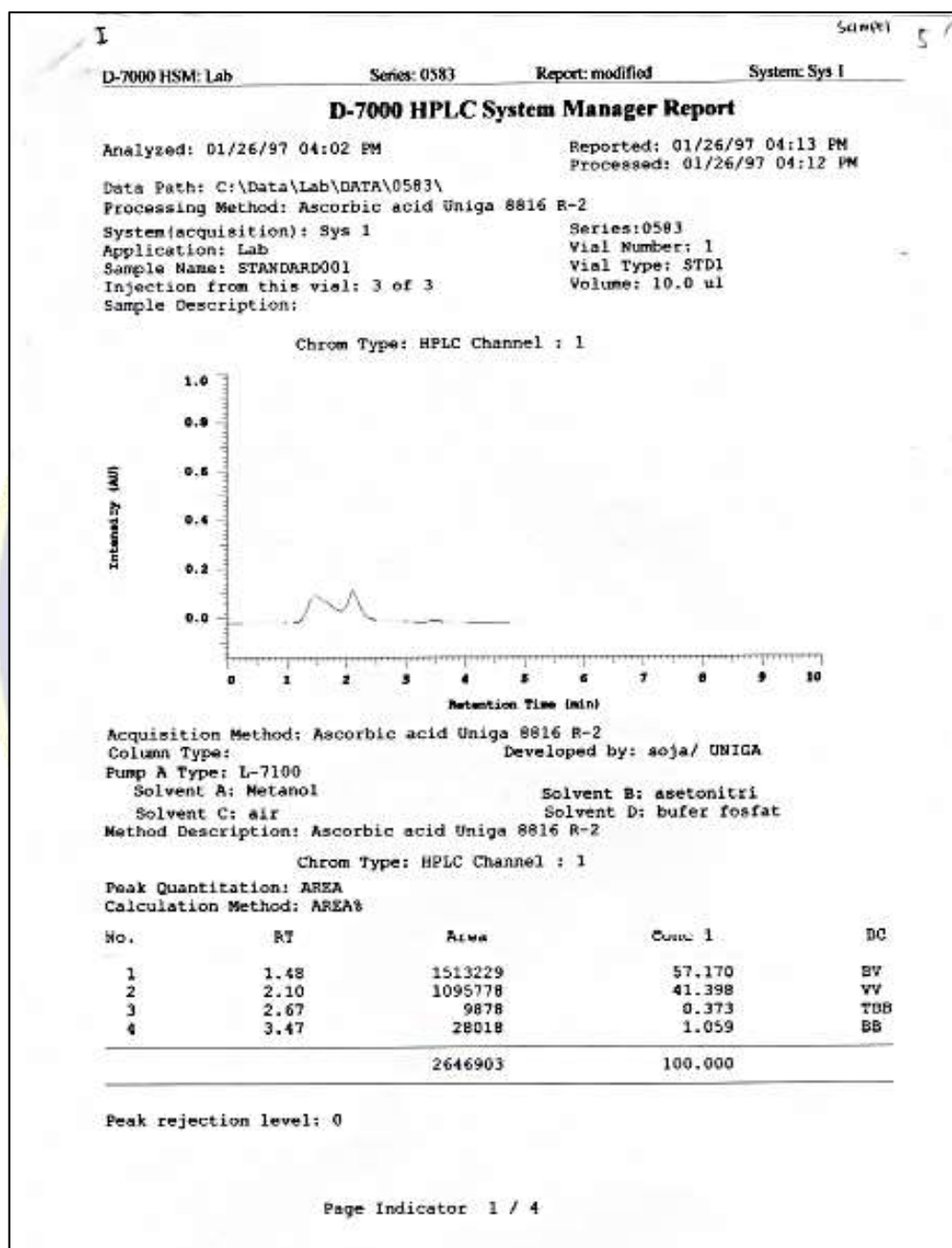
$$\frac{500 \text{ mL}}{1000 \text{ mL}} \times 5,514 = 2,757 \text{ mg/2,5 gram} = 1,103 \text{ mg/gram}$$

