

ESTUDIO CROMATOGRÁFICO (HPLC) DE CAFEINA EN MUESTRAS FARMACÉUTICAS Y CAFÉ SOLUBLE

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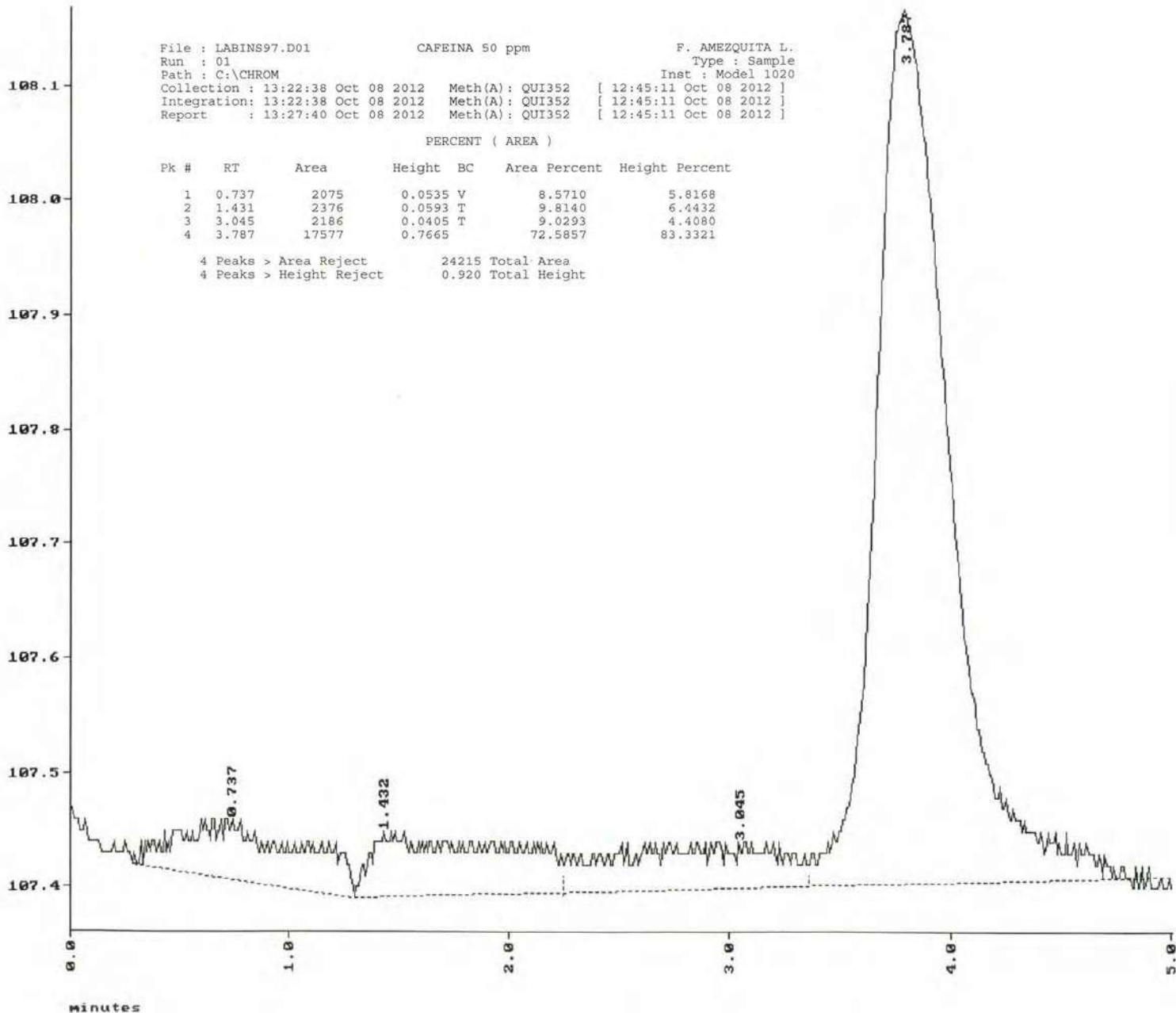
Primera parte
obtención de la curva de calibración para la cafeína

- En esta parte conocerás el tiempo de retención de la cafeína utilizando como fase móvil la mezcla MeOH/H₂O en la proporción 30:70 v, a un flujo de 1,5 mL/min, una columna marca *Alltech* con fase estacionaria de *Adsorbosphere HS C18* 7 μ de 150 mm x 4,6 mm, dando un tiempo de 5 minutos para la elución y detectados a longitud de onda de 254 nm.
- Los cromatogramas fueron obtenidos para la cafeína a (50, 100, 200, 300 y 500) mg/L.

File : LABINS97.D01
Run : 01
Collection : 13:22:38 Oct 08 2012
Method : QUI352
F. AMEZQUITA L.
Type : Sample
[12:45:11 Oct 08 2012]

CAFEINA 50 ppm

(LABINS97.D01) MU



File : LABINS97.D01
Run : 01
Path : C:\CHROM
Collection : 13:22:38 Oct 08 2012
Integration: 13:22:38 Oct 08 2012
Report : 13:27:40 Oct 08 2012
CAFEINA 50 ppm
Meth(A): QUI352
Meth(A): QUI352
Meth(A): QUI352
F. AMEZQUITA L.
Type : Sample
Inst : Model 1020
[12:45:11 Oct 08 2012]
[12:45:11 Oct 08 2012]
[12:45:11 Oct 08 2012]

PERCENT (AREA)

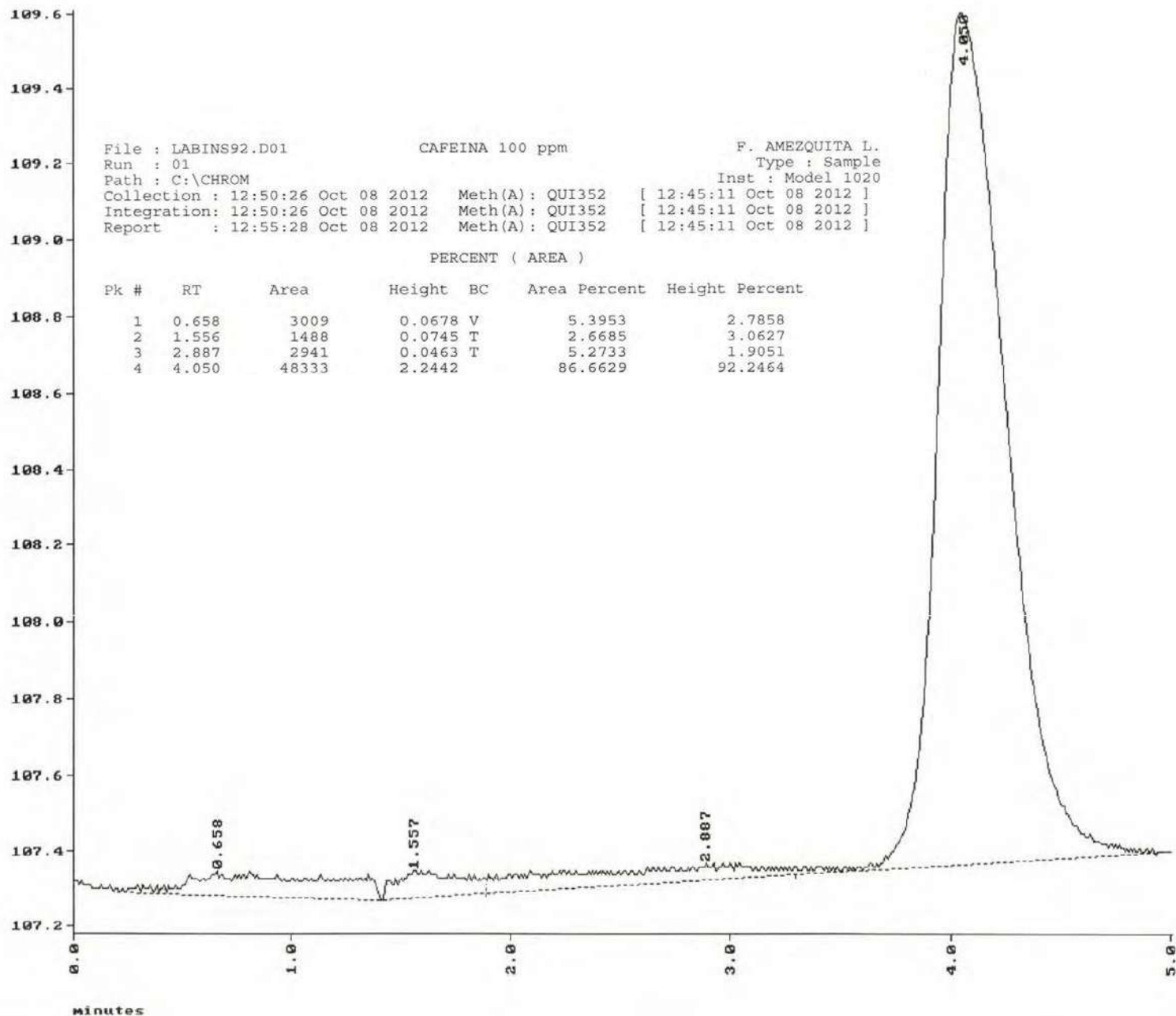
Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.737	2075	0.0535	V	8.5710	5.8168
2	1.431	2376	0.0593	T	9.8140	6.4432
3	3.045	2186	0.0405	T	9.0293	4.4080
4	3.787	17577	0.7665		72.5857	83.3321

4 Peaks > Area Reject 24215 Total Area
4 Peaks > Height Reject 0.920 Total Height

File : LABINS92.D01
 Run : 01
 Collection : 12:50:26 Oct 08 2012
 Method : QUI352
 F. AMEZQUITA L.
 Type : Sample
 [12:45:11 Oct 08 2012]

CAFEINA 100 ppm

(LABINS92.D01) mV



File : LABINS92.D01
 Run : 01
 Path : C:\CHROM
 Collection : 12:50:26 Oct 08 2012
 Integration: 12:50:26 Oct 08 2012
 Report : 12:55:28 Oct 08 2012
 CAFEINA 100 ppm
 Meth(A): QUI352 [12:45:11 Oct 08 2012]
 Meth(A): QUI352 [12:45:11 Oct 08 2012]
 Meth(A): QUI352 [12:45:11 Oct 08 2012]
 F. AMEZQUITA L.
 Type : Sample
 Inst : Model 1020

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.658	3009	0.0678	V	5.3953	2.7858
2	1.556	1488	0.0745	T	2.6685	3.0627
3	2.887	2941	0.0463	T	5.2733	1.9051
4	4.050	48333	2.2442		86.6629	92.2464

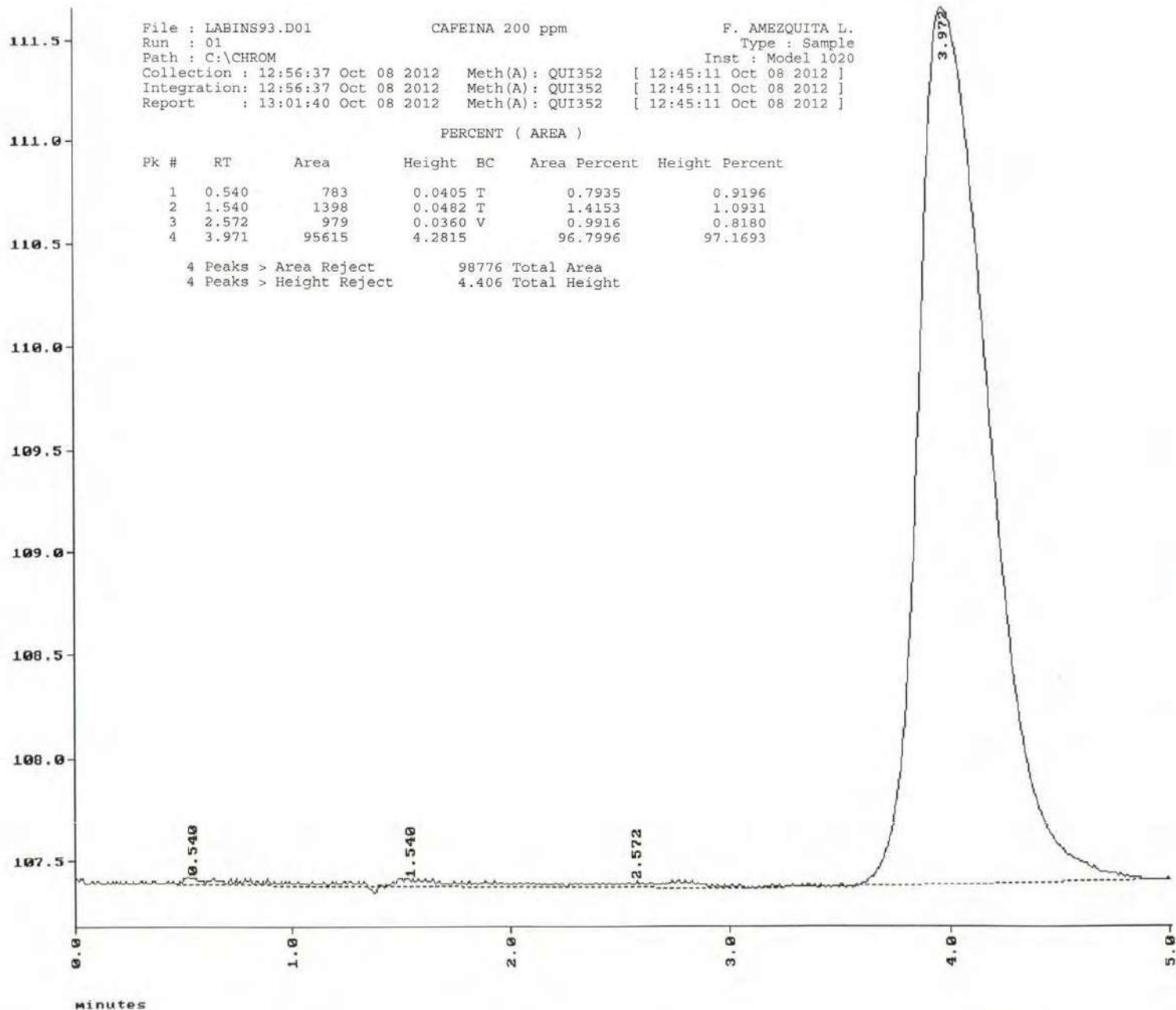
File : LABINS93.D01
Run : 01
Collection : 12:56:37 Oct 08 2012

CAFEINA 200 ppm

F. AMEZQUITA L.
Type : Sample
[12:45:11 Oct 08 2012]

Method : QUI352

(LABINS93.D01) MU



File : LABINS93.D01
Run : 01
Path : C:\CHROM
Collection : 12:56:37 Oct 08 2012
Integration: 12:56:37 Oct 08 2012
Report : 13:01:40 Oct 08 2012

CAFEINA 200 ppm

F. AMEZQUITA L.
Type : Sample
Inst : Model 1020

[12:45:11 Oct 08 2012]
[12:45:11 Oct 08 2012]
[12:45:11 Oct 08 2012]

PERCENT (AREA)

PK #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.540	783	0.0405	T	0.7935	0.9196
2	1.540	1398	0.0482	T	1.4153	1.0931
3	2.572	979	0.0360	V	0.9916	0.8180
4	3.971	95615	4.2815		96.7996	97.1693

4 Peaks > Area Reject 98776 Total Area
4 Peaks > Height Reject 4.406 Total Height

- Después de haber revisado los tres cromatogramas anteriores, es posible que ya puedas decir cual el tiempo de retención de la cafeína.
- ¿Cuál es?
- Recuerda que ese valor es una constante, atendiendo a la fase móvil, tipo de columna y la velocidad de flujo.
- Revisa bien los cromatogramas. Observa las escalas.

File : LABINS98.D01
Run : 01
Collection : 13:29:27 Oct 08 2012

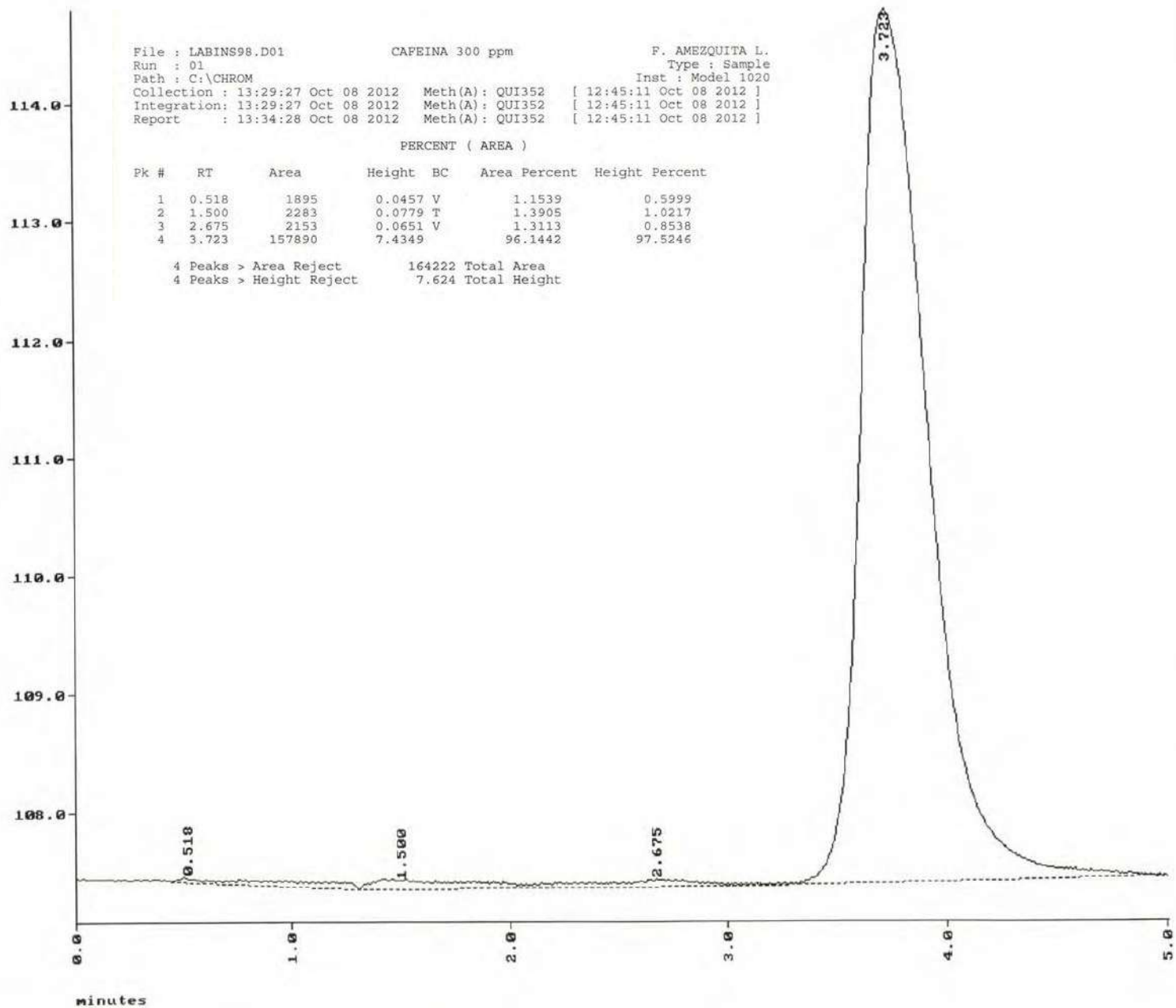
CAFEINA 300 ppm

F. AMEZQUITA L.
Type : Sample
[12:45:11 Oct 08 2012]

Method : QUI352

(LABINS98.D01)

mV



File : LABINS98.D01
Run : 01
Path : C:\CHROM

CAFEINA 300 ppm

F. AMEZQUITA L.
Type : Sample
Inst : Model 1020

Collection : 13:29:27 Oct 08 2012 Meth(A): QUI352 [12:45:11 Oct 08 2012]
Integration: 13:29:27 Oct 08 2012 Meth(A): QUI352 [12:45:11 Oct 08 2012]
Report : 13:34:28 Oct 08 2012 Meth(A): QUI352 [12:45:11 Oct 08 2012]