LAMPIRAN 6**(LANJUTAN)**

Gambar 5.17 Kurva kenaikan kadar vitamin C pada ekstrak bunga Rosella

LAMPIRAN 6

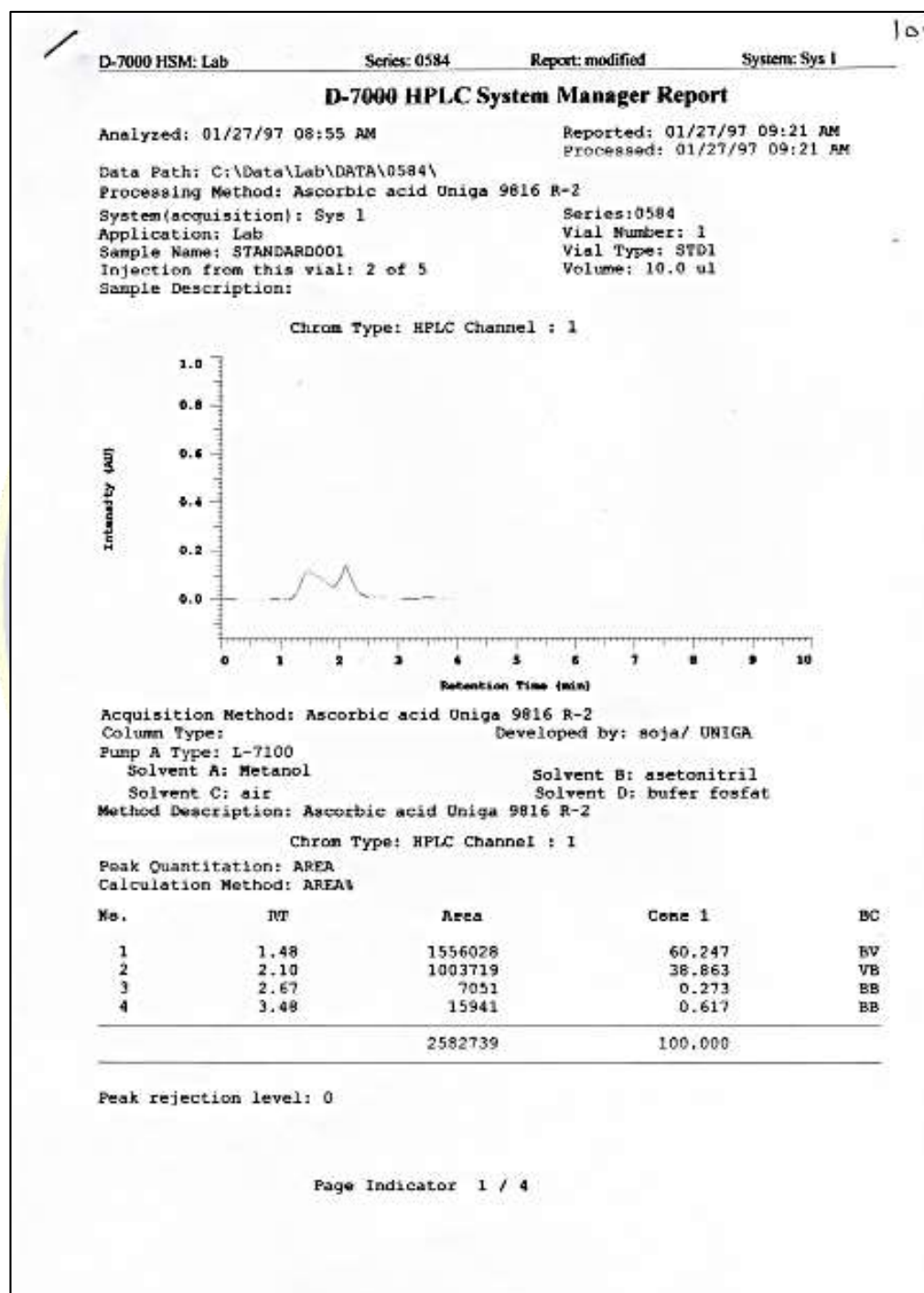
(LANJUTAN)



Gambar 5.18 Kromatogram ekstrak 5 menit replikasi 1

LAMPIRAN 6

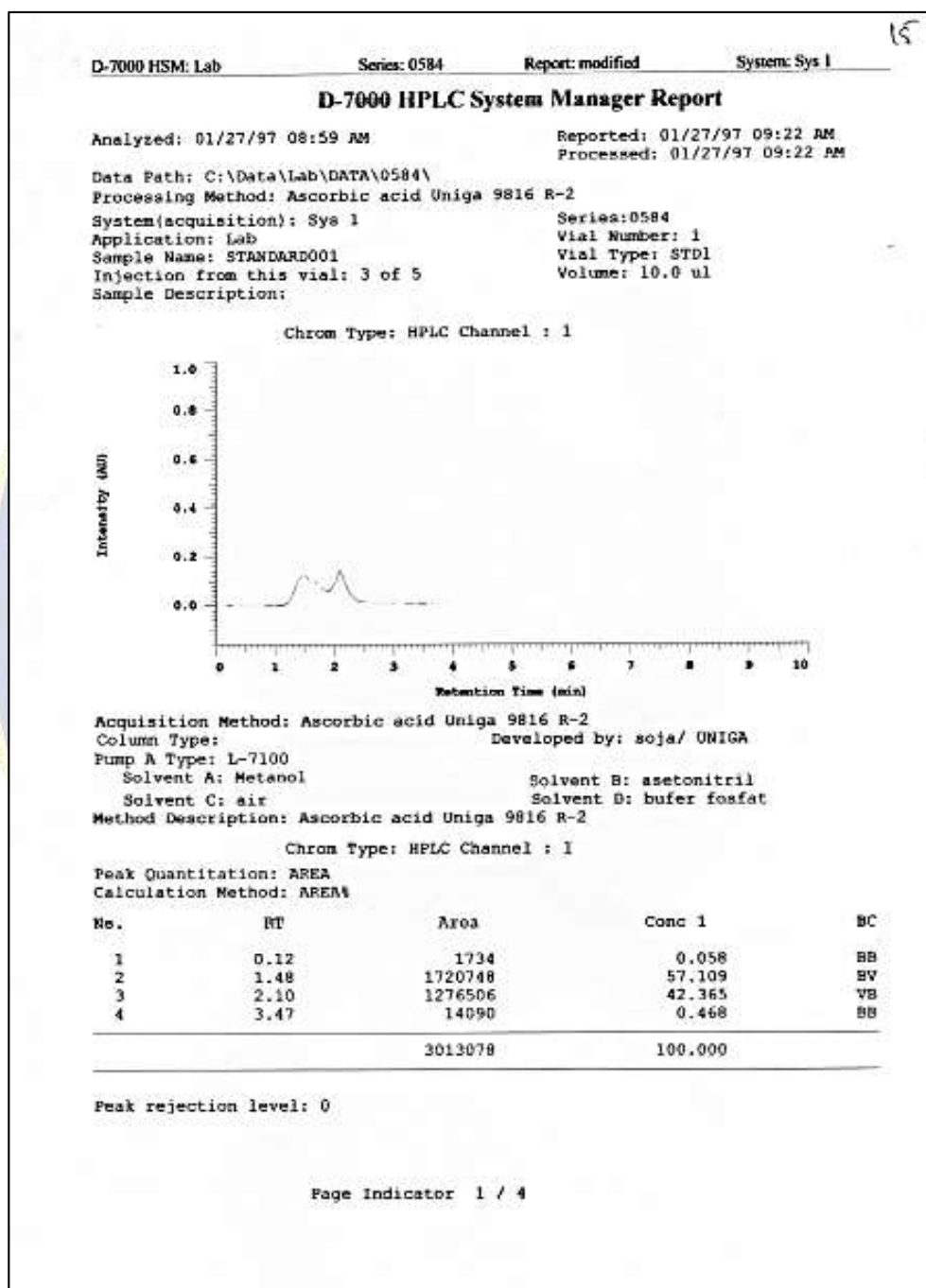
(LANJUTAN)