PERCENT (AREA)

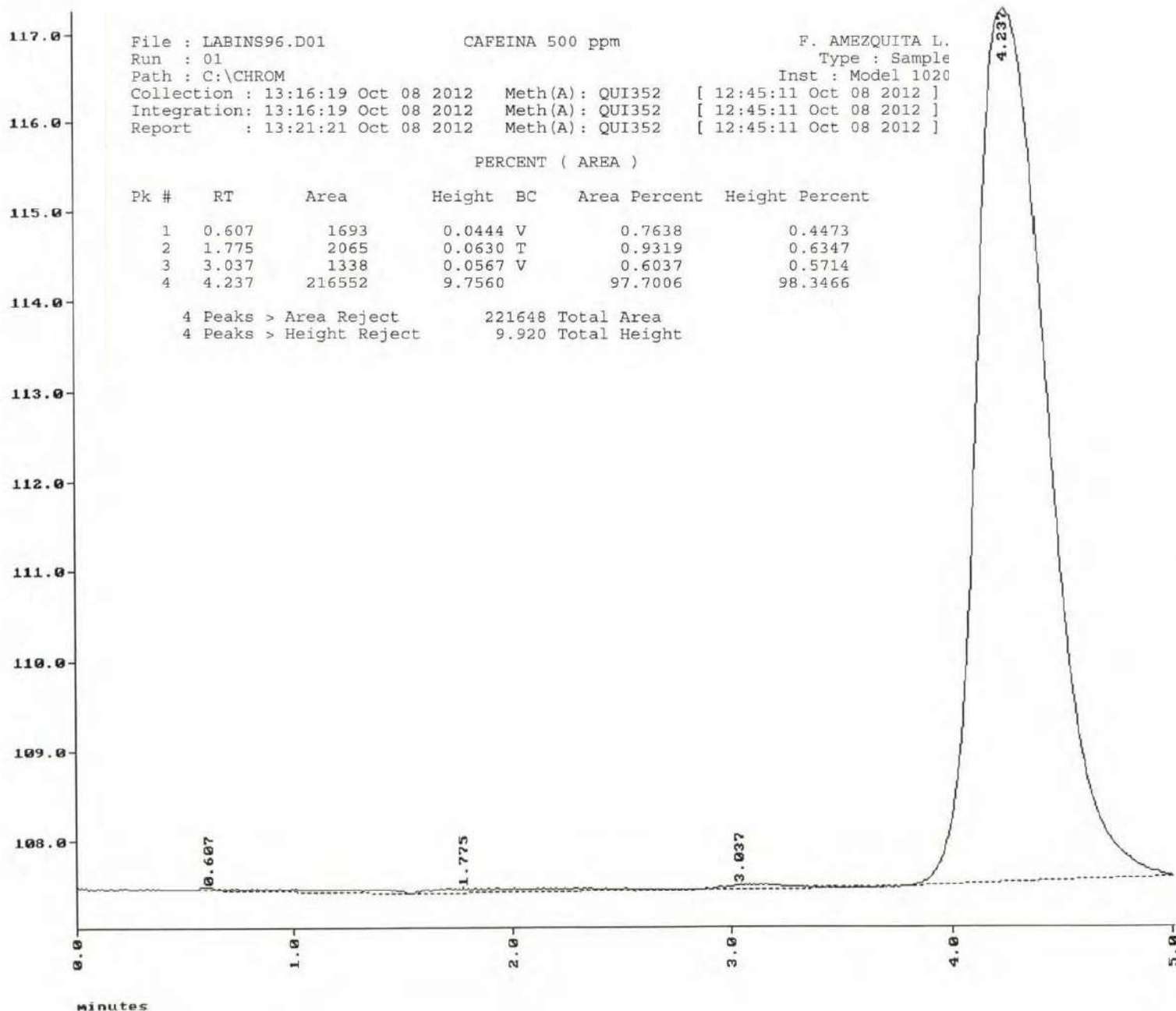
File : LABINS96.D01
Run : 01
Collection : 13:16:19 Oct 08 2012

CAFEINA 500 ppm

F. AMEZQUITA L.
Type : Sample
[12:45:11 Oct 08 2012]

Method : QUI352

< LABINS96.D01 > MU



File : LABINS96.D01 CAFEINA 500 ppm F. AMEZQUITA L.
Run : 01 Type : Sample
Path : C:\CHROM Inst : Model 1020
Collection : 13:16:19 Oct 08 2012 Meth(A): QUI352 [12:45:11 Oct 08 2012]
Integration: 13:16:19 Oct 08 2012 Meth(A): QUI352 [12:45:11 Oct 08 2012]
Report : 13:21:21 Oct 08 2012 Meth(A): QUI352 [12:45:11 Oct 08 2012]

PERCENT (AREA)

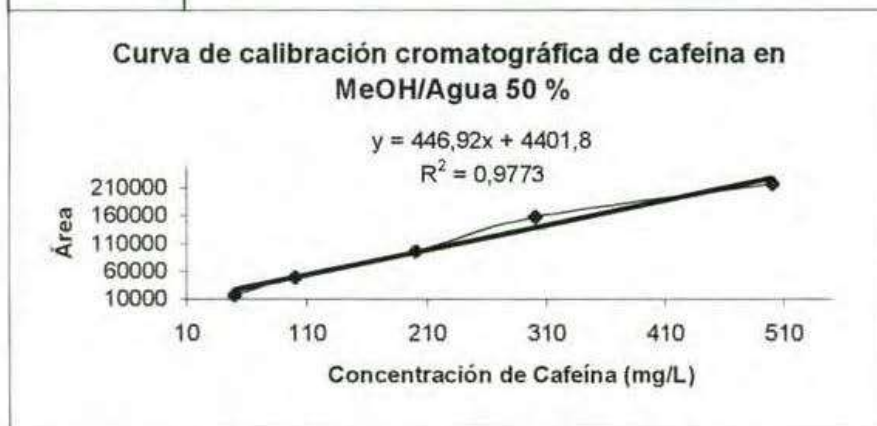
Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.607	1693	0.0444	V	0.7638	0.4473
2	1.775	2065	0.0630	T	0.9319	0.6347
3	3.037	1338	0.0567	V	0.6037	0.5714
4	4.237	216552	9.7560		97.7006	98.3466

4 Peaks > Area Reject 221648 Total Area
4 Peaks > Height Reject 9.920 Total Height

Con los datos de área del pico correspondiente a la cafeína elabora la curva de calibración, obtén la ecuación de la recta y pide el factor de correlación.

Cafeína	50 mg/L	100 mg/L	200 mg/L	300 mg/L	500 mg/L
Atenuación	8	8	8	8	8
Vol. μ L	10	10	10	10	10
Área	17577	48333	95615	157890	216552

Gráfico 1



mg/L	Area
50	17577
100	48333
200	95615
300	157890
500	216552

Segunda parte:

- Toda vez que has conocido el tiempo de retención de la cafeína, ahora la identificarás en diferentes productos.
- Y utilizando la ecuación de la recta obtenida, haz el cálculo de las concentraciones de cafeína en cada muestra.

File : LABINS07.D01
Run : 01
Collection : 14:26:08 Oct 08 2012

NESCAPE

Method : QUI352

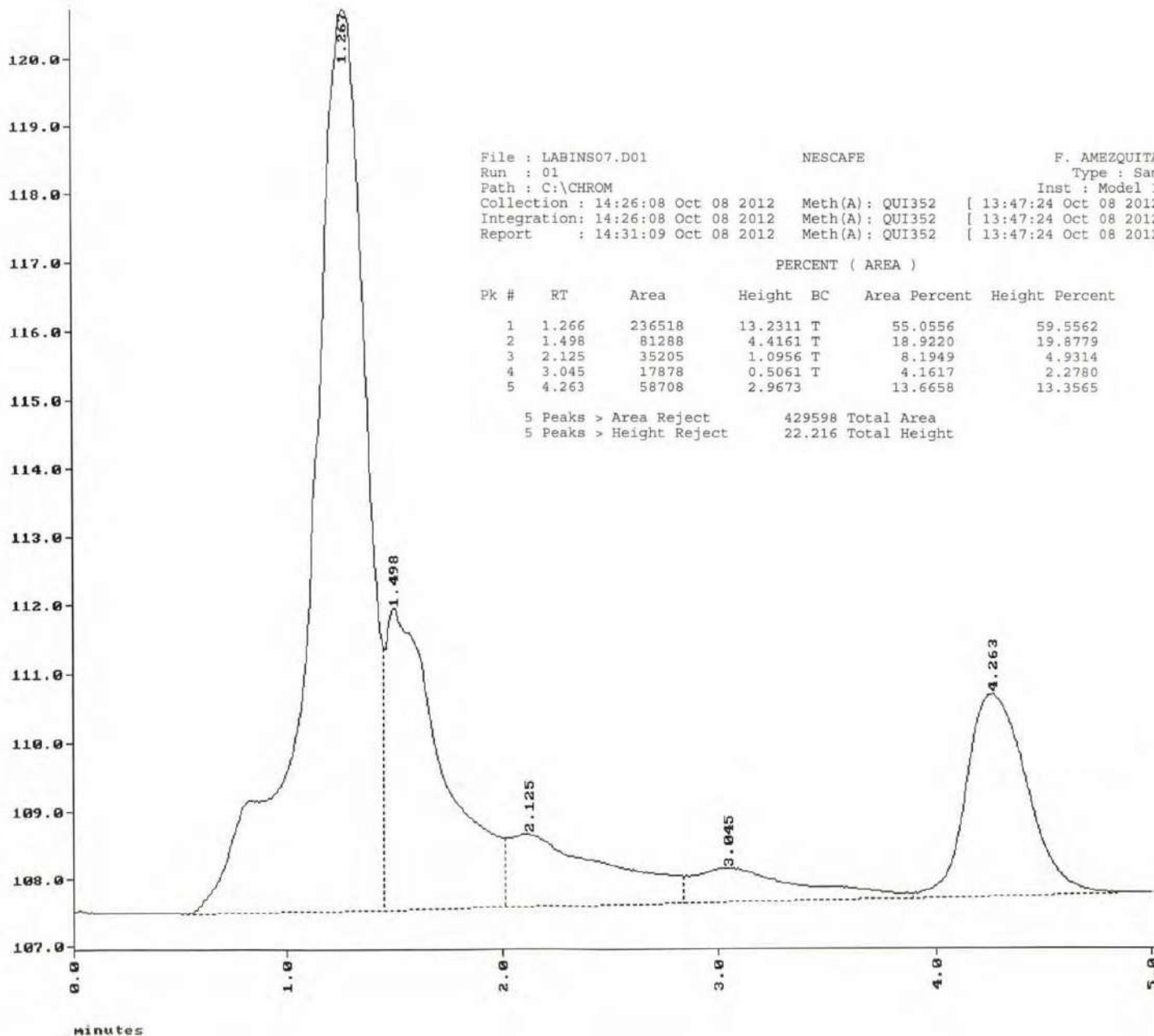
Method : QUI352

[13:47:24 Oct 08 2012]

F. AMEZQUITA L.

Type : Sample

(LABINS07.D01) mV



File : LABINS07.D01
Run : 01
Path : C:\CHROM
Collection : 14:26:08 Oct 08 2012
Integration: 14:26:08 Oct 08 2012
Report : 14:31:09 Oct 08 2012

NESCAPE

F. AMEZQUITA L.
Type : Sample
Inst : Model 1020
[13:47:24 Oct 08 2012]
[13:47:24 Oct 08 2012]
[13:47:24 Oct 08 2012]

PERCENT (AREA)

PK #	RT	Area	Height	BC	Area Percent	Height Percent
1	1.266	236518	13.2311	T	55.0556	59.5562
2	1.498	81288	4.4161	T	18.9220	19.8779
3	2.125	35205	1.0956	T	8.1949	4.9314
4	3.045	17878	0.5061	T	4.1617	2.2780
5	4.263	58708	2.9673		13.6658	13.3565

5 Peaks > Area Reject

429598 Total Area

5 Peaks > Height Reject

22.216 Total Height

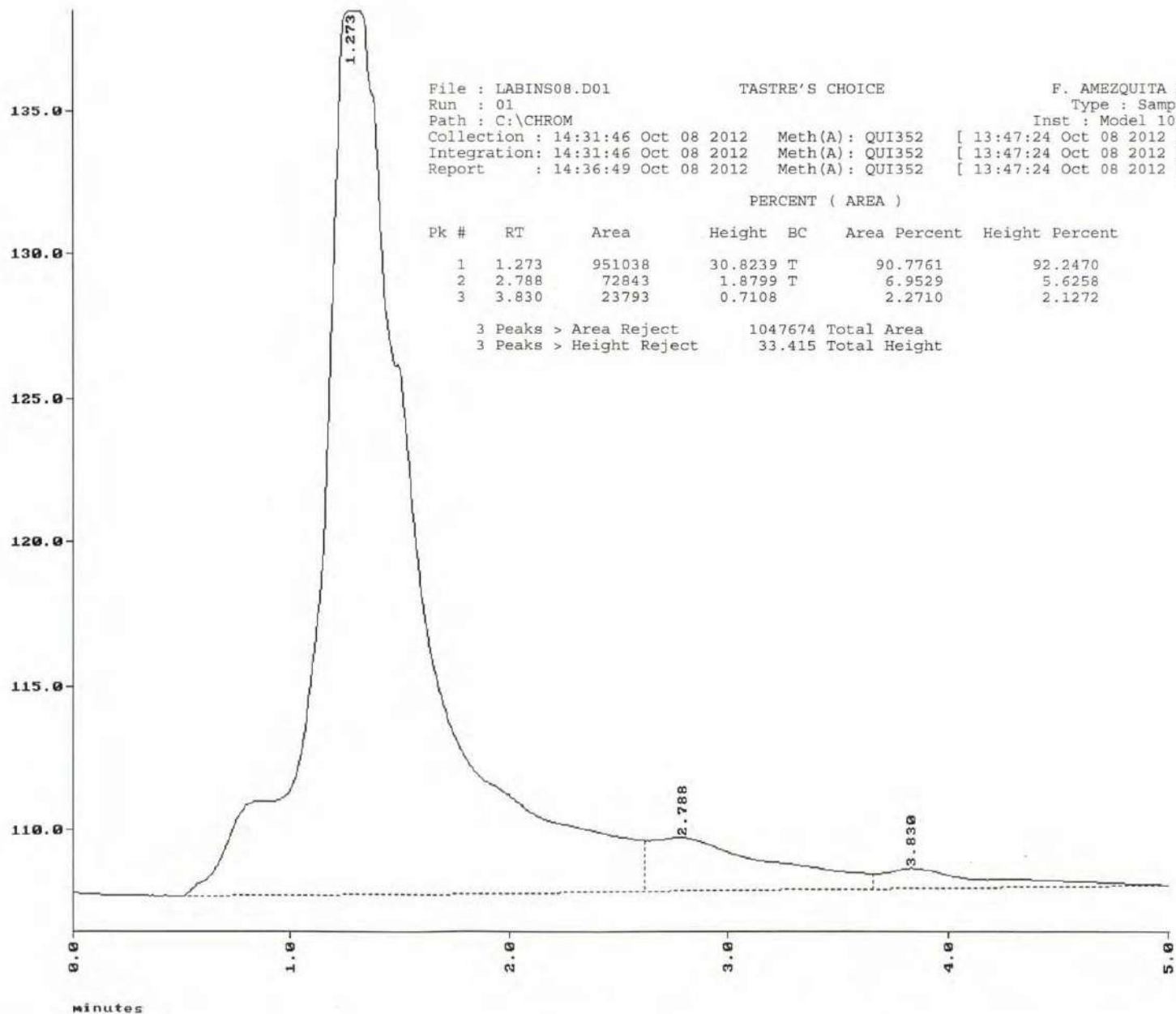
File : LABINS08.D01
Run : 01
Collection : 14:31:46 Oct 08 2012

TASTRE'S CHOICE

F. AMEZQUITA L.
Type : Sample
[13:47:24 Oct 08 2012]

Method : QUI352

(LABINS08.D01) mU



File : LABINS08.D01
Run : 01
Path : C:\CHROM
Collection : 14:31:46 Oct 08 2012
Integration: 14:31:46 Oct 08 2012
Report : 14:36:49 Oct 08 2012

TASTRE'S CHOICE

F. AMEZQUITA L.
Type : Sample
Inst : Model 1020

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	1.273	951038	30.8239	T	90.7761	92.2470
2	2.788	72843	1.8799	T	6.9529	5.6258
3	3.830	23793	0.7108		2.2710	2.1272

3 Peaks > Area Reject 1047674 Total Area
3 Peaks > Height Reject 33.415 Total Height

- Las muestras anteriores fueron de café soluble, la primera corresponde a un café con cafeína y el segundo a un café descafeinado. ¿Observas la diferencia?