Gambar 5.19 Kromatogram ekstrak 10 menit replikasi 1

LAMPIRAN 6

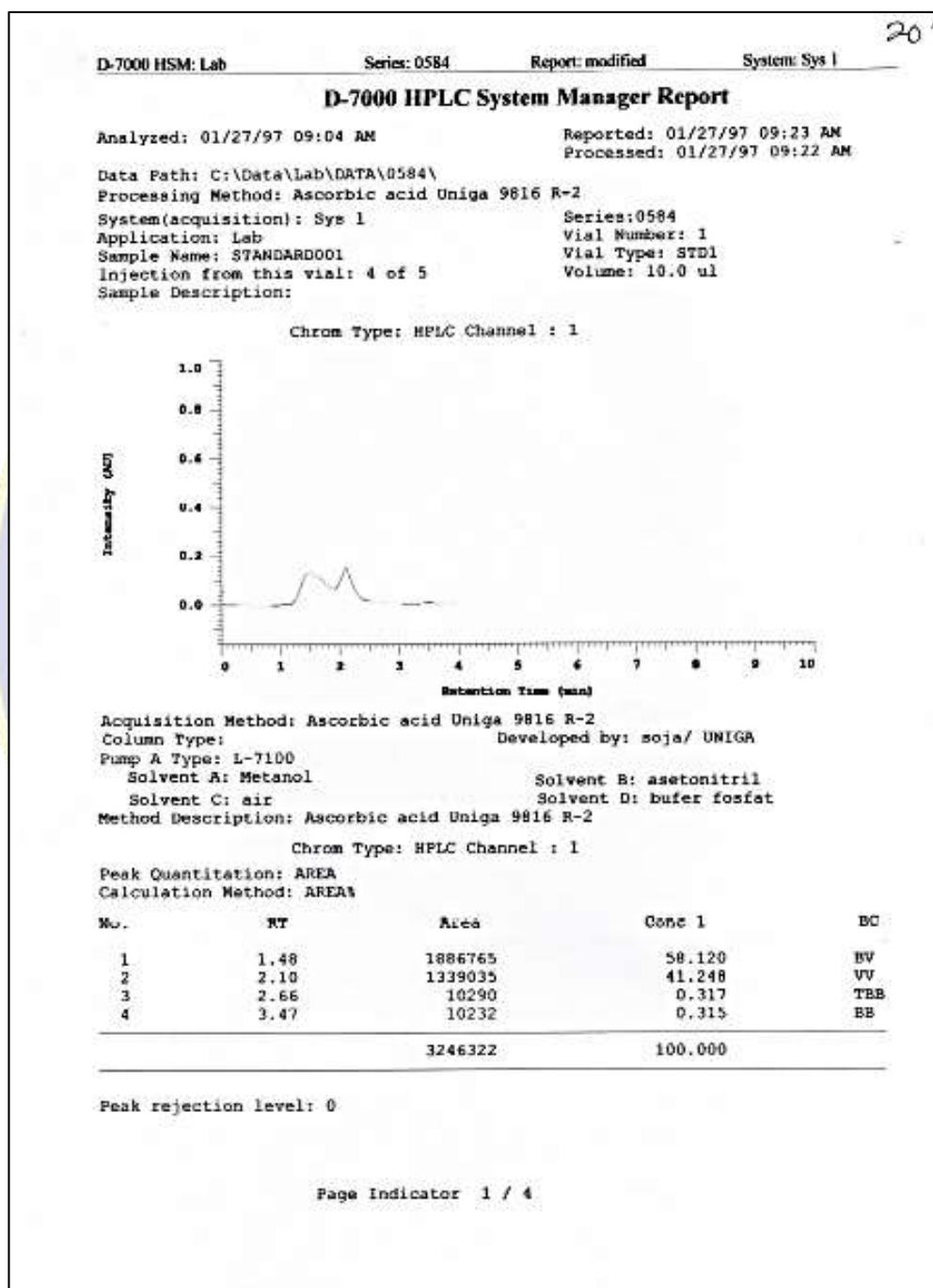
(LANJUTAN)



Gambar 5.20 Kromatogram ekstrak 15 menit replikasi 1

LAMPIRAN 6

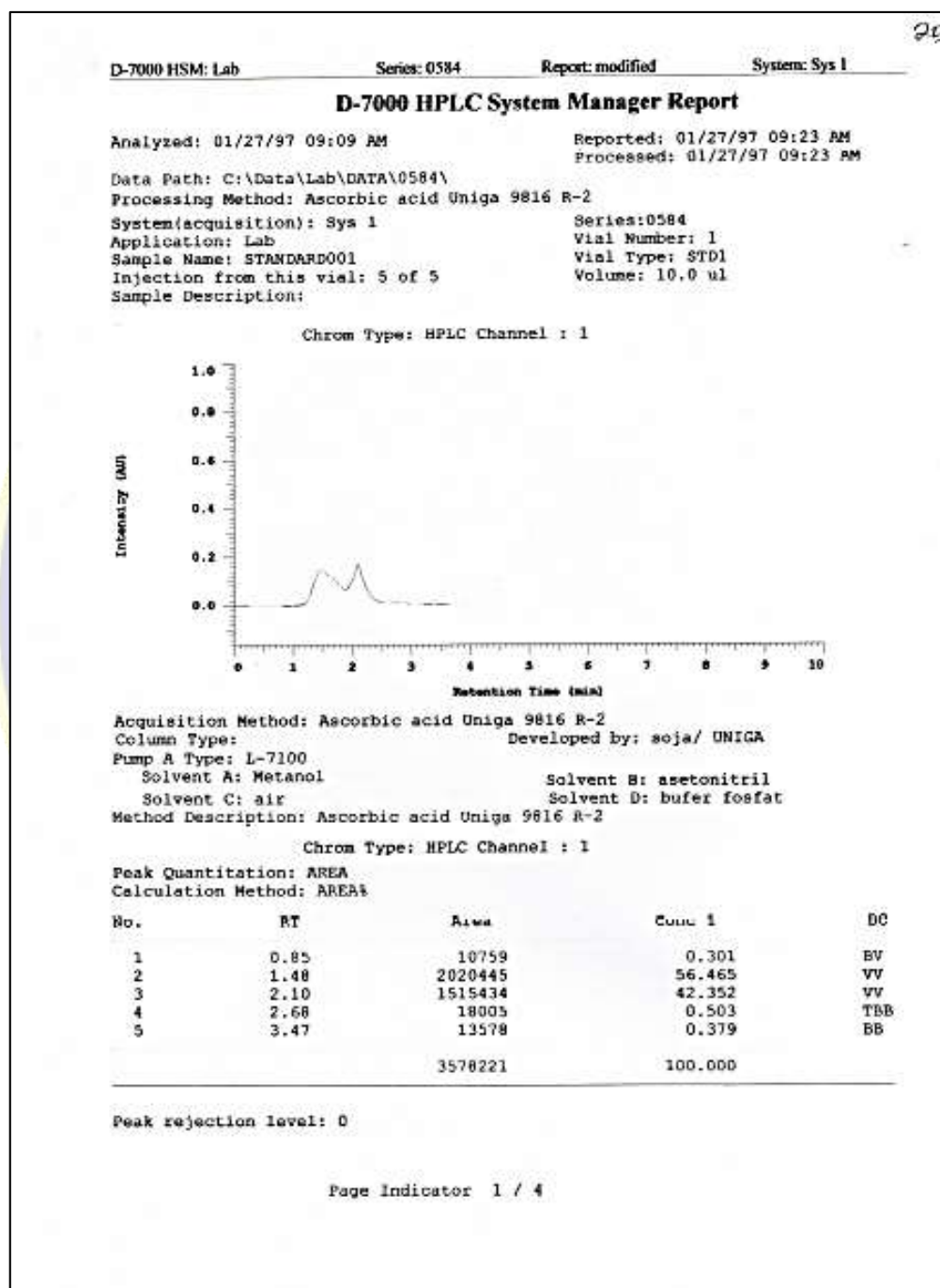
(LANJUTAN)



Gambar 5.21 Kromatogram ekstrak 20 menit replikasi 1

LAMPIRAN 6

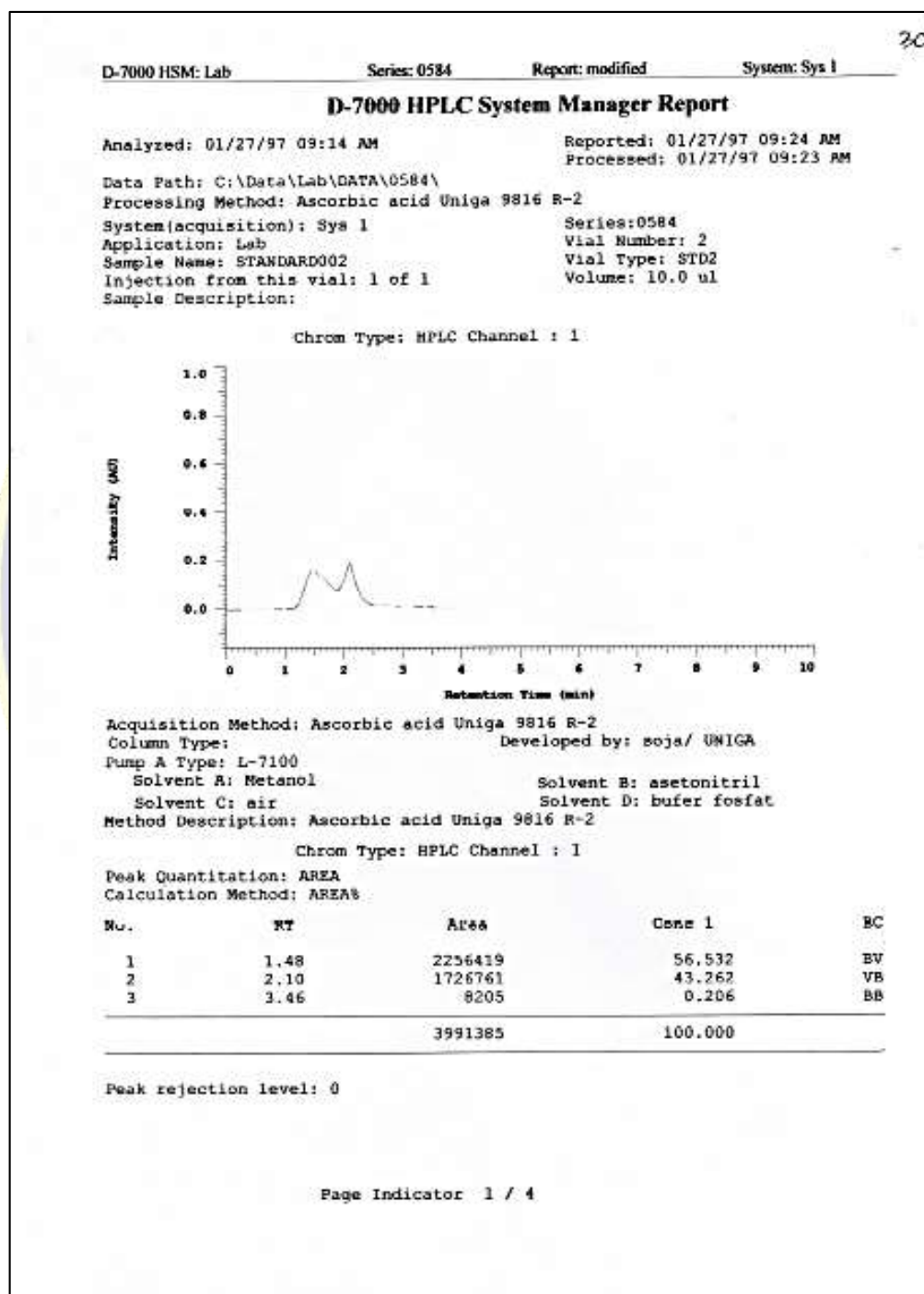
(LANJUTAN)