Tercera parte:

- Ahora se presentan los cromatogramas de los siguientes medicamentos:
- Cafiaspirina
- Empirina
- Sedalmerck
- Andox plus
- Sacidol
- Nordinet

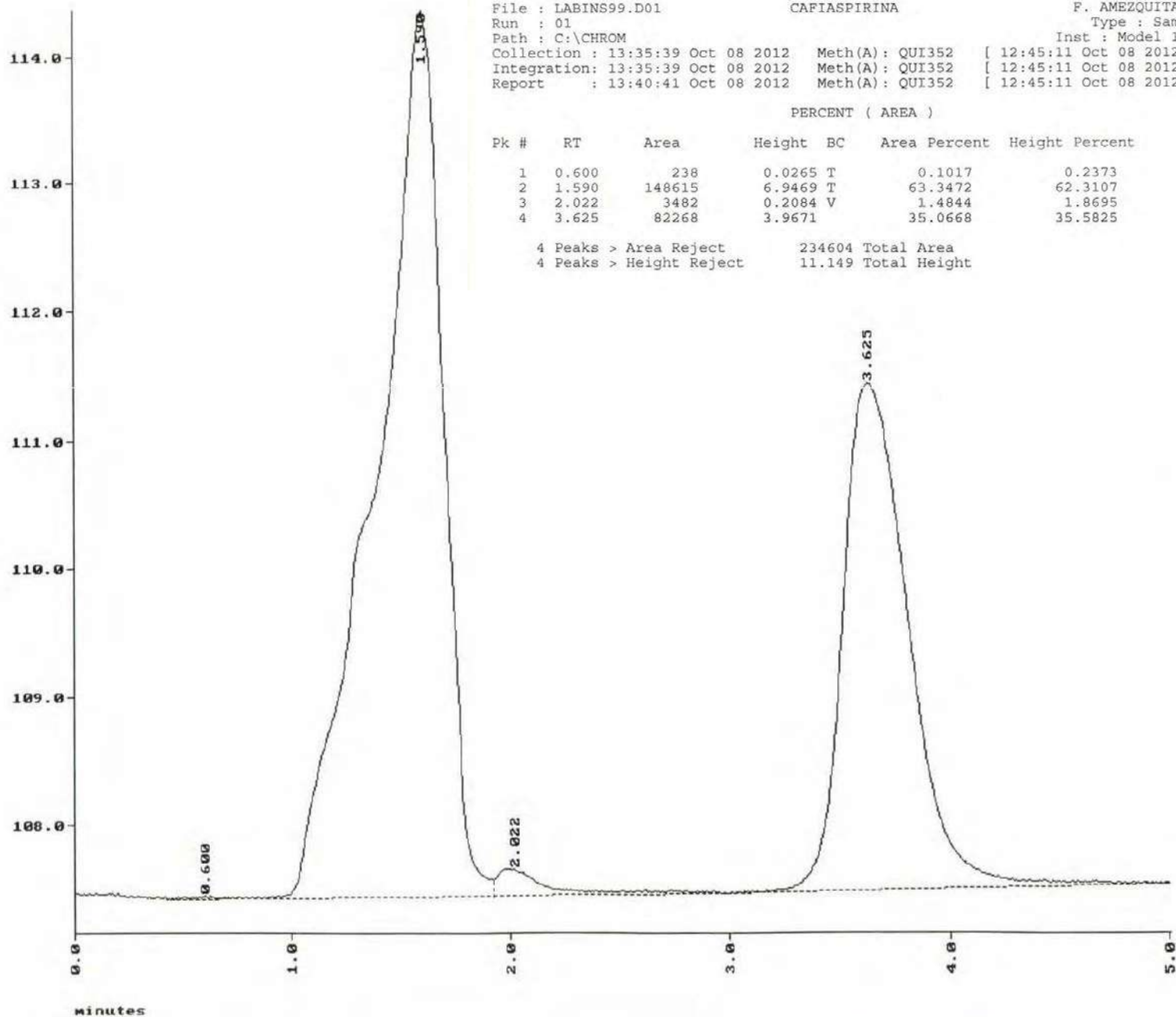
File : LABINS99.D01
 Run : 01
 Collection : 13:35:39 Oct 08 2012

CAFIASPIRINA

F. AMEZQUITA L.
 Type : Sample
 [12:45:11 Oct 08 2012]

Method : QUI352

(LABINS99.D01) mV



File : LABINS99.D01

CAFIASPIRINA

F. AMEZQUITA L.

Run : 01

Type : Sample

Path : C:\CHROM

Inst : Model 1020

Collection : 13:35:39 Oct 08 2012

Meth(A) : QUI352

[12:45:11 Oct 08 2012]

Integration: 13:35:39 Oct 08 2012

Meth(A) : QUI352

[12:45:11 Oct 08 2012]

Report : 13:40:41 Oct 08 2012

Meth(A) : QUI352

[12:45:11 Oct 08 2012]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.600	238	0.0265	T	0.1017	0.2373
2	1.590	148615	6.9469	T	63.3472	62.3107
3	2.022	3482	0.2084	V	1.4844	1.8695
4	3.625	82268	3.9671		35.0668	35.5825

4 Peaks > Area Reject

234604 Total Area

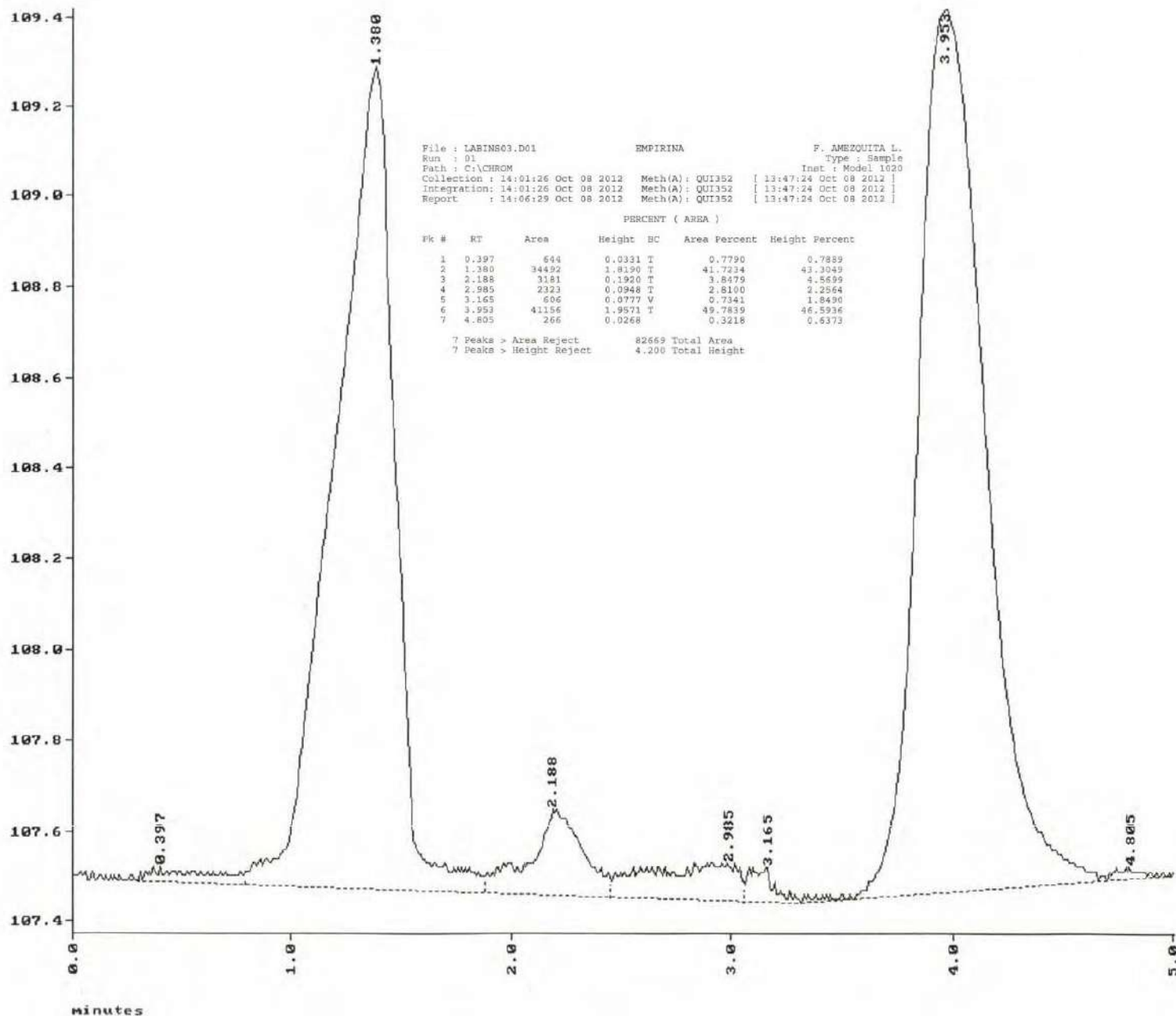
4 Peaks > Height Reject

11.149 Total Height

File : LABINS03.D01
Run : 01
Collection : 14:01:26 Oct 08 2012
Method : QUI352
F. AMEZQUITA L.
Type : Sample
[13:47:24 Oct 08 2012]

EMPIRINA

(LABINS03.D01) mU



File : LABINS15.D01

Run : 01

Collection : 13:14:45 Feb 19 2013

empirina

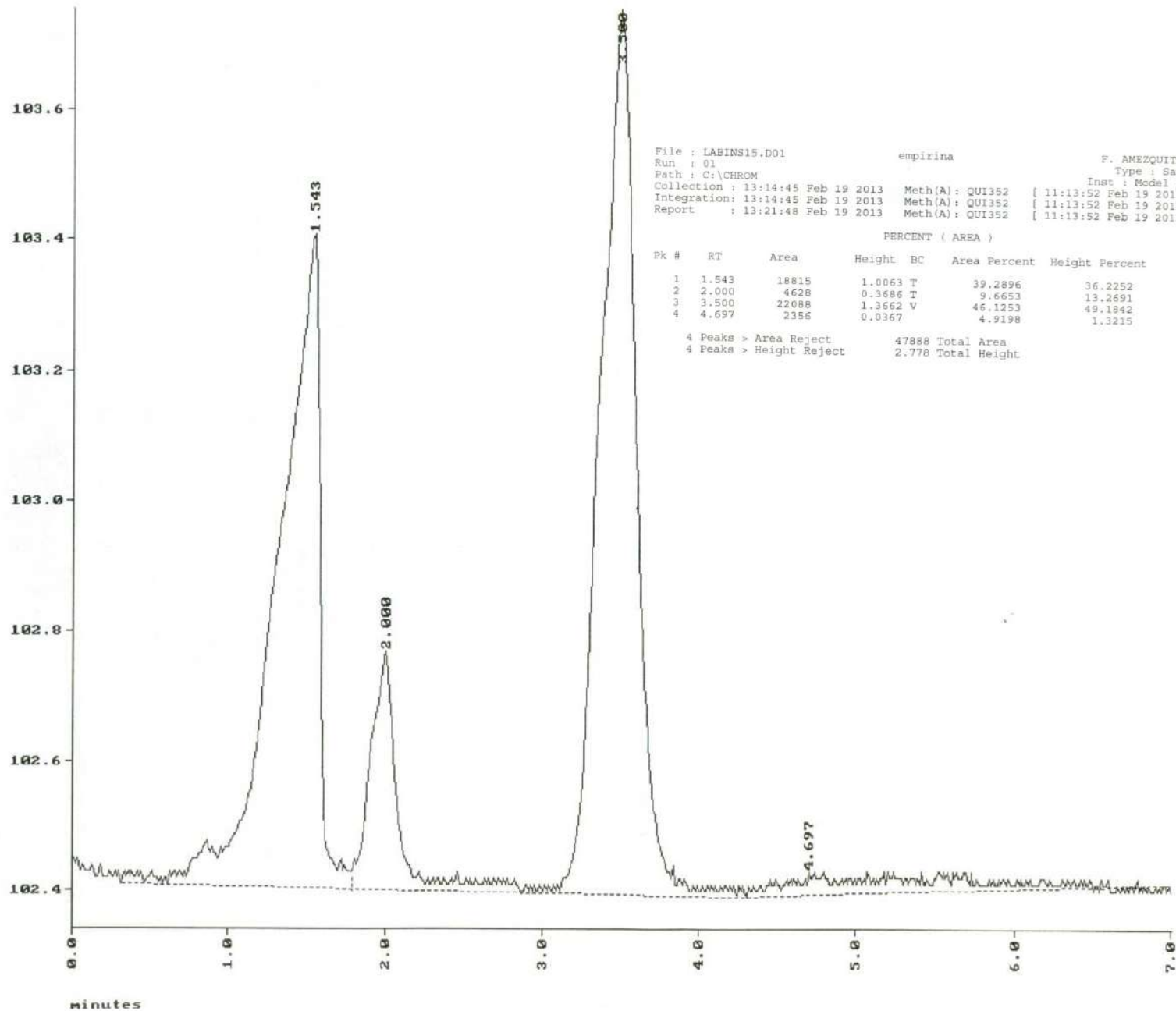
Method : QUI352

F. AMEZQUITA L.

Type : Sample

[11:13:52 Feb 19 2013]

(LABINS15.D01) MU



File : LABINS15.D01

Run : 01

Path : C:\CHROM

Collection : 13:14:45 Feb 19 2013

Integration : 13:14:45 Feb 19 2013

Report : 13:21:48 Feb 19 2013

empirina

F. AMEZQUITA L.

Type : Sample

Inst : Model 1020

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	1.543	18815	1.0063	T	39.2896	36.2252
2	2.000	4628	0.3686	T	9.6653	13.2691
3	3.500	22088	1.3662	V	46.1253	49.1842
4	4.697	2356	0.0367		4.9198	1.3215

4 Peaks > Area Reject

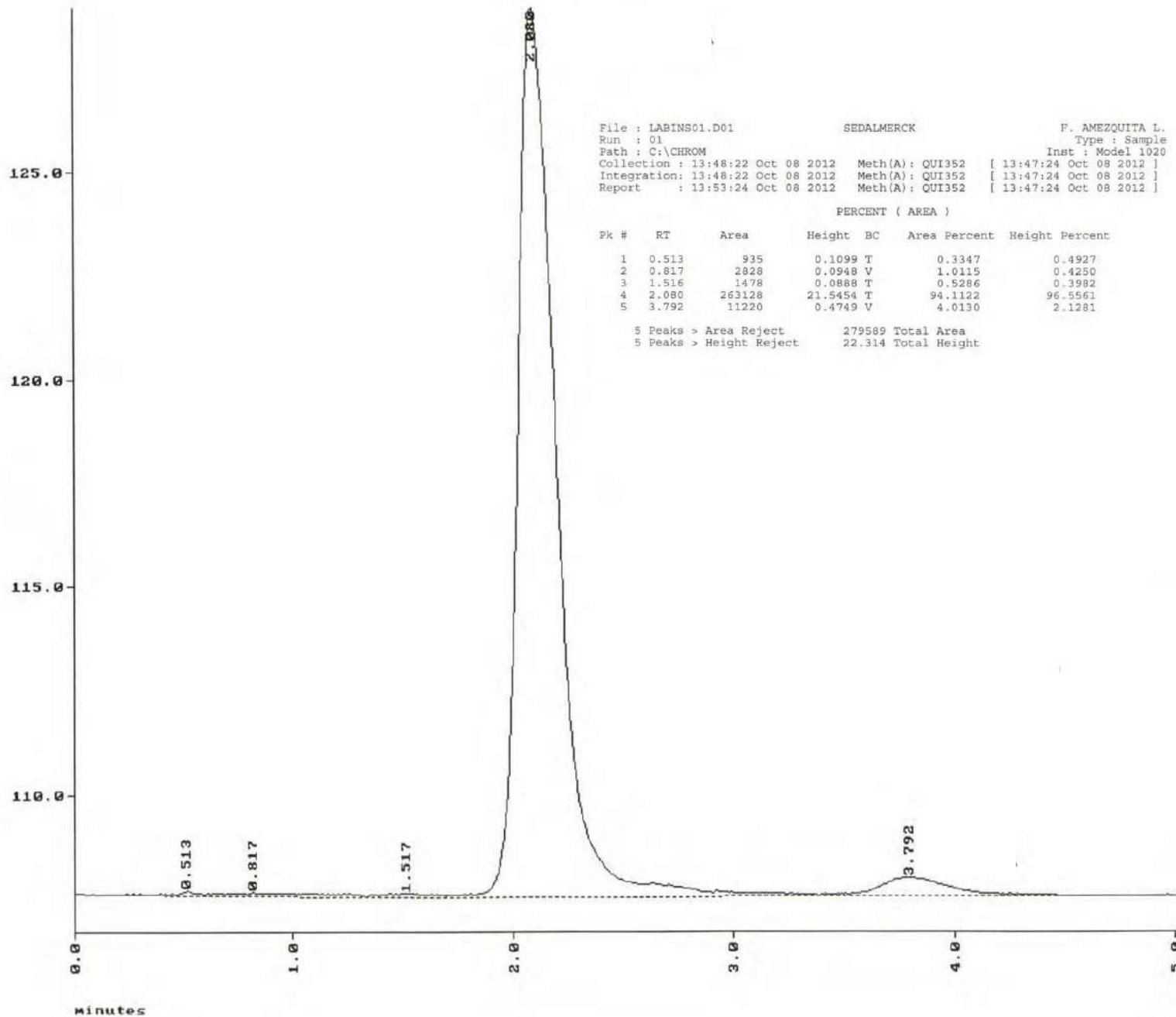
47888 Total Area

4 Peaks > Height Reject

2.778 Total Height

File : LABINS01.D01 SEDALMERCK F. AMEZQUITA L.
Run : 01 Type : Sample
Collection : 13:48:22 Oct 08 2012 Method : QUI352 [13:47:24 Oct 08 2012]

(LABINS01.D01) mV



File : LABINS01.D01 SEDALMERCK F. AMEZQUITA L.
Run : 01 Type : Sample
Path : C:\CHROM Inst : Model 1020
Collection : 13:48:22 Oct 08 2012 Meth(A): QUI352 [13:47:24 Oct 08 2012]
Integration: 13:48:22 Oct 08 2012 Meth(A): QUI352 [13:47:24 Oct 08 2012]
Report : 13:53:24 Oct 08 2012 Meth(A): QUI352 [13:47:24 Oct 08 2012]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.513	935	0.1099	T	0.3347	0.4927
2	0.817	2828	0.0948	V	1.0115	0.4250
3	1.516	1478	0.0888	T	0.5286	0.3982
4	2.080	263128	21.5454	T	94.1122	96.5561
5	3.792	11220	0.4749	V	4.0130	2.1281

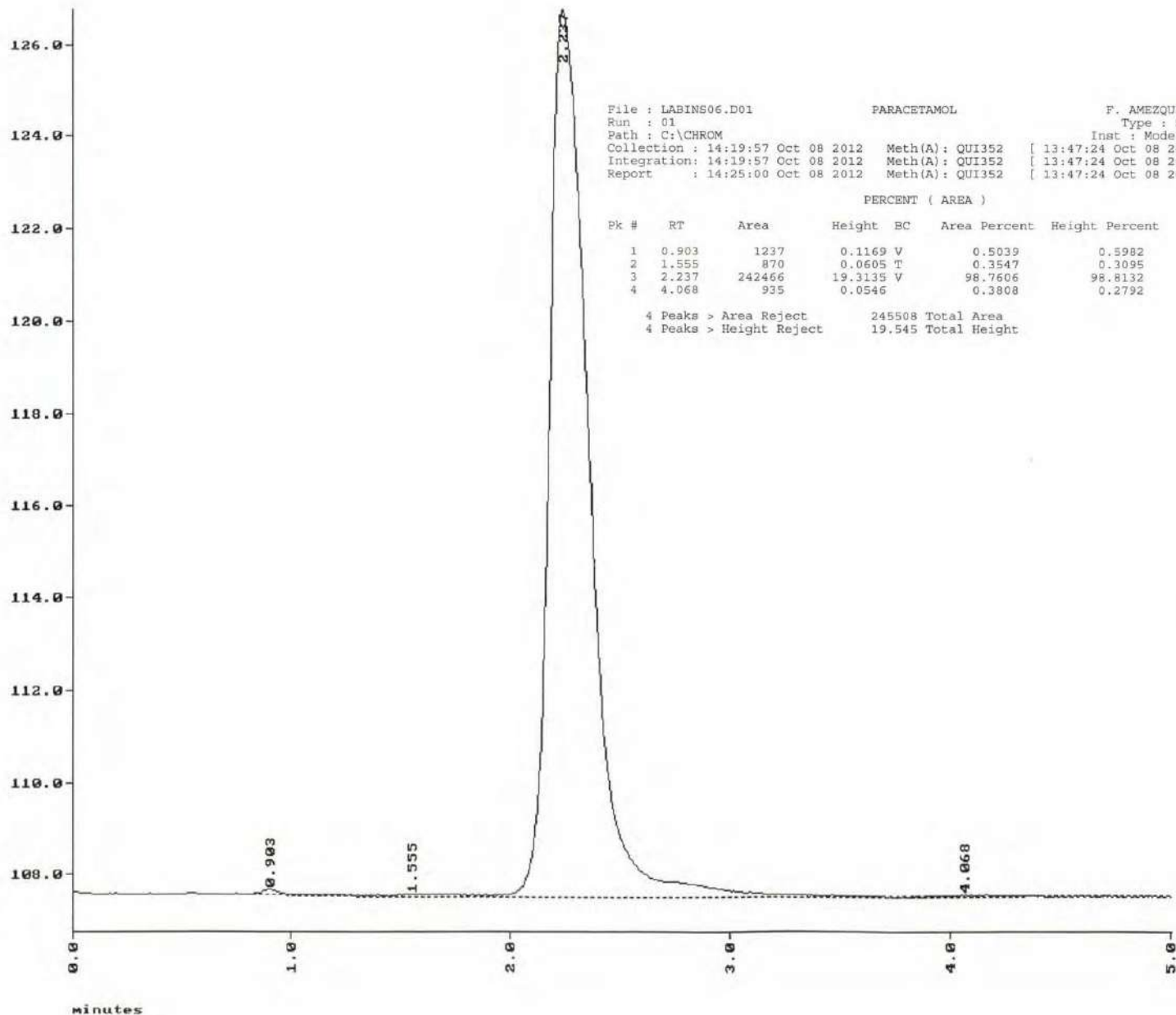
5 Peaks > Area Reject 279589 Total Area
5 Peaks > Height Reject 22.314 Total Height