Gambar 5.22 Kromatogram ekstrak 25 menit replikasi 1

LAMPIRAN 6

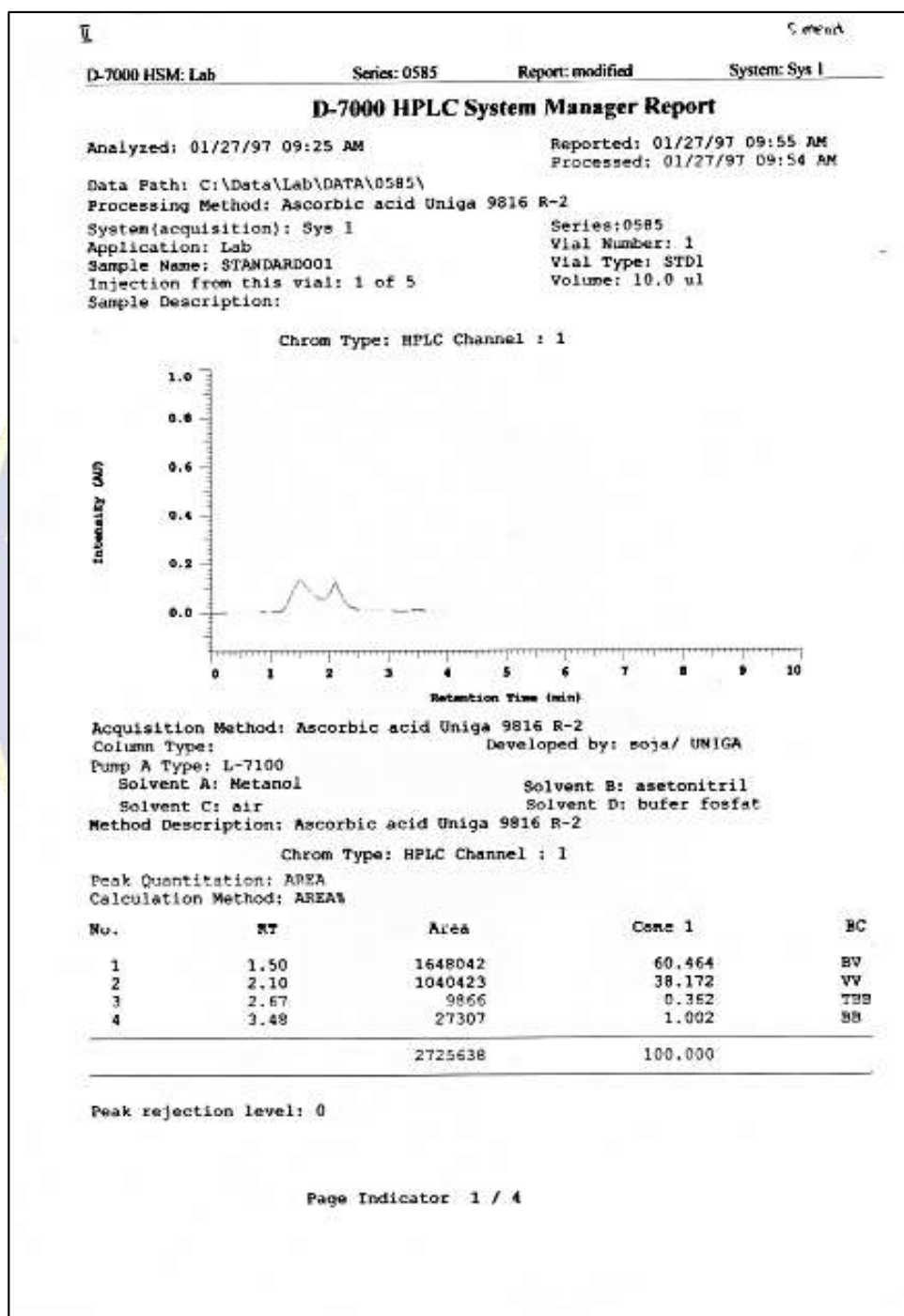
(LANJUTAN)



Gambar 5.23 Kromatogram ekstrak 30 menit replikasi 1

LAMPIRAN 6

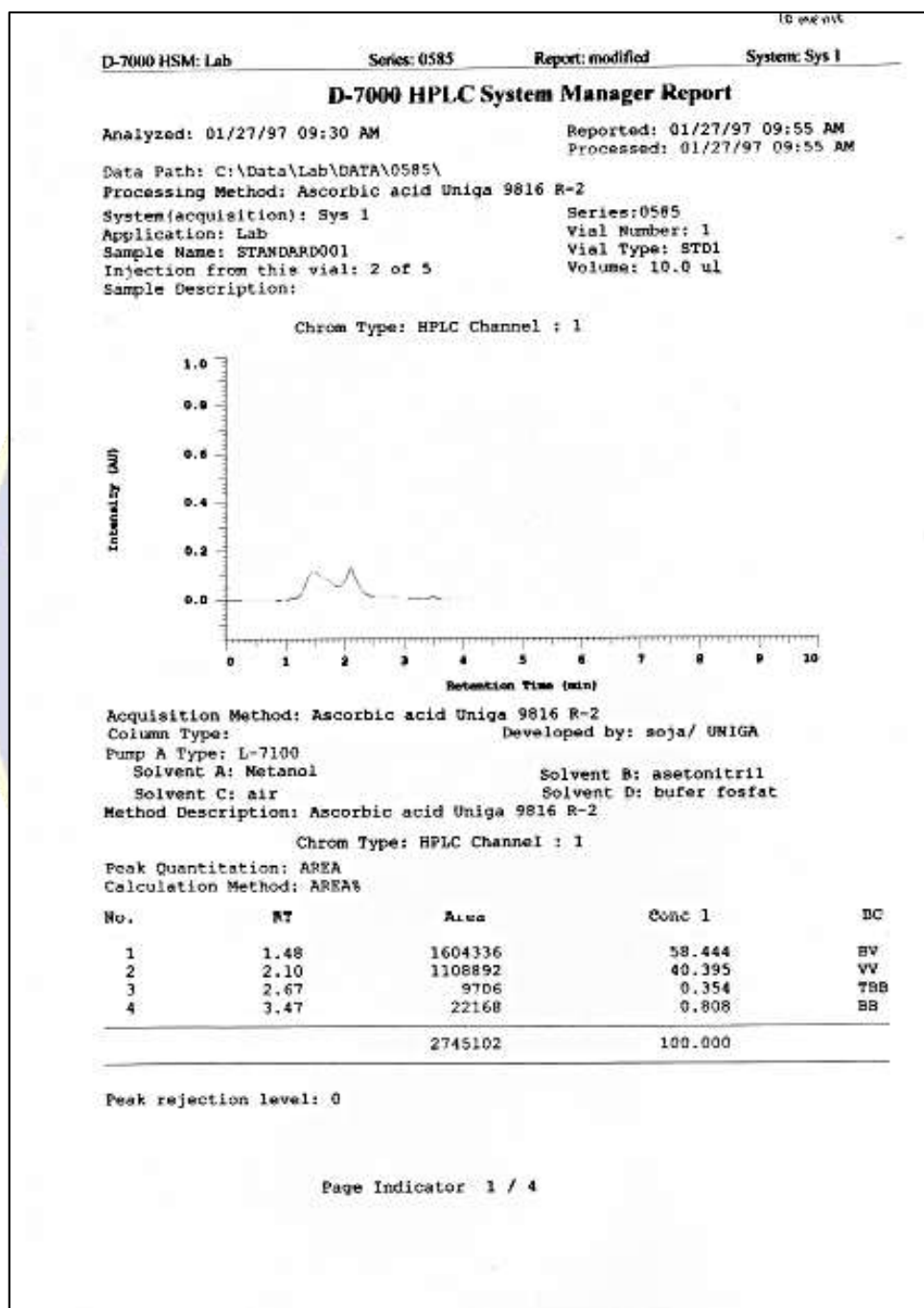
(LANJUTAN)