File : LABINS06.D01
 Run : 01
 Collection : 14:19:57 Oct 08 2012

PARACETAMOL
 Type : Sample
 Method : QUI352
 [13:47:24 Oct 08 2012]

F. AMEZQUITA L.

(LABINS06.D01) mV



File : LABINS06.D01
 Run : 01
 Path : C:\CHROM
 Collection : 14:19:57 Oct 08 2012
 Integration : 14:19:57 Oct 08 2012
 Report : 14:25:00 Oct 08 2012

PARACETAMOL

F. AMEZQUITA L.
 Type : Sample
 Inst : Model 1020
 [13:47:24 Oct 08 2012]
 [13:47:24 Oct 08 2012]
 [13:47:24 Oct 08 2012]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.903	1237	0.1169	V	0.5039	0.5982
2	1.555	870	0.0605	T	0.3547	0.3095
3	2.237	242466	19.3135	V	98.7606	98.8132
4	4.068	935	0.0546		0.3808	0.2792

4 Peaks > Area Reject 245508 Total Area
 4 Peaks > Height Reject 19.545 Total Height

File : LABINS05.D01

PARACETAMOL AMB

F. AMEZQUITA L.

Run : 01

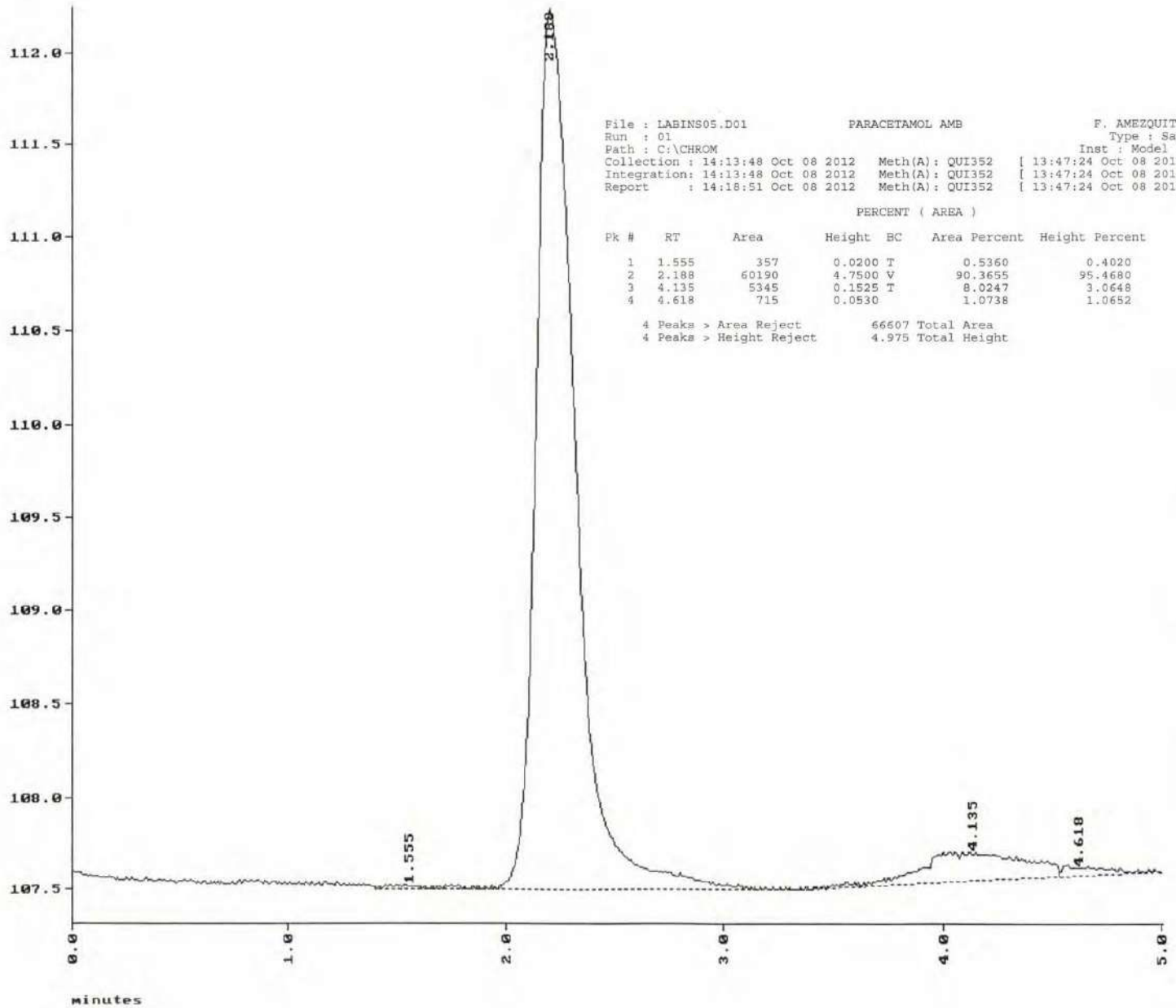
Type : Sample

Collection : 14:13:48 Oct 08 2012

[13:47:24 Oct 08 2012]

Method : QUI352

(LABINS05.D01) MU



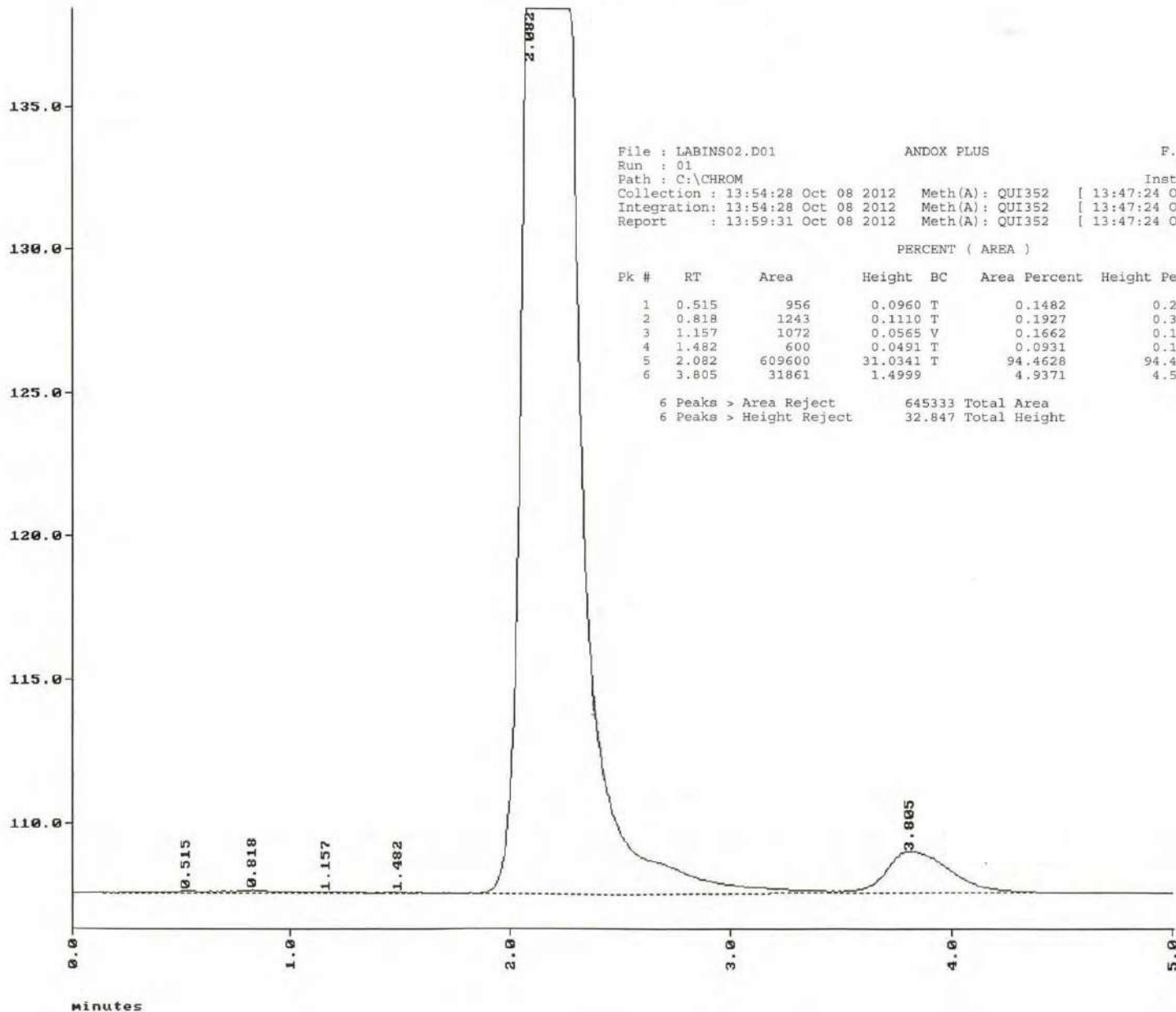
File : LABINS02.D01
Run : 01
Collection : 13:54:28 Oct 08 2012

ANDOX PLUS

F. AMEZQUITA L.
Type : Sample
[13:47:24 Oct 08 2012]

Method : QUI352

(LABINS02.D01) MU



File : LABINS02.D01
Run : 01
Path : C:\CHROM
Collection : 13:54:28 Oct 08 2012
Integration : 13:54:28 Oct 08 2012
Report : 13:59:31 Oct 08 2012

ANDOX PLUS

F. AMEZQUITA L.
Type : Sample
Inst : Model 1020

Meth(A): QUI352 [13:47:24 Oct 08 2012]
Meth(A): QUI352 [13:47:24 Oct 08 2012]
Meth(A): QUI352 [13:47:24 Oct 08 2012]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.515	956	0.0960	T	0.1482	0.2924
2	0.818	1243	0.1110	T	0.1927	0.3379
3	1.157	1072	0.0565	V	0.1662	0.1721
4	1.482	600	0.0491	T	0.0931	0.1494
5	2.082	609600	31.0341	T	94.4628	94.4820
6	3.805	31861	1.4999		4.9371	4.5662

6 Peaks > Area Reject 645333 Total Area
6 Peaks > Height Reject 32.847 Total Height

File : LABINS35.D01

Run : 01

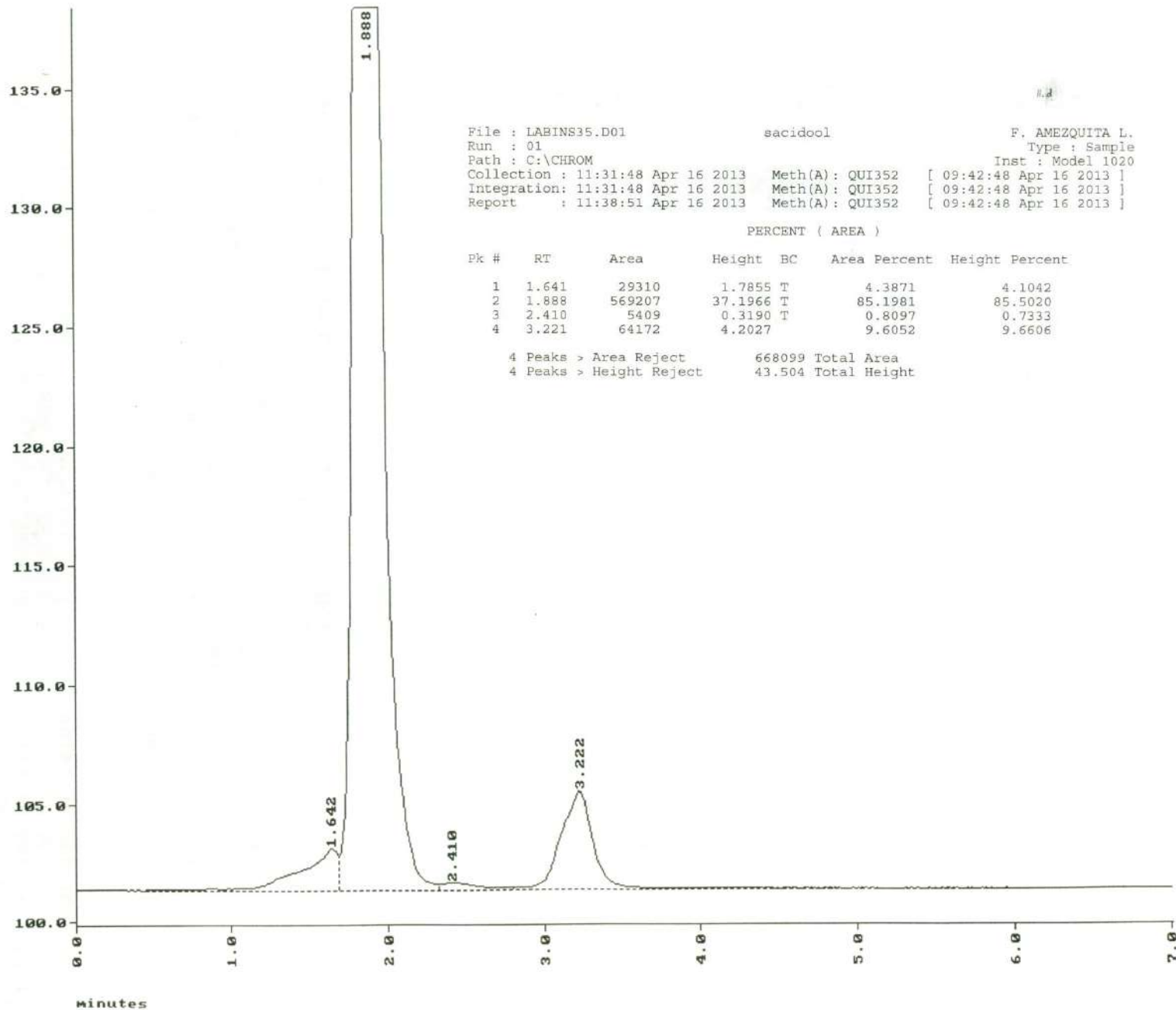
Collection : 11:31:48 Apr 16 2013

sacidool

Method : QUI352

F. AMEZQUITA L.
Type : Sample
[09:42:48 Apr 16 2013]

(LABINS35.D01) mV



File : LABINS35.D01

Run : 01

Path : C:\CHROM

Collection : 11:31:48 Apr 16 2013

Integration: 11:31:48 Apr 16 2013

Report : 11:38:51 Apr 16 2013

sacidool

Meth(A): QUI352

Meth(A): QUI352

Meth(A): QUI352

F. AMEZQUITA L.

Type : Sample

Inst : Model 1020

[09:42:48 Apr 16 2013]

[09:42:48 Apr 16 2013]

[09:42:48 Apr 16 2013]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	1.641	29310	1.7855	T	4.3871	4.1042
2	1.888	569207	37.1966	T	85.1981	85.5020
3	2.410	5409	0.3190	T	0.8097	0.7333
4	3.221	64172	4.2027		9.6052	9.6606

4 Peaks > Area Reject

4 Peaks > Height Reject

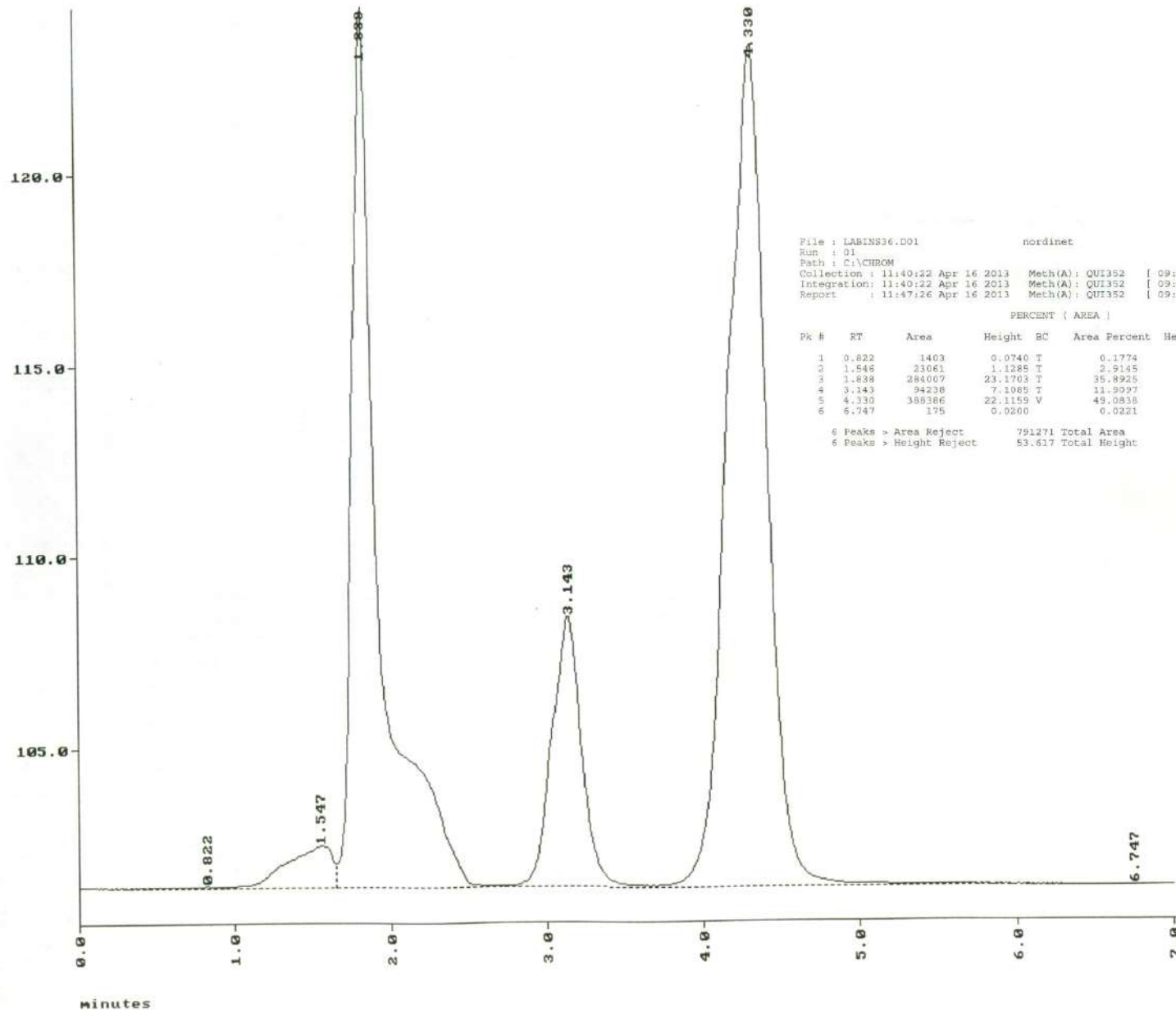
668099 Total Area

43.504 Total Height

File : LABINS36.D01
Run : 01
Collection : 11:40:22 Apr 16 2013
Method : QUI352
F. AMEZQUITA L.
Type : Sample
[09:42:48 Apr 16 2013]

nordinet

(LABINS36.D01) mU



File : LABINS36.D01
Run : 01
Path : C:\CHROM
Collection : 11:40:22 Apr 16 2013
Integration : 11:40:22 Apr 16 2013
Report : 11:47:26 Apr 16 2013
nordinet
Meth(A): QUI352
Meth(A): QUI352
Meth(A): QUI352
F. AMEZQUITA L.
Type : Sample
Inst : Model 1020
[09:42:48 Apr 16 2013]
[09:42:48 Apr 16 2013]
[09:42:48 Apr 16 2013]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.822	1403	0.0740	T	0.1774	0.1379
2	1.546	23061	1.1285	T	2.9145	2.1047
3	1.838	284007	23.1703	T	35.8925	43.2143
4	3.143	94238	7.1085	T	11.9097	13.2579
5	4.330	388386	22.1159	V	49.0838	41.2478
6	6.747	175	0.0200		0.0221	0.0373