Gambar 5.24 Kromatogram ekstrak 5 menit replikasi 2

LAMPIRAN 6

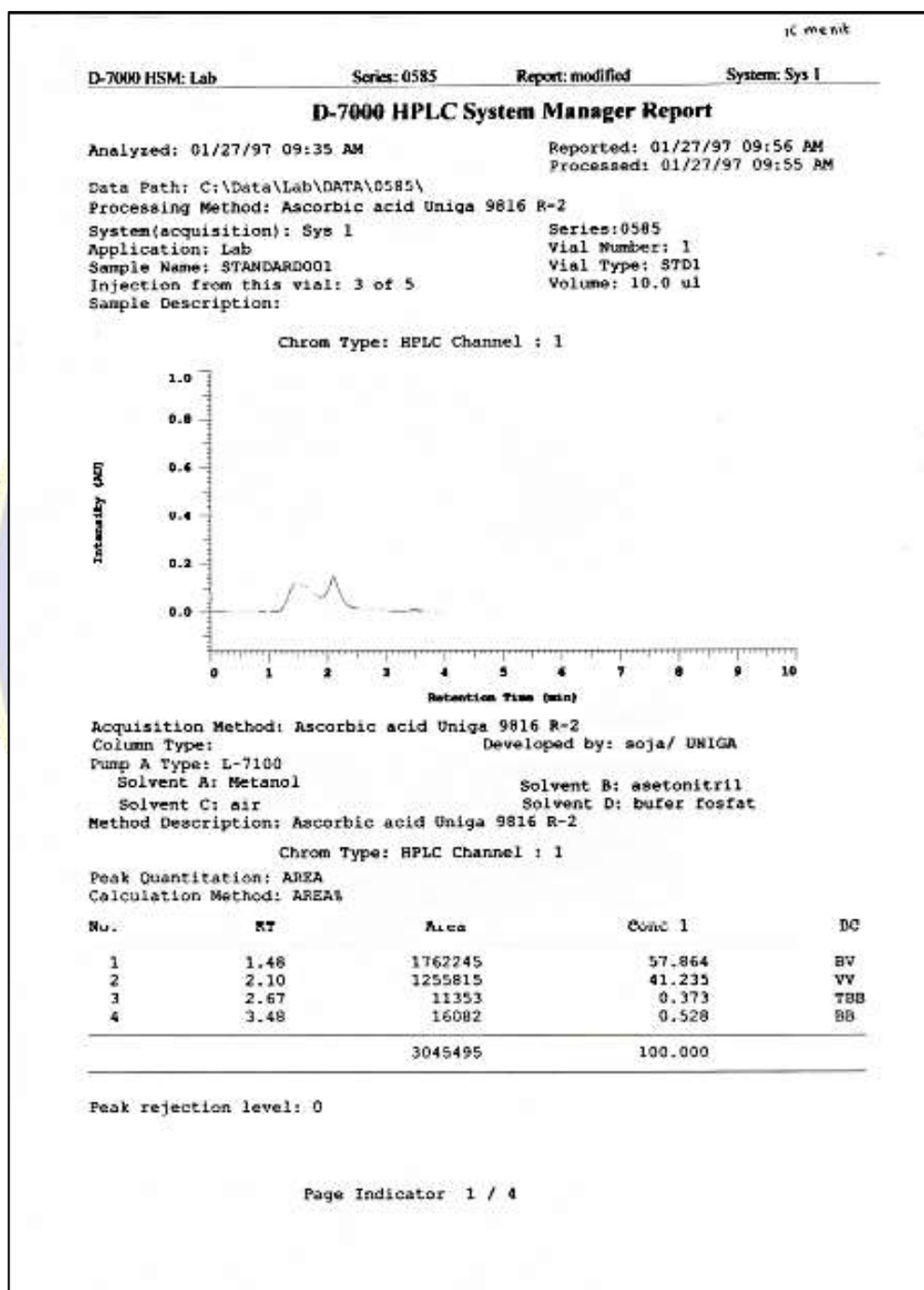
(LANJUTAN)