6 Peaks > Area Reject 791271 Total Area
6 Peaks > Height Reject 53.617 Total Height

- Los medicamentos tienen las siguientes formulaciones:
 - Cafiaspirina (cafeína y ac. Acetil salicílico -AAS).
 - Empirina (cafeína, AAS y fenacetina).
 - Andox plus (cafeína y paracetamol).
 - Sedalmerck, lo hay con dos (cafeína, fenilefrina y paracetamol) y (cafeína y paracetamol).
 - Sacidol (cafeína, paracetamol y AAS).
 - Nordinet (cafeína, AAS, fenacetina y acetanilida).
-
- A partir de la señal de cafeína podrás ir identificando cada compuesto. Auxílate de los cromatogramas de paracetamol.

Tercera parte:

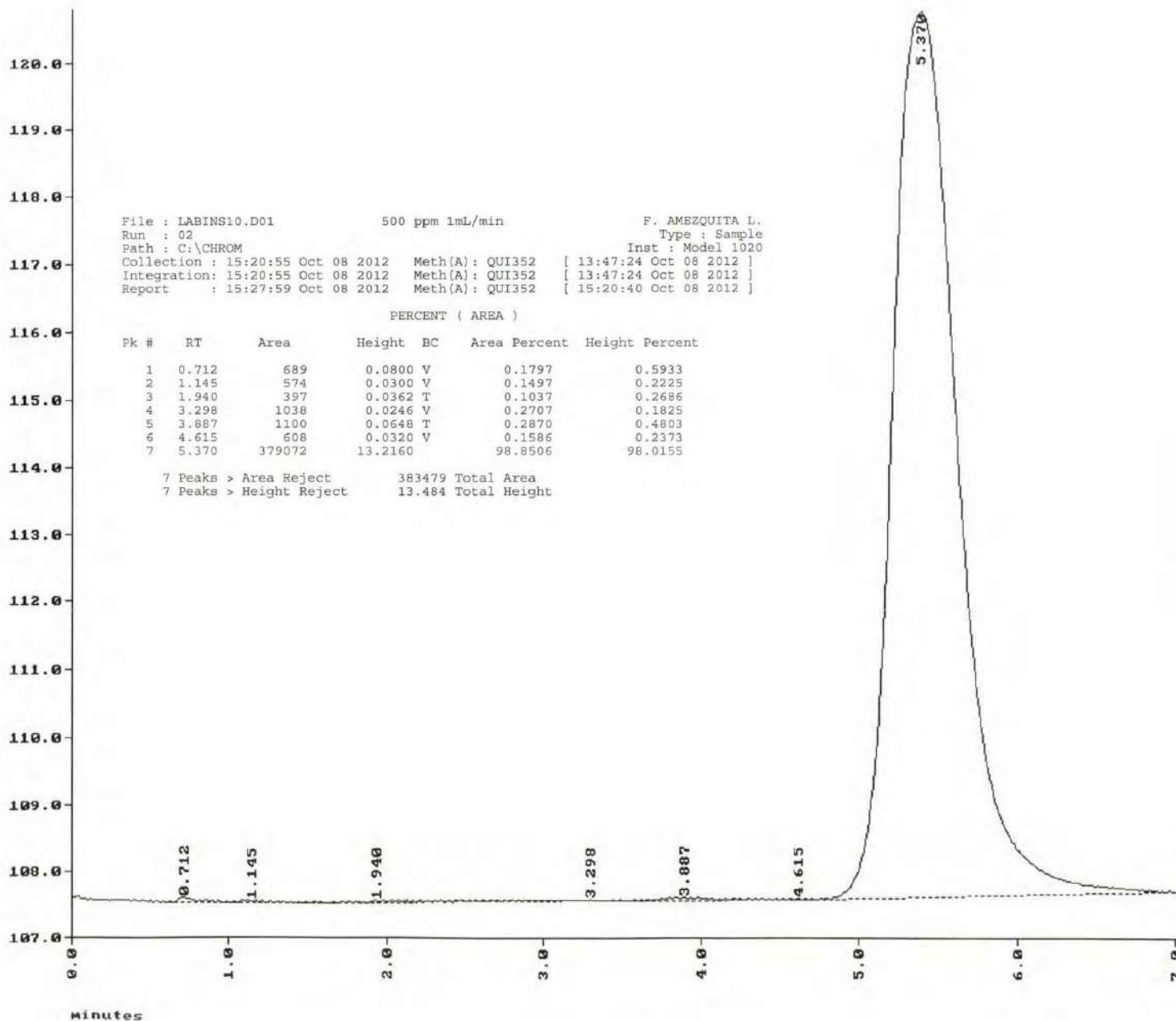
Ahora harás el estudio del efecto de la velocidad de flujo en el tiempo de retención.

Consiste en inyectar la misma muestra a diferentes velocidades. Al finalizar haz el gráfico del tiempo de retención en función del flujo.

Y para concluir llena la plantilla con los datos.

File : LABINS10.D01 500 ppm 1mL/min F. AMEZQUITA L.
 Run : 02 Type : Sample
 Collection : 15:20:55 Oct 08 2012 Method : QUI352 [13:47:24 Oct 08 2012]

(LABINS10.D01) MU



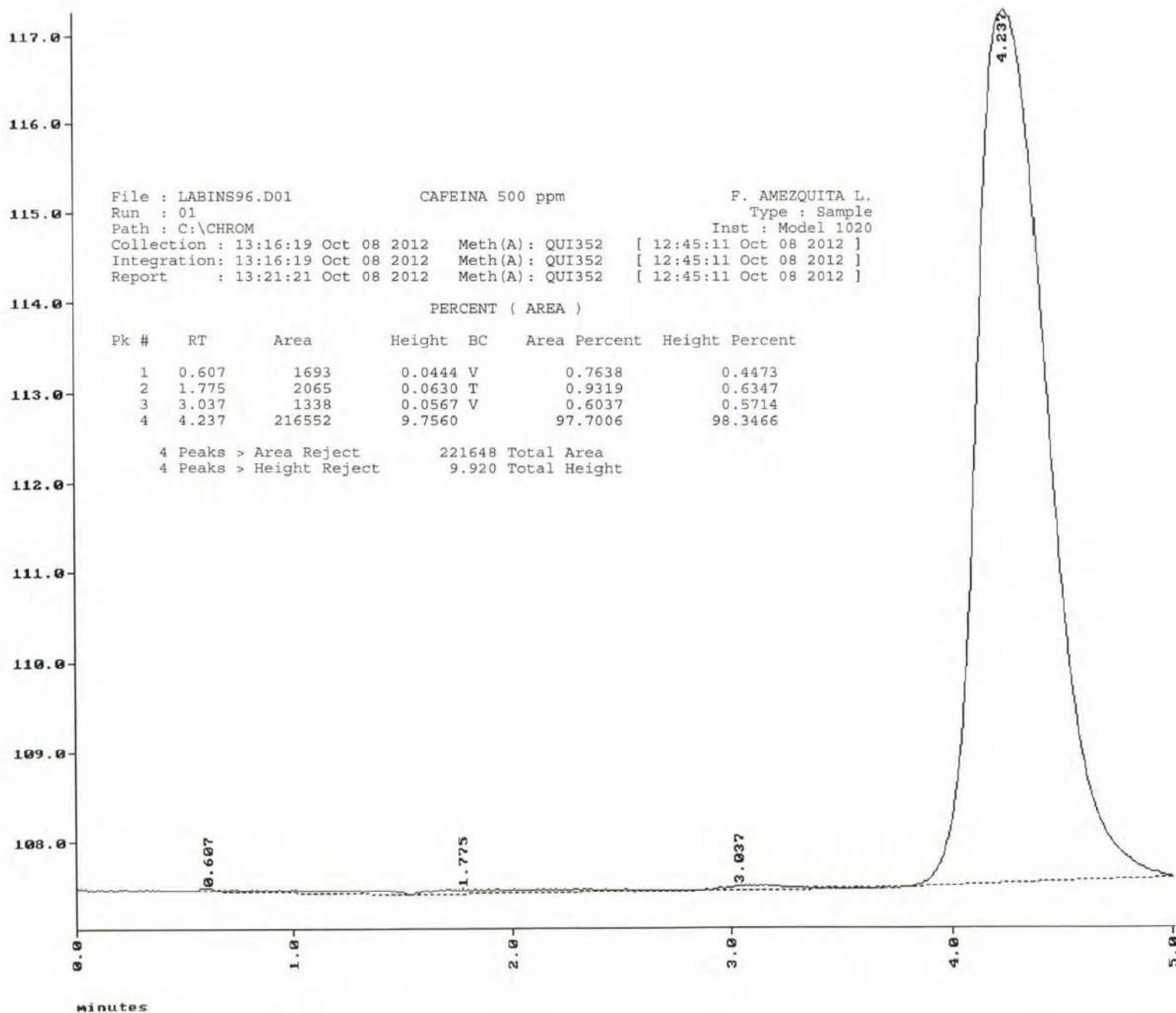
File : LABINS96.D01
Run : 01
Collection : 13:16:19 Oct 08 2012

CAFEINA 500 ppm

F. AMEZQUITA L.
Type : Sample
[12:45:11 Oct 08 2012]

Method : QUI352

< LABINS96.D01 >



File : LABINS96.D01
Run : 01
Path : C:\CHROM
Collection : 13:16:19 Oct 08 2012
Integration : 13:16:19 Oct 08 2012
Report : 13:21:21 Oct 08 2012

CAFEINA 500 ppm

F. AMEZQUITA L.
Type : Sample
Inst : Model 1020

Meth(A) : QUI352 [12:45:11 Oct 08 2012]
Meth(A) : QUI352 [12:45:11 Oct 08 2012]
Meth(A) : QUI352 [12:45:11 Oct 08 2012]

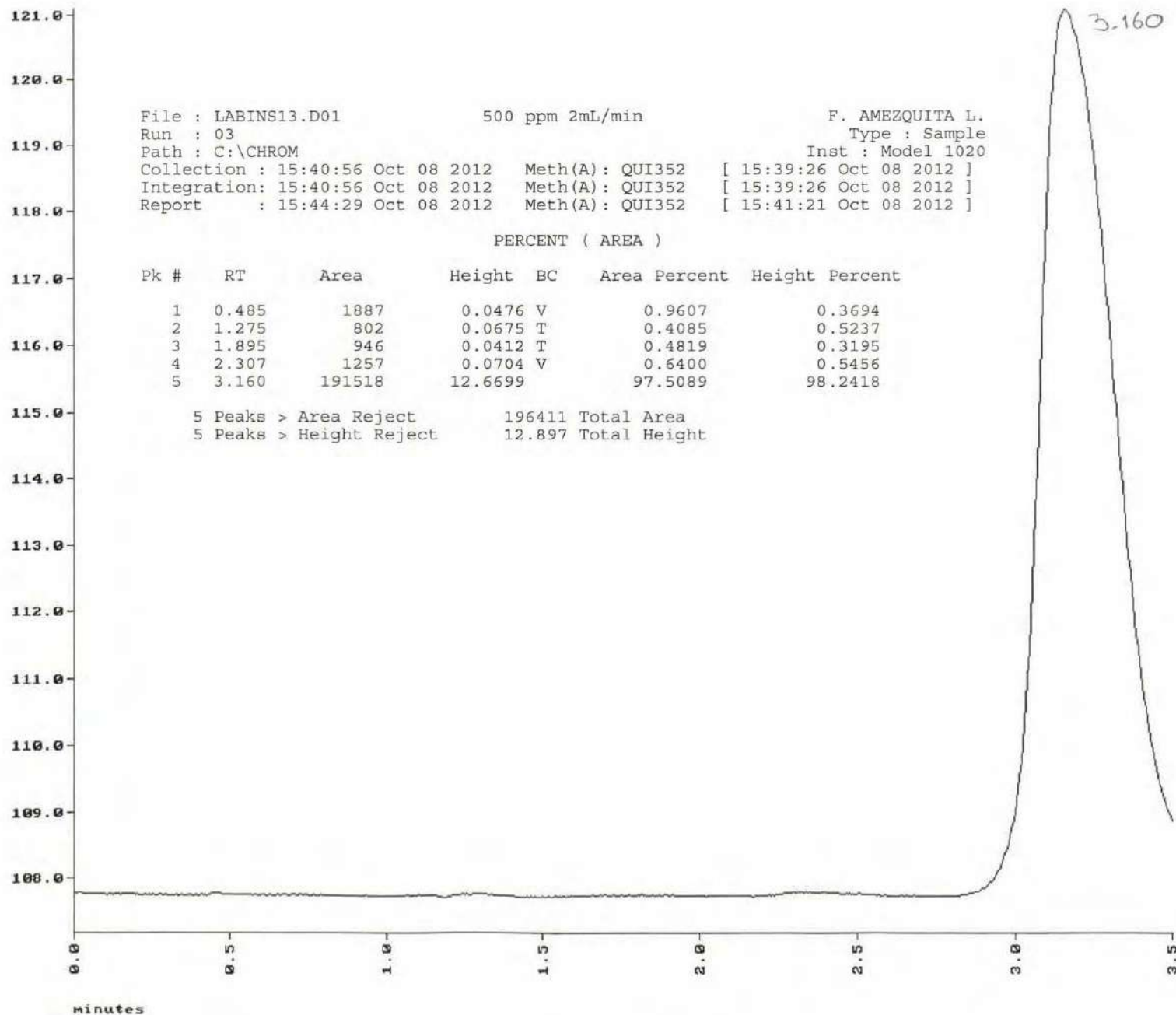
PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.607	1693	0.0444	V	0.7638	0.4473
2	1.775	2065	0.0630	T	0.9319	0.6347
3	3.037	1338	0.0567	V	0.6037	0.5714
4	4.237	216552	9.7560		97.7006	98.3466

4 Peaks > Area Reject 221648 Total Area
4 Peaks > Height Reject 9.920 Total Height

File : LABINS13.D01 500 ppm 2mL/min F. AMEZQUITA L.
Run : 03 Type : Sample
Collection : 15:40:56 Oct 08 2012 Method : QUI352 [15:39:26 Oct 08 2012]

(LABINS13.D01) MU

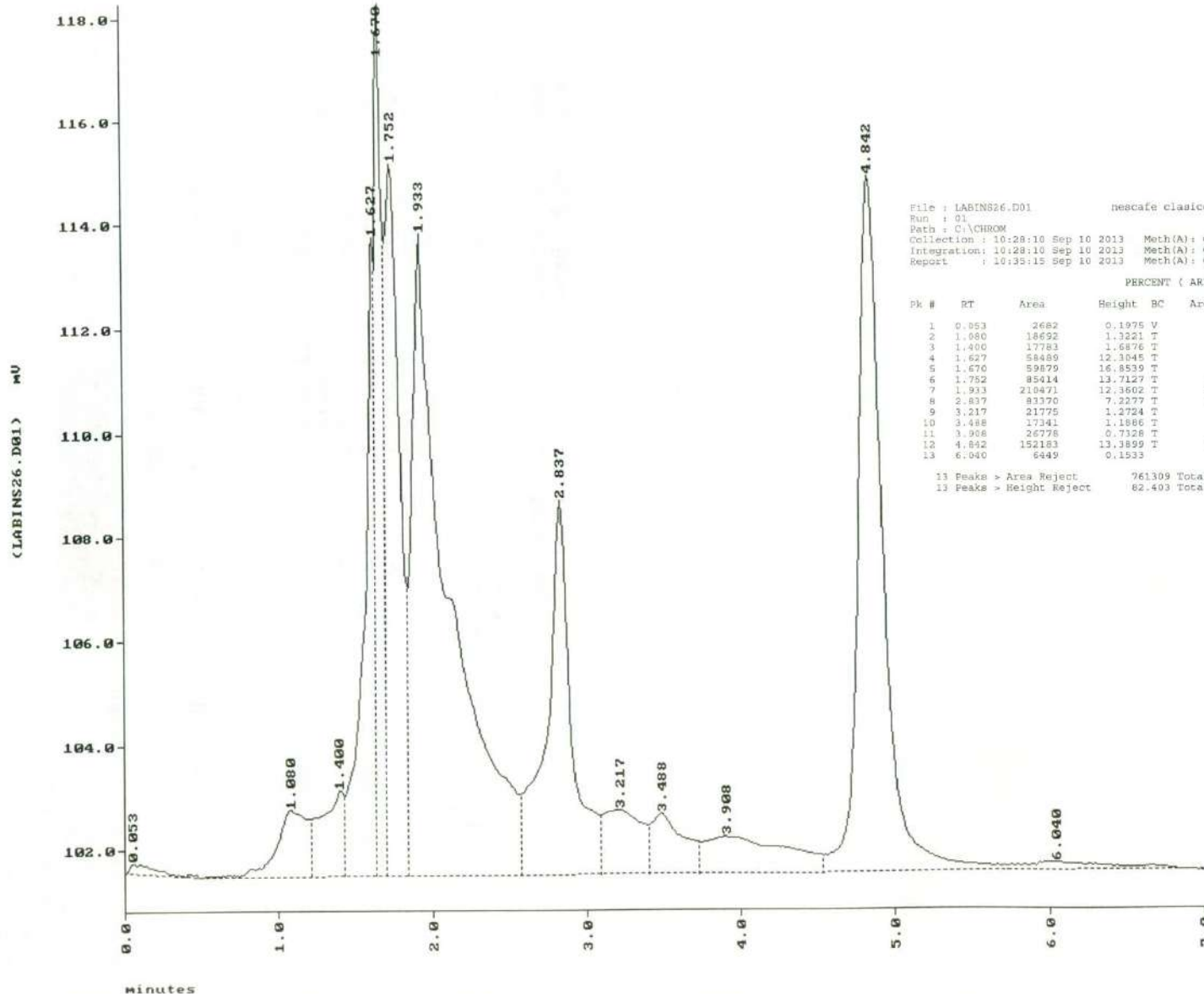


- Cuarta parte:

Como una aplicación adicional se presentan dos cromatogramas de café soluble comercial de la marca *Nescafé*, tipo *Clásico*. Uno de ellos corresponde a la presentación normal y otro a Descafeinado. ¿Notas la diferencia? ¿Qué opinas? es cierto que son lo mismo según dice el comercial.

Cromatograma (a)

File : LABINS26.D01 nescafe clasico5 F. AMEZQUITA L.
Run : 01 Type : Sample
Collection : 10:28:10 Sep 10 2013 Method : QUI352 [09:39:19 Sep 10 2013]



File : LABINS26.D01 nescafe clasico5 F. AMEZQUITA L.
Run : 01 Type : Sample
Path : C:\CHROM Inat : Model 1020
Collection : 10:28:10 Sep 10 2013 Meth(A): QUI352 [09:39:19 Sep 10 2013]
Integration : 10:28:10 Sep 10 2013 Meth(A): QUI352 [09:39:19 Sep 10 2013]
Report : 10:35:15 Sep 10 2013 Meth(A): QUI352 [09:39:19 Sep 10 2013]

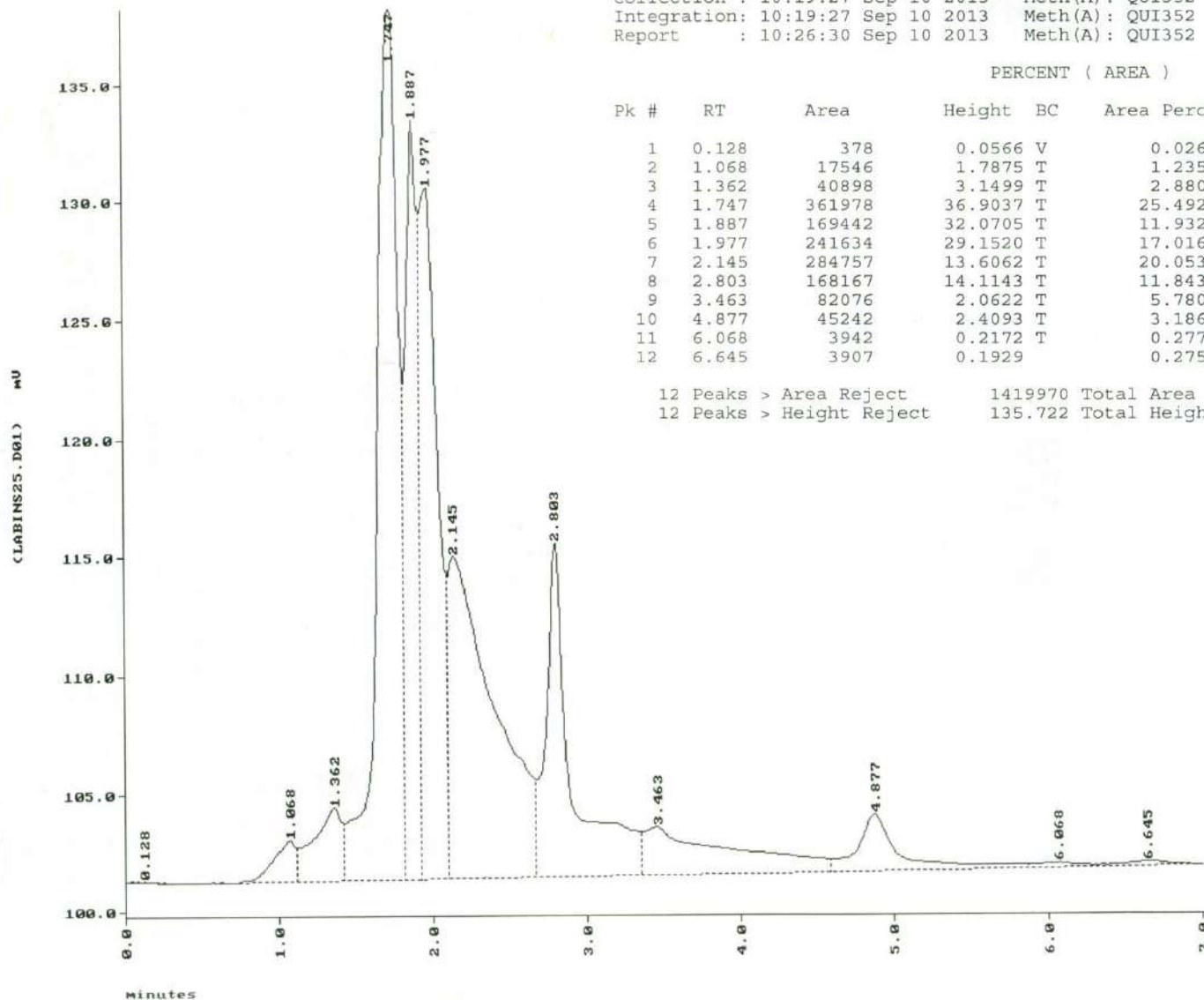
PERCENT (AREA)

PK #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.953	2682	0.1975	V	0.3523	0.2197
2	1.080	18692	1.3221	T	2.4552	1.6044
3	1.400	17783	1.6876	T	2.3359	2.0480
4	1.627	58489	12.3045	T	7.6827	14.9320
5	1.670	59679	16.8539	T	7.8653	20.4510
6	1.752	85414	13.7127	T	11.2194	16.6410
7	1.933	210471	12.3602	T	27.6459	14.9597
8	2.837	83370	7.2277	T	10.9509	8.7711
9	3.217	21775	1.2724	T	2.8603	1.5441
10	3.488	17341	1.1886	T	2.2779	1.4425
11	3.908	26776	0.7326	T	3.5174	0.8893
12	4.842	152183	13.3899	T	19.9897	16.2492
13	6.040	6449	0.1533		0.8471	0.1860

13 Peaks > Area Reject 761309 Total Area
13 Peaks > Height Reject 82.403 Total Height

Cromatograma (b)

File : LABINS25.D01 nescafe clasico F. AMEZQUITA L.
Run : 01 Type : Sample
Collection : 10:19:27 Sep 10 2013 Method : QUI352 [09:39:19 Sep 10 2013]



File : LABINS25.D01

nescafe clasico

F. AMEZQUITA L.

Run : 01

Type : Sample

Path : C:\CHROM

Inst : Model 1020

Collection : 10:19:27 Sep 10 2013 Meth(A): QUI352 [09:39:19 Sep 10 2013]

Integration: 10:19:27 Sep 10 2013 Meth(A): QUI352 [09:39:19 Sep 10 2013]

Report : 10:26:30 Sep 10 2013 Meth(A): QUI352 [09:39:19 Sep 10 2013]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.128	378	0.0566	V	0.0266	0.0417
2	1.068	17546	1.7875	T	1.2357	1.3170
3	1.362	40898	3.1499	T	2.8803	2.3208
4	1.747	361978	36.9037	T	25.4920	27.1906
5	1.887	169442	32.0705	T	11.9328	23.6295
6	1.977	241634	29.1520	T	17.0168	21.4792
7	2.145	284757	13.6062	T	20.0537	10.0250
8	2.803	168167	14.1143	T	11.8430	10.3994
9	3.463	82076	2.0622	T	5.7801	1.5194
10	4.877	45242	2.4093	T	3.1861	1.7751
11	6.068	3942	0.2172	T	0.2776	0.1600
12	6.645	3907	0.1929		0.2751	0.1422

12 Peaks > Area Reject

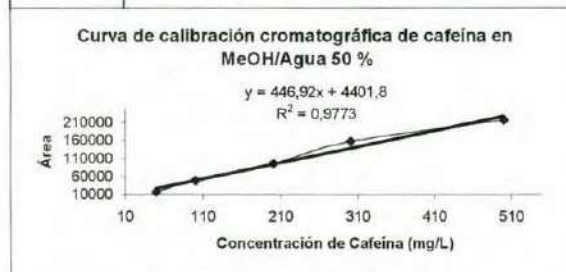
1419970 Total Area

12 Peaks > Height Reject

135.722 Total Height

Cafeína	50 mg/L	100 mg/L	200 mg/L	300 mg/L	500 mg/L
Atenuación	8	8	8	8	8
Vol. µL	10	10	10	10	10
Área	17577	48333	95615	157890	216552

Gráfico 1



mg/L	Area
50	17577
100	48333
200	95615
300	157890
500	216552

Muestra	(Nescafé 5g/L)	Taster's choice (10 g/L)	Cafiaspirina Bayer (1:4)	Sedalmerck (1:50)	Empirina (1:4)	Andox plus (1:10)	mg de cafeína en 2 g de Nescafé	mg de cafeína en 2 g de Taster's Choice
Atenuación	8	8	8	8	8	8	24,3024	17,3654
flujo mL/min	1,5	1,5	1,5	1,5	1,5	1,5	48,6049	8,6777
Vol. µL	10	10	10	10	10	10		
tR (min) de la cafeína	4,263	3,83	3,625	3,792	3,953	3,805		
Área	58708	23793	82268	11220	41156	31861		
Altura	2,9673	0,7108	3,9671	0,4749	1,9571	1,4999		
% de Área	13,6658	2,271	35,0668	4,013	49,7839	4,9371		
% de Altura	13,3565	2,1272	35,5825	2,1281	46,5936	4,5662		
Concentración	121,512127	43,3885259	174,228497	15,2559742	82,2388794	61,4409738		

Muestra	Paracetamol (1:50)	Paracetamol ambar (1:50)
Atenuación	8	8
Flujo mL/min	1,5	1,5
Vol. µL	10	10
tR (min) del Paracetamol	2,237	2,188
Área	242466	60190
Altura	19,3135	4,75
% de Área	98,7606	90,3655
% de Altura	98,8132	95,468

Gráfico 2



Cafeína	1,0 mL/min	1,5 mL/min	2,0 mL/min
Atenuación	8	8	8
Vol. µL	10	10	10
tR (min) de la cafeína	5,37	4,237	3,16
Área	379072	216552	191518
Altura	13,216	9,756	12,6699
% de Área	98,8506	97,7006	97,5089
% de Altura	98,0155	98,3466	98,2418

mL/min	tR
1	5,37
1,5	4,237
2	3,16

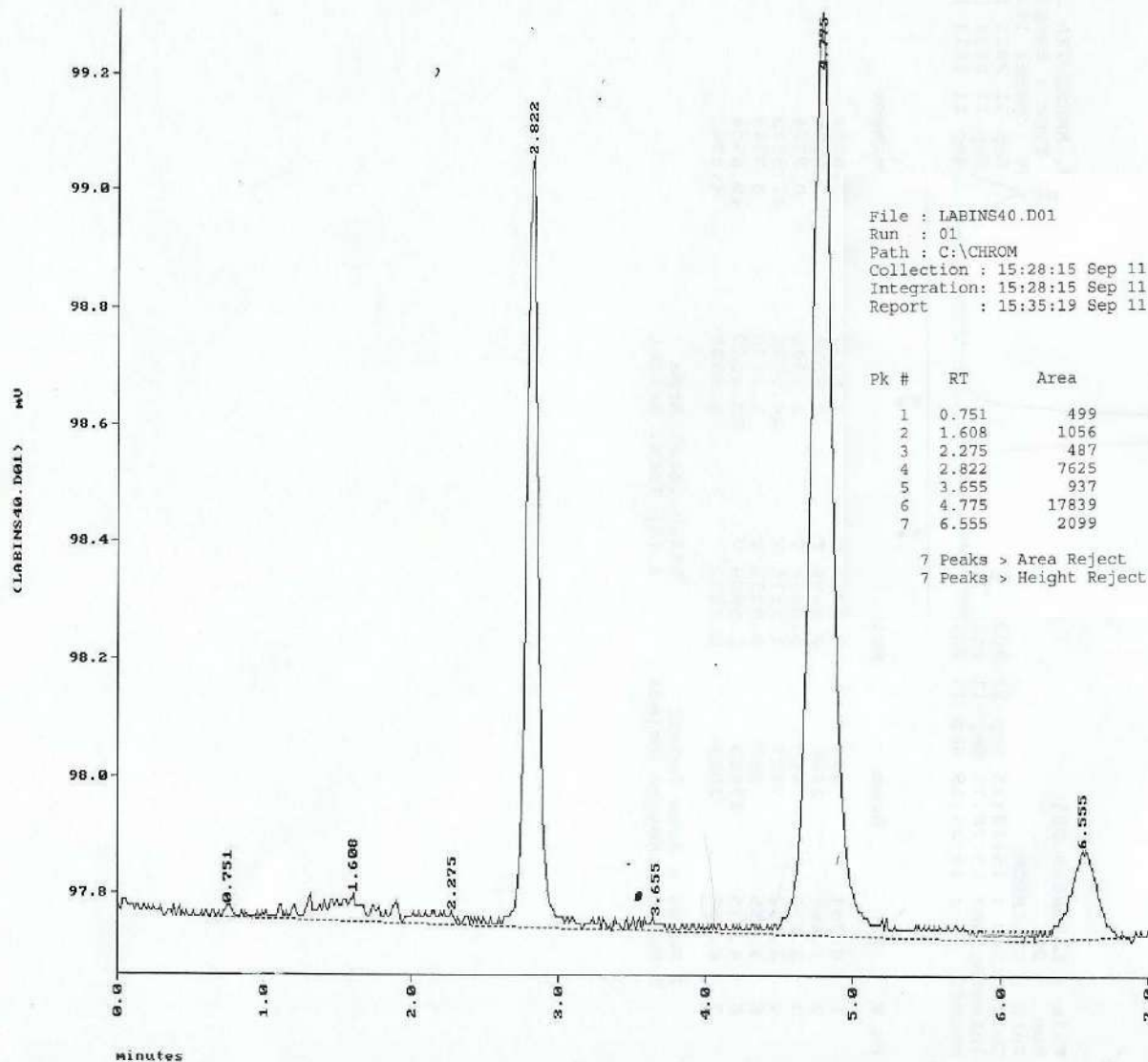
1 mL/min 7 minutos

A continuación encontrarás cinco cromatogramas de cafeína que fueron obtenidos bajo las mismas características que en la primera parte, modificando solamente el flujo a 1 mL/min.

(a) ¿Te queda claro porque la elución se hizo a 7 minutos?

(b) Anota en tus observaciones todas las diferencias que notes en ellos respecto a los de la primera parte.

File : LABINS40.D01 cafeina 50 ppm
 Run : 01
 Collection : 15:28:15 Sep 11 2013 Method : QUI352 F. AMEZQUITA L.
 Type : Sample
 [15:09:56 Sep 11 2013]



File : LABINS40.D01 cafeina 50 ppm F. AMEZQUITA L.
 Run : 01 Type : Sample
 Path : C:\CHROM Inst : Model 1020
 Collection : 15:28:15 Sep 11 2013 Meth(A): QUI352 [15:09:56 Sep 11 2013]
 Integration: 15:28:15 Sep 11 2013 Meth(A): QUI352 [15:09:56 Sep 11 2013]
 Report : 15:35:19 Sep 11 2013 Meth(A): QUI352 [15:09:56 Sep 11 2013]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.751	499	0.0221	T	1.6337	0.6958
2	1.608	1056	0.0484	T	3.4574	1.5280
3	2.275	487	0.0234	T	1.5945	0.7386
4	2.822	7625	1.3175	V	24.9671	41.5513
5	3.655	937	0.0233	T	3.0678	0.7349
6	4.775	17839	1.5808	V	58.4057	49.8554
7	6.555	2099	0.1552		6.8739	4.8962

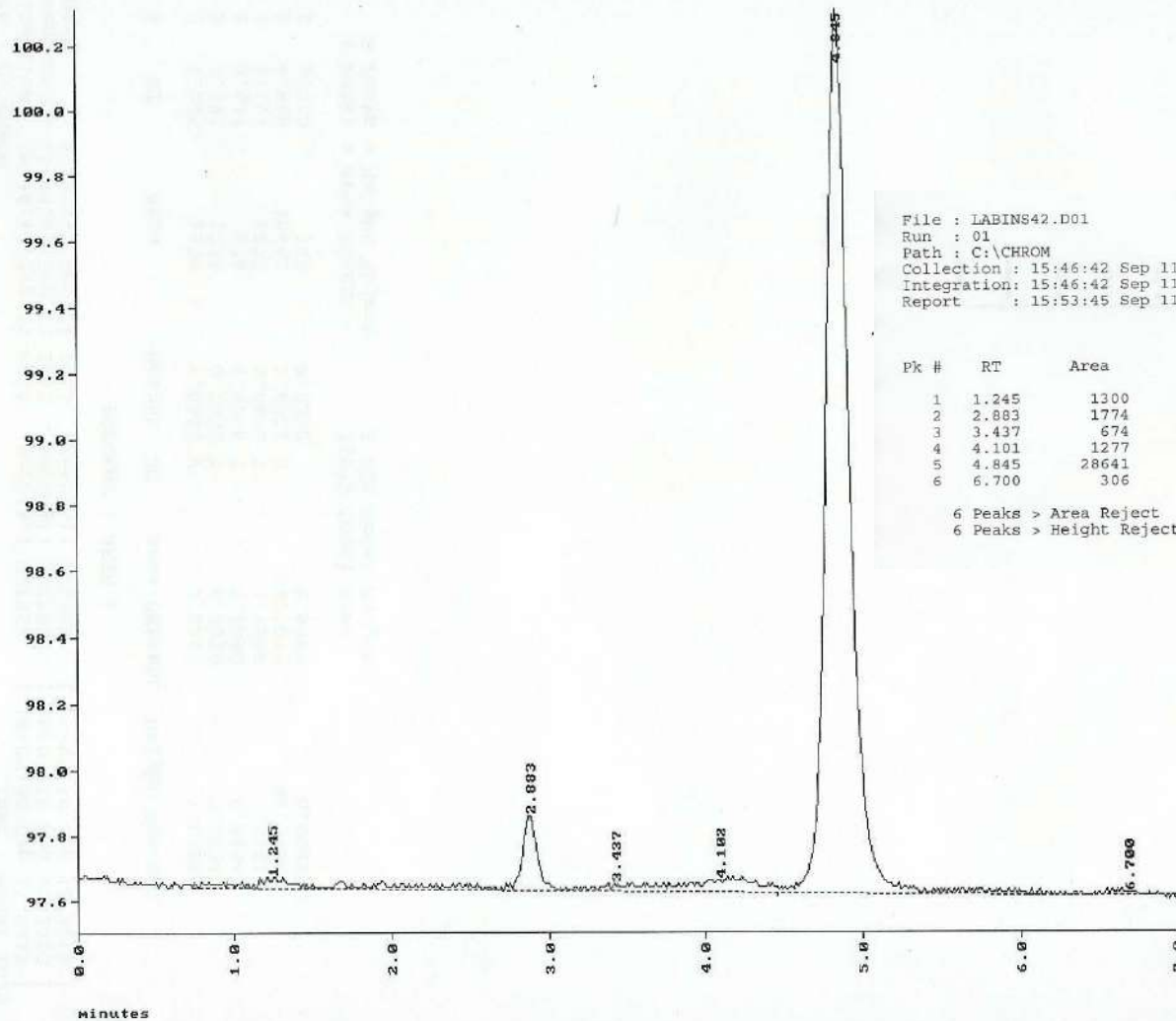
7 Peaks > Area Reject 30543 Total Area
 7 Peaks > Height Reject 3.171 Total Height