Gambar 5.25 Kromatogram ekstrak 10 menit replikasi 2

LAMPIRAN 6

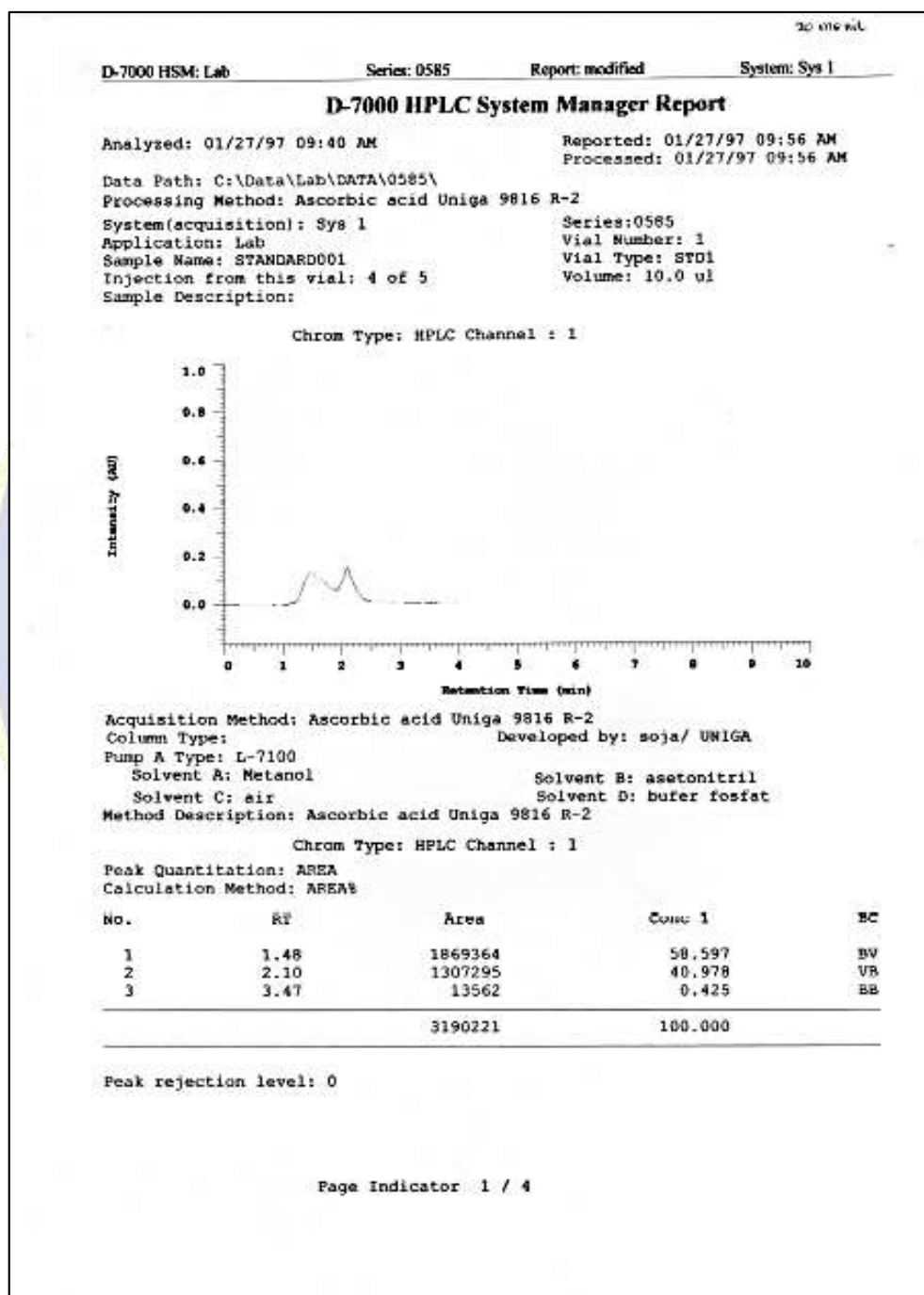
(LANJUTAN)



Gambar 5.26 Kromatogram ekstrak 15 menit replikasi 2

LAMPIRAN 6

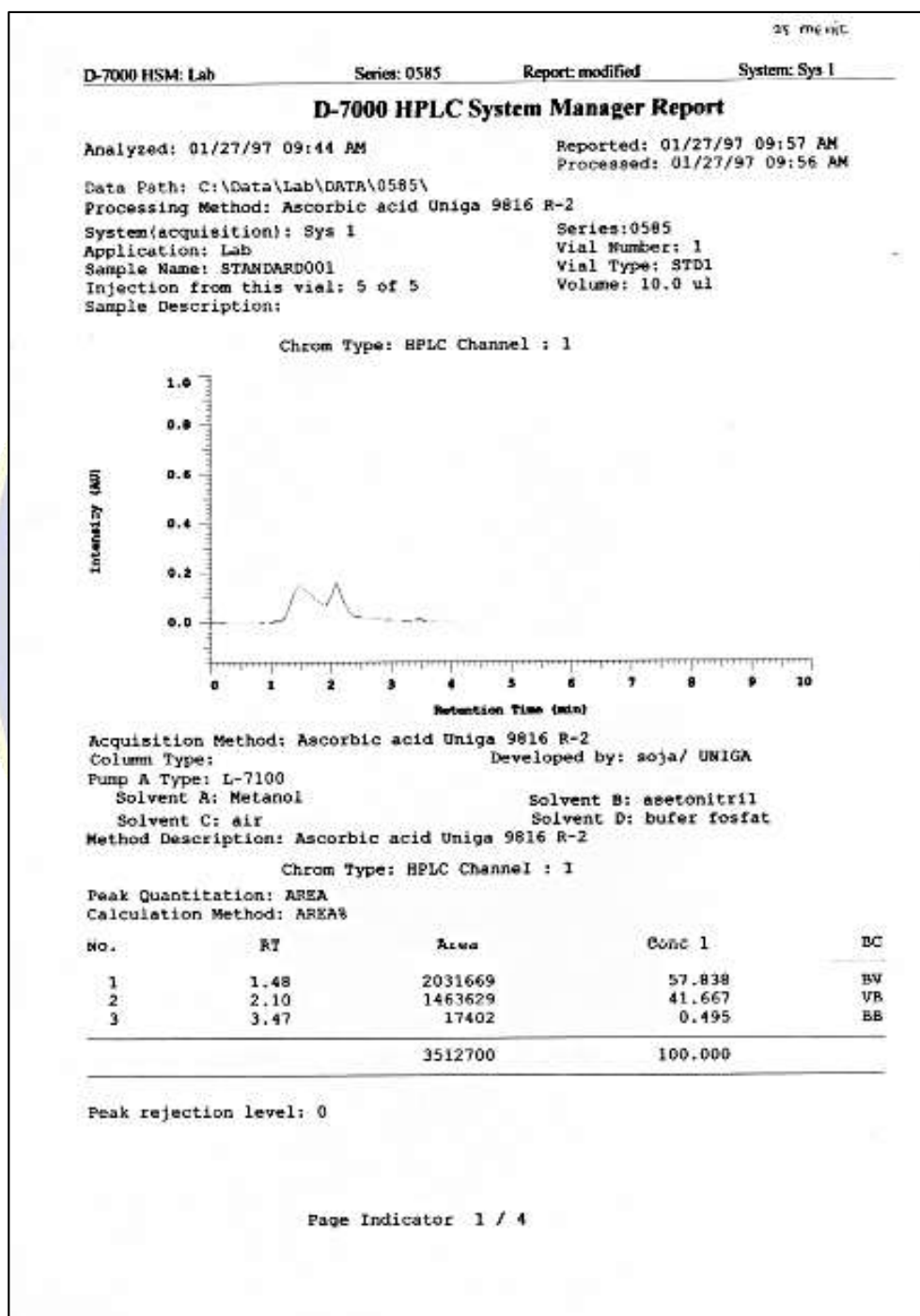
(LANJUTAN)