File : LABINS42.D01
 Run : 01
 Collection : 15:09:56 Sep 11 2013

cafeina 100 ppm
 Method : QUI352

F. AMEZQUITA L.
 Type : Sample
 Inst : Model 1020

(LABINS42.D01)



File : LABINS42.D01
 Run : 01
 Path : C:\CHROM
 Collection : 15:46:42 Sep 11 2013
 Integration: 15:46:42 Sep 11 2013
 Report : 15:53:45 Sep 11 2013

cafeina 100 ppm

F. AMEZQUITA L.
 Type : Sample
 Inst : Model 1020

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	1.245	1300	0.0333	V	3.8267	1.0896
2	2.883	1774	0.2330	T	5.2219	7.6274
3	3.437	674	0.0258	T	1.9840	0.8454
4	4.101	1277	0.0492	T	3.7590	1.6121
5	4.845	28641	2.6931	V	84.3077	88.1708
6	6.700	306	0.0200		0.9007	0.6548

6 Peaks > Area Reject
 6 Peaks > Height Reject

33972 Total Area
 3.054 Total Height

File : LABINS43.D01

cafeina 200 ppm

F. AMEZQUITA L.

Run : 01

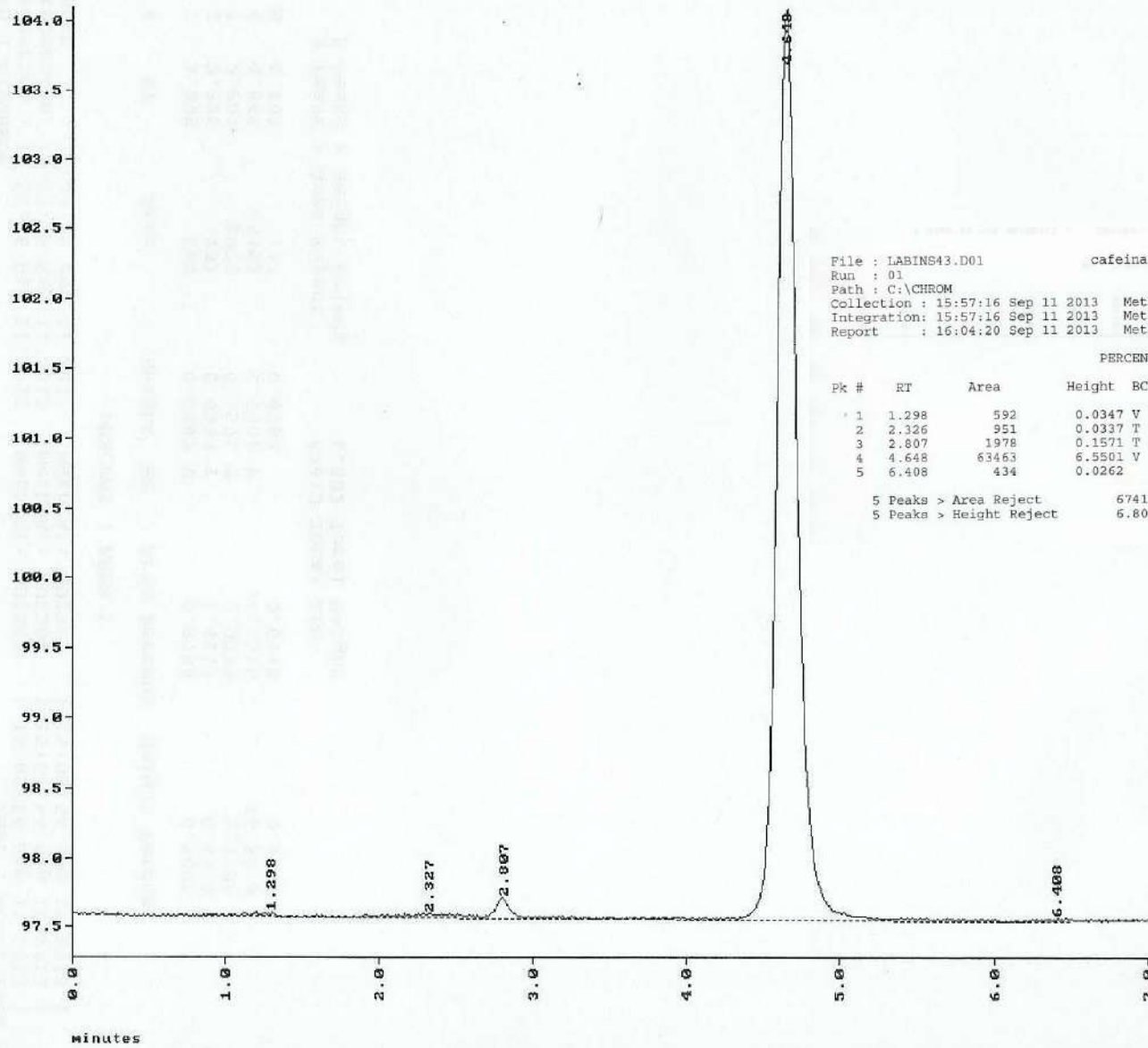
Collection : 15:57:16 Sep 11 2013

Type : Sample

Method : QUI352

[15:09:56 Sep 11 2013]

(LABINS43.D01) mU



File : LABINS43.D01 cafeina 200 ppm F. AMEZQUITA L.
Run : 01 Type : Sample
Path : C:\CHROM Inst : Model 1020
Collection : 15:57:16 Sep 11 2013 Meth(A): QUI352 [15:09:56 Sep 11 2013]
Integration: 15:57:16 Sep 11 2013 Meth(A): QUI352 [15:09:56 Sep 11 2013]
Report : 16:04:20 Sep 11 2013 Meth(A): QUI352 [15:09:56 Sep 11 2013]

PERCENT (AREA)

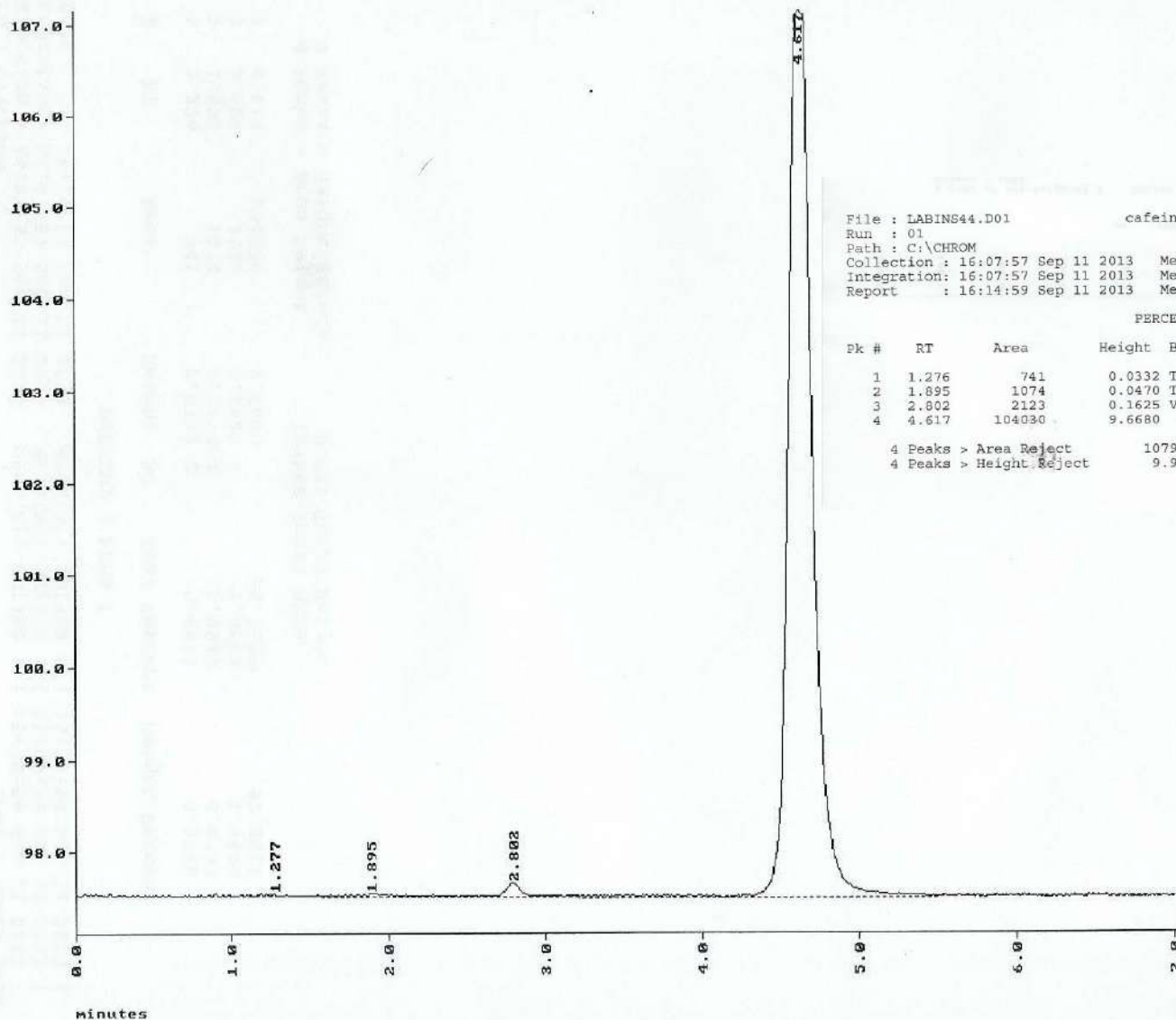
Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	1.298	592	0.0347	V	0.8788	0.5095
2	2.326	951	0.0337	T	1.4113	0.4953
3	2.807	1978	0.1571	T	2.9339	2.3096
4	4.648	63463	6.5501	V	94.1315	96.3009
5	6.408	434	0.0262		0.6445	0.3846

5 Peaks > Area Reject 67419 Total Area
5 Peaks > Height Reject 6.802 Total Height

File : LABINS44.D01
Run : 01
Collection : 16:07:57 Sep 11 2013
Method : QUI352
F. AMEZQUITA L.
Type : Sample
[15:09:56 Sep 11 2013]

cafeina 300ppm

(LABINS44.D01) mV



File : LABINS44.D01
Run : 01
Path : C:\CHROM
Collection : 16:07:57 Sep 11 2013
Integration: 16:07:57 Sep 11 2013
Report : 16:14:59 Sep 11 2013
cafeina 300ppm
Meth(A): QUI352
Meth(A): QUI352
Meth(A): QUI352
F. AMEZQUITA L.
Type : Sample
Inst : Model 1020
[15:09:56 Sep 11 2013]
[15:09:56 Sep 11 2013]
[15:09:56 Sep 11 2013]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	1.276	741	0.0332	T	0.6863	0.3345
2	1.895	1074	0.0470	T	0.9947	0.4738
3	2.802	2123	0.1625	V	1.9663	1.6400
4	4.617	104030	9.6680		96.3526	97.5517

4 Peaks > Area Reject 107968 Total Area
4 Peaks > Height Reject 9.911 Total Height

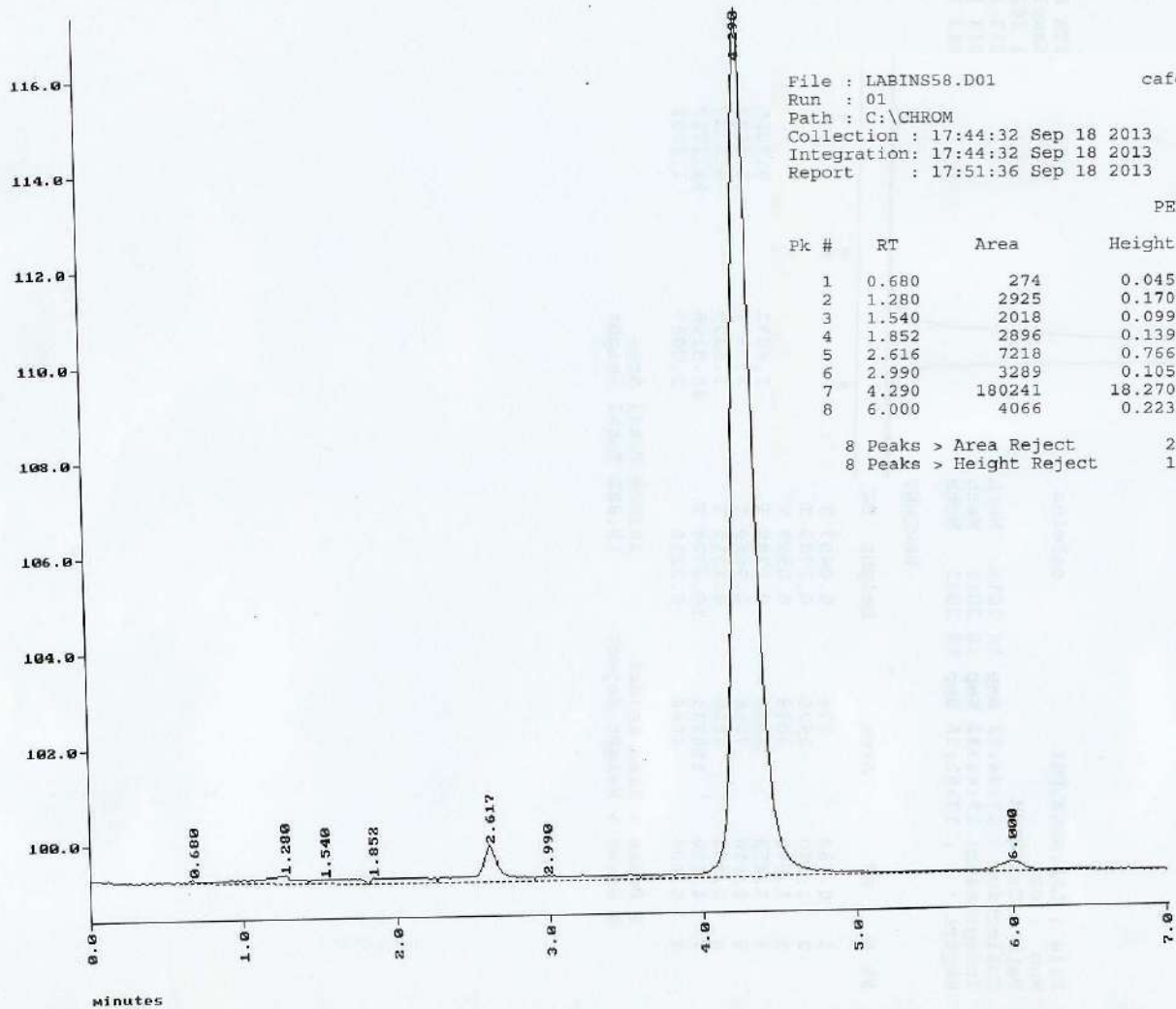
File : LABINS58.D01
Run : 01
Collection : 17:44:32 Sep 18 2013
Method : QUI352
Meth(A): QUI352
Inst : Model 1020

cafeina 500mg/L

F. AMEZQUITA L.
Type : Sample
[16:57:05 Sep 18 2013]

(LABINS58.D01)

mV



File : LABINS58.D01

cafeina 500mg/L

F. AMEZQUITA L.

Run : 01

Type : Sample

Path : C:\CHROM

Inst : Model 1020

Collection : 17:44:32 Sep 18 2013 Meth(A): QUI352 [16:57:05 Sep 18 2013]

Integration: 17:44:32 Sep 18 2013 Meth(A): QUI352 [16:57:05 Sep 18 2013]

Report : 17:51:36 Sep 18 2013 Meth(A): QUI352 [16:57:05 Sep 18 2013]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.680	274	0.0457	T	0.1350	0.2306
2	1.280	2925	0.1703	T	1.4414	0.8593
3	1.540	2018	0.0997	V	0.9948	0.5028
4	1.852	2896	0.1399	T	1.4273	0.7055
5	2.616	7218	0.7669	T	3.5573	3.8689
6	2.990	3289	0.1055	T	1.6209	0.5320
7	4.290	180241	18.2704	T	88.8196	92.1717
8	6.000	4066	0.2238	T	2.0037	1.1292

8 Peaks > Area Reject

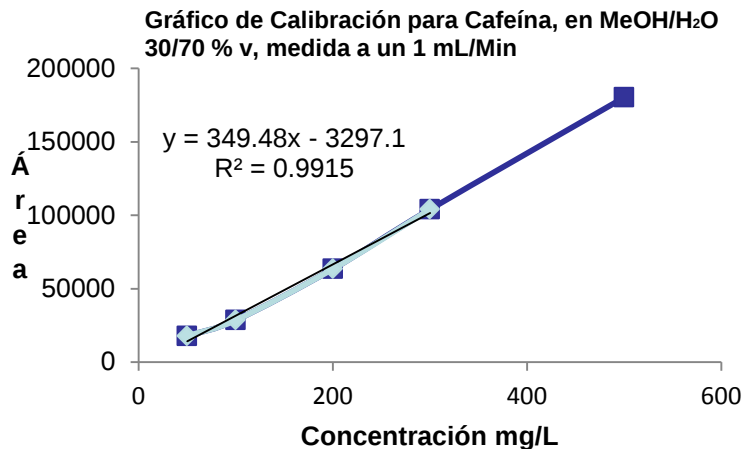
202929 Total Area

8 Peaks > Height Reject

19.822 Total Height

Con los datos de Área y concentración repite la curva de calibración y anota en tus observaciones lo que consideres importante al hacer el análisis de los datos.

mg/L	Área
50	17839
100	28641
200	63463
300	104030
500	180241



Ahora obtén el cromatograma a las mismas condiciones de velocidad de flujo para los medicamentos:

Andox plus a 7 min

Sacidol a 7 min

Empirina a 7 min

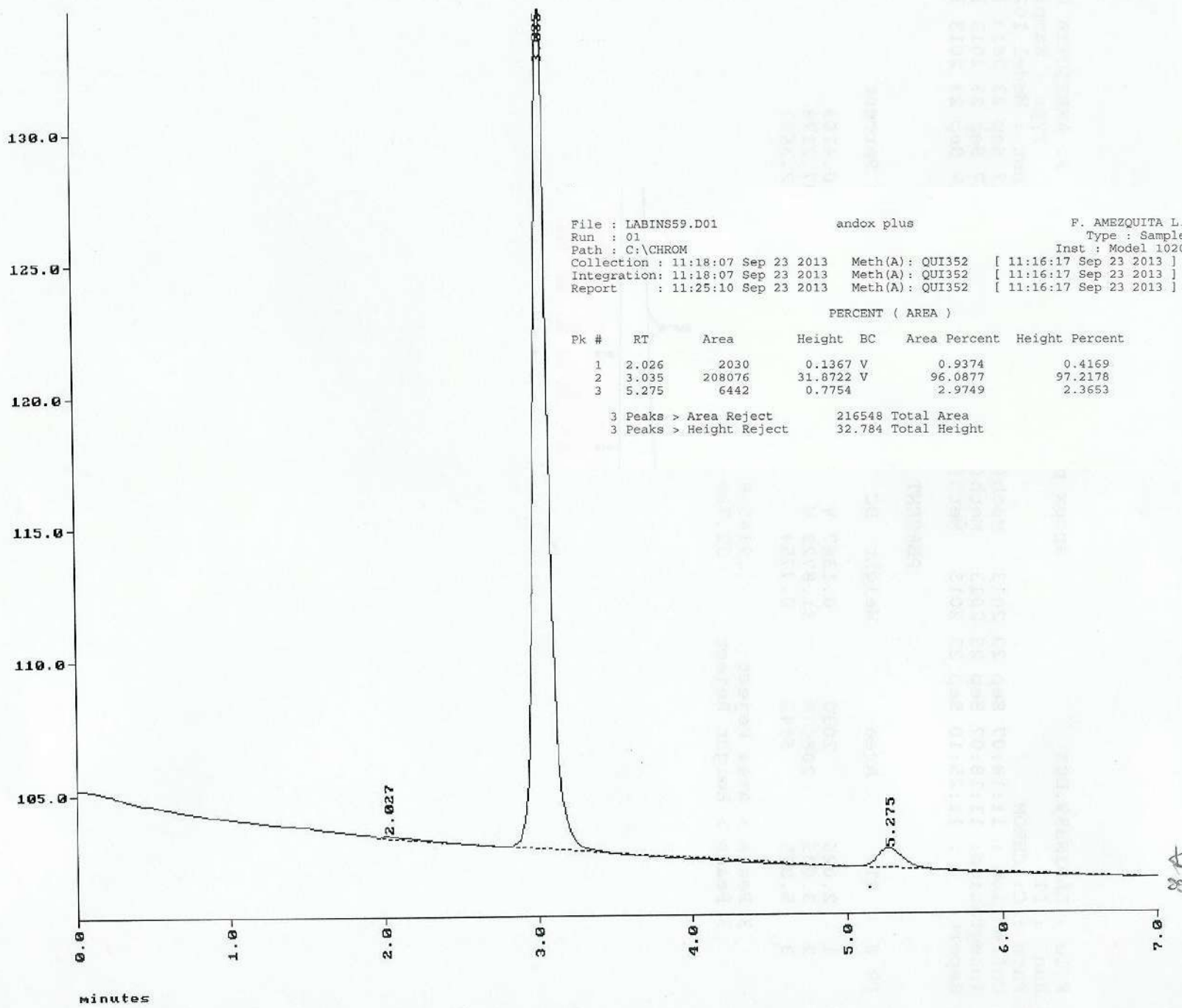
Nordinet a 15 min

Sigue el orden propuesto. Sabiendo la formulación haz la identificación de cada constituyente en el cromatograma, el cálculo de la cafeína en cada uno y anota tus conclusiones en el manual.

¡Esperamos que hayas disfrutado la práctica!

File : LABINS59.D01
 Run : 01
 Collection : 11:18:07 Sep 23 2013
 Method : QUI352
 andox plus
 F. AMEZQUITA L.
 Type : Sample
 11:16:17 Sep 23 2013

(LABINS59.D01) mU



File : LABINS59.D01
 Run : 01
 Path : C:\CHROM
 Collection : 11:18:07 Sep 23 2013
 Integration: 11:18:07 Sep 23 2013
 Report : 11:25:10 Sep 23 2013
 andox plus
 F. AMEZQUITA L.
 Type : Sample
 Inst : Model 1020
 Meth(A): QUI352 [11:16:17 Sep 23 2013]
 Meth(A): QUI352 [11:16:17 Sep 23 2013]
 Meth(A): QUI352 [11:16:17 Sep 23 2013]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	2.026	2030	0.1367	V	0.9374	0.4169
2	3.035	208076	31.8722	V	96.0877	97.2178
3	5.275	6442	0.7754		2.9749	2.3653

3 Peaks > Area Reject 216548 Total Area
 3 Peaks > Height Reject 32.784 Total Height

88A

File : LABINS64.D01

Run : 01

Collection : 12:24:33 Sep 23 2013

sacidol

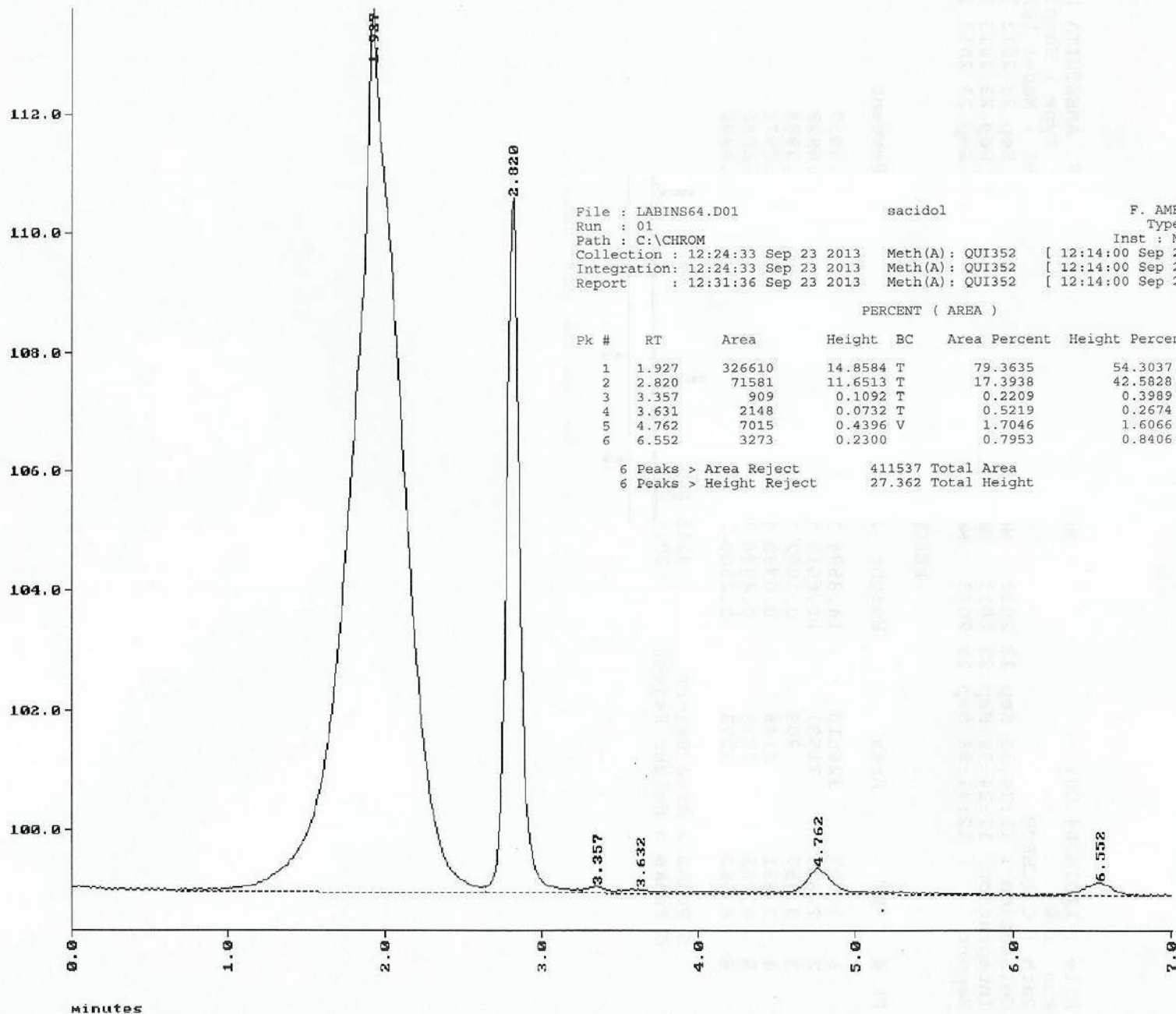
Method : QUI352

F. AMEZQUITA L.

Type : Sample

[12:14:00 Sep 23 2013]

(LABINS64.D01) MU



File : LABINS64.D01

Run : 01

Path : C:\CHROM

Collection : 12:24:33 Sep 23 2013 Meth(A) : QUI352

Integration : 12:24:33 Sep 23 2013 Meth(A) : QUI352

Report : 12:31:36 Sep 23 2013 Meth(A) : QUI352

sacidol

F. AMEZQUITA L.

Type : Sample

Inst : Model 1020

[12:14:00 Sep 23 2013]

[12:14:00 Sep 23 2013]

[12:14:00 Sep 23 2013]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	1.927	326610	14.8584	T	79.3635	54.3037
2	2.820	71581	11.6513	T	17.3938	42.5828
3	3.357	909	0.1092	T	0.2209	0.3989
4	3.631	2148	0.0732	T	0.5219	0.2674
5	4.762	7015	0.4396	V	1.7046	1.6066
6	6.552	3273	0.2300		0.7953	0.8406

6 Peaks > Area Reject

6 Peaks > Height Reject

411537 Total Area

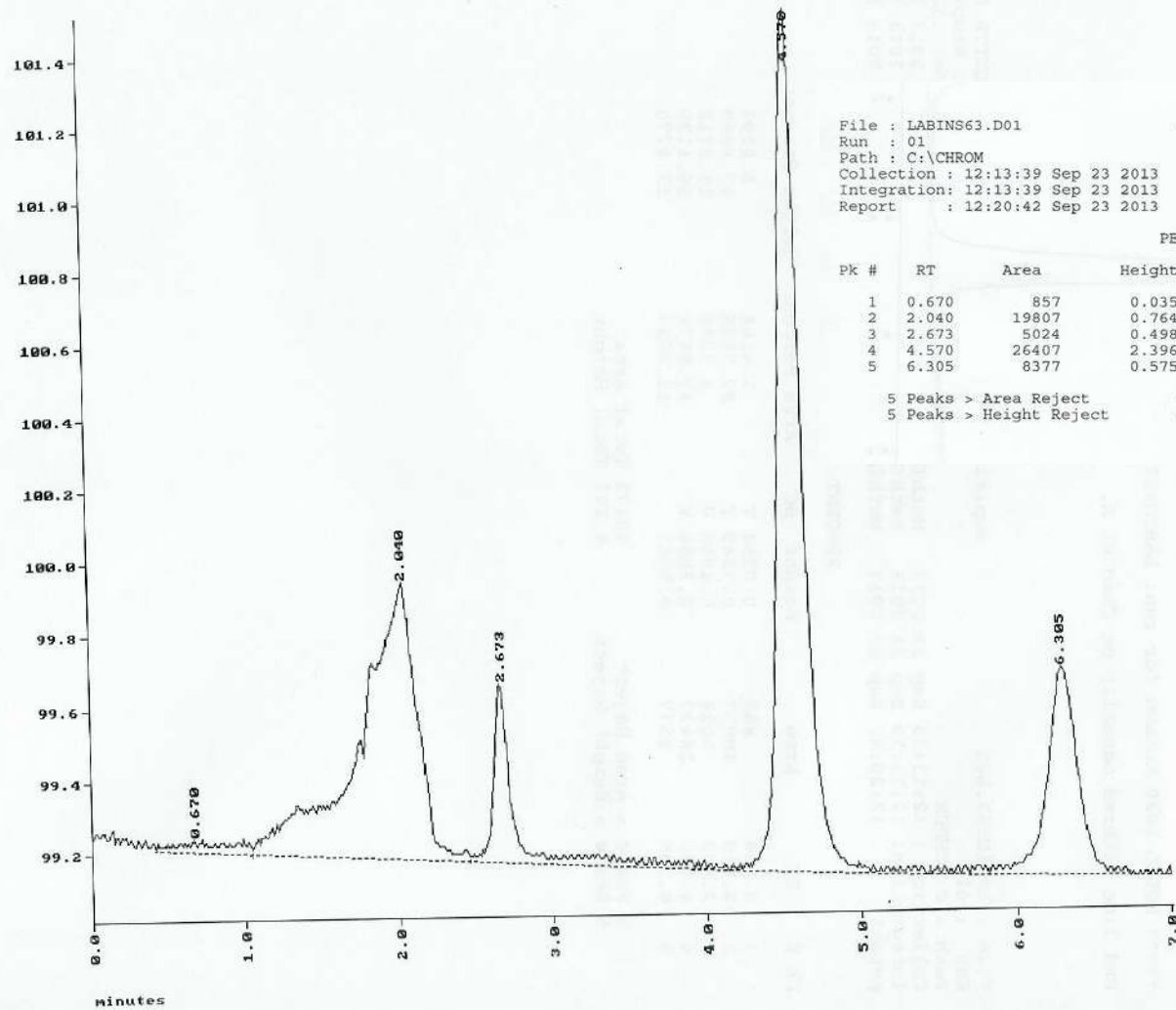
27.362 Total Height

File : LABINS63.D01
Run : 01
Collection : 12:13:39 Sep 23 2013

empirina
Method : QUI352

F. AMEZQUITA L.
Type : Sample
[11:55:22 Sep 23 2013]

(LABINS63.D01) MU



File : LABINS63.D01
Run : 01
Path : C:\CHROM
Collection : 12:13:39 Sep 23 2013
Integration: 12:13:39 Sep 23 2013
Report : 12:20:42 Sep 23 2013

empirina

F. AMEZQUITA L.
Type : Sample
Inst : Model 1020

Meth(A): QUI352 [11:55:22 Sep 23 2013]
Meth(A): QUI352 [11:55:22 Sep 23 2013]
Meth(A): QUI352 [12:14:00 Sep 23 2013]

PERCENT (AREA)

PK #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.670	857	0.0354	T	1.4184	0.8292
2	2.040	19807	0.7649	T	32.7536	17.9080
3	2.673	5024	0.4986	V	8.3079	11.6719
4	4.570	26407	2.3968	V	43.6676	56.1139
5	6.305	8377	0.5757		13.8525	13.4770

5 Peaks > Area Reject 60472 Total Area
5 Peaks > Height Reject 4.271 Total Height

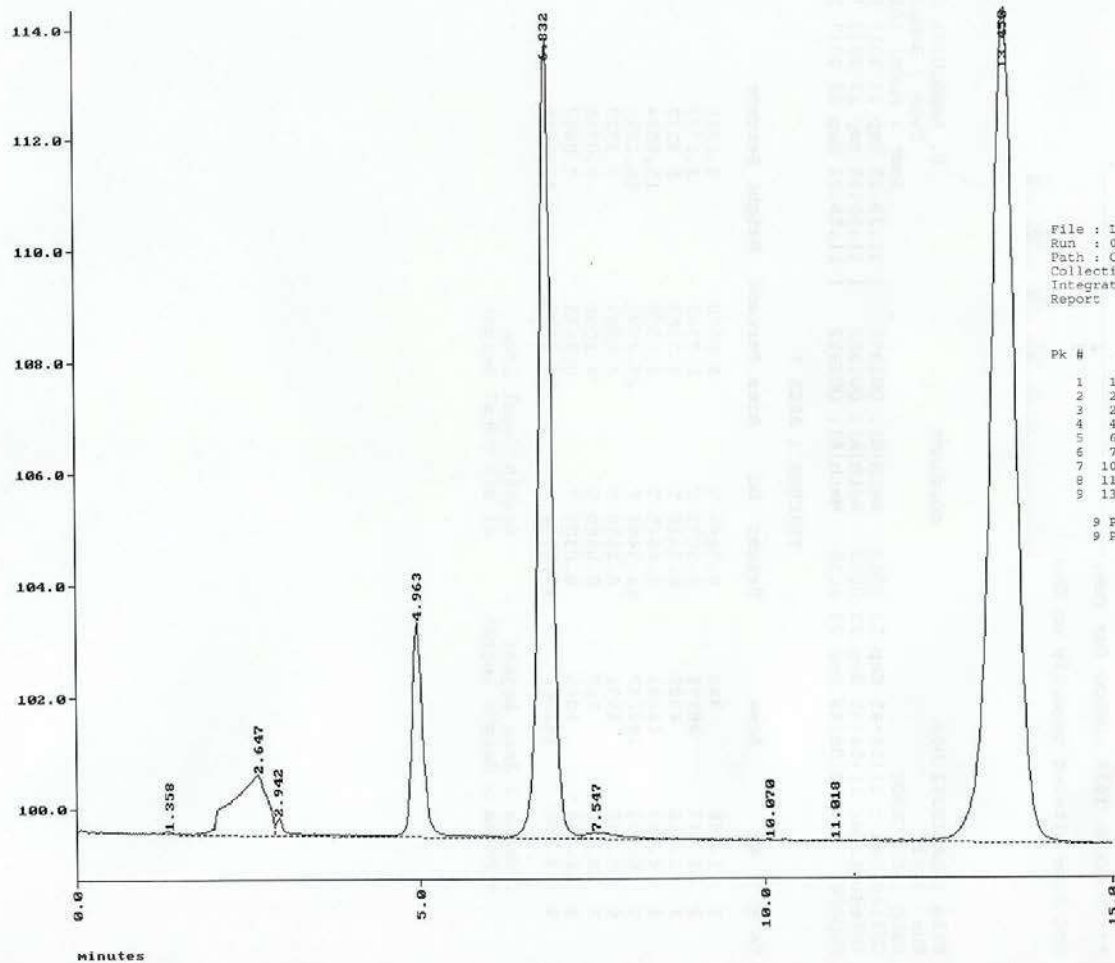
File : LABINS62.D01
Run : 03
Collection : 11:54:45 Sep 23 2013

nordinet

Method : QUI352

F. AMEZQUITA L.
Type : Sample
Collection : 11:39:35 Sep 23 2013

(LABINS62.D01) m0



File : LABINS62.D01
Run : 03
Path : C:\CHROM
Collection : 11:54:45 Sep 23 2013
Integration : 11:54:45 Sep 23 2013
Report : 12:09:49 Sep 23 2013

nordinet

F. AMEZQUITA L.
Type : Sample
Inst : Model 1020
Meth(A) : QUI352 [11:39:35 Sep 23 2013]
Meth(A) : QUI352 [11:39:35 Sep 23 2013]
Meth(A) : QUI352 [11:55:22 Sep 23 2013]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	1.358	380	0.0448	V	0.0570	0.1285
2	2.647	38178	1.1079	T	5.7302	3.1757
3	2.942	4905	0.3235	T	0.7362	0.9272
4	4.963	43684	3.8615	T	6.5566	11.0684
5	6.832	189267	14.3466	T	28.4072	41.1227
6	7.546	5984	0.1300	V	0.8981	0.3727
7	10.070	709	0.0260	T	0.1065	0.0745
8	11.018	1095	0.0302	T	0.1643	0.0867
9	13.450	382062	15.0168		57.3438	43.0436

9 Peaks > Area Reject 666265 Total Area
9 Peaks > Height Reject 34.887 Total Height