Gambar 5.27 Kromatogram ekstrak 20 menit replikasi 2

LAMPIRAN 6

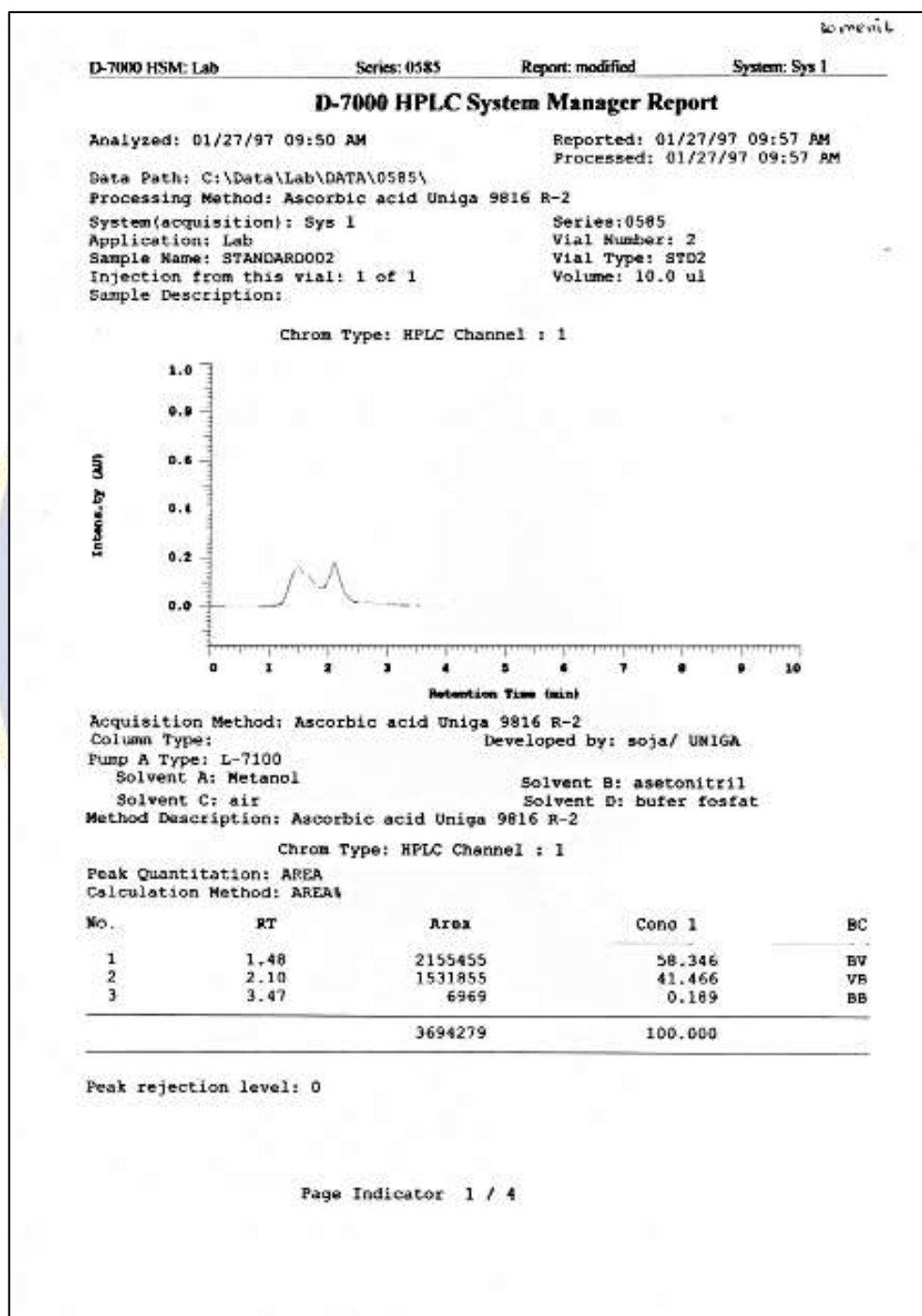
(LANJUTAN)



Gambar 5.28 Kromatogram ekstrak 25 menit replikasi 2

LAMPIRAN 6

(LANJUTAN)



Gambar 5.29 Kromatogram ekstrak 30 menit replikasi 2

LAMPIRAN 7**SAMPEL KELOPAK BUNGA ROSELLA**

Gambar 5.30 Simplisia kelopak bunga Rosella (*Hibiscus Sabdariffa* L)