

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

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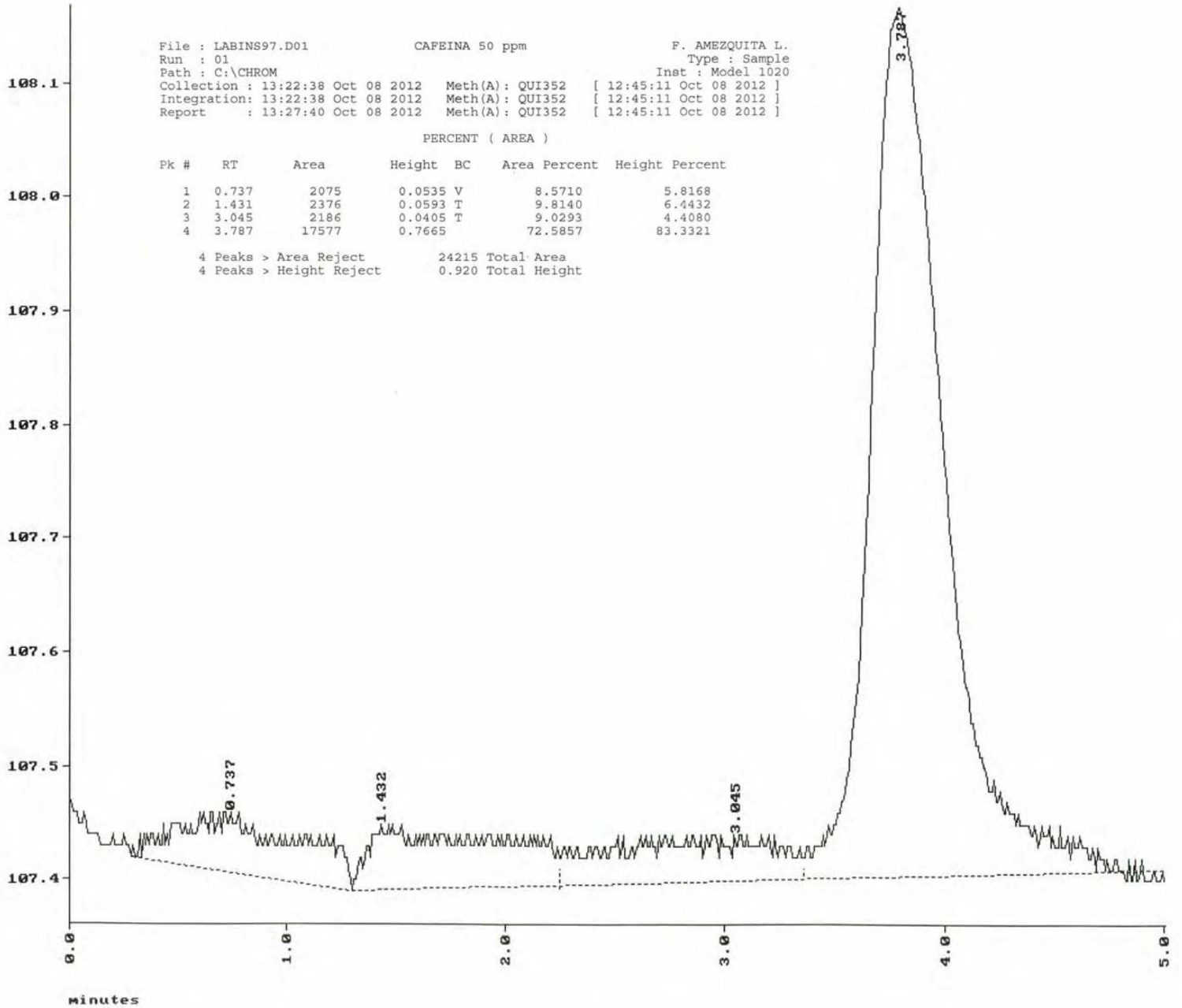
Primera parte

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.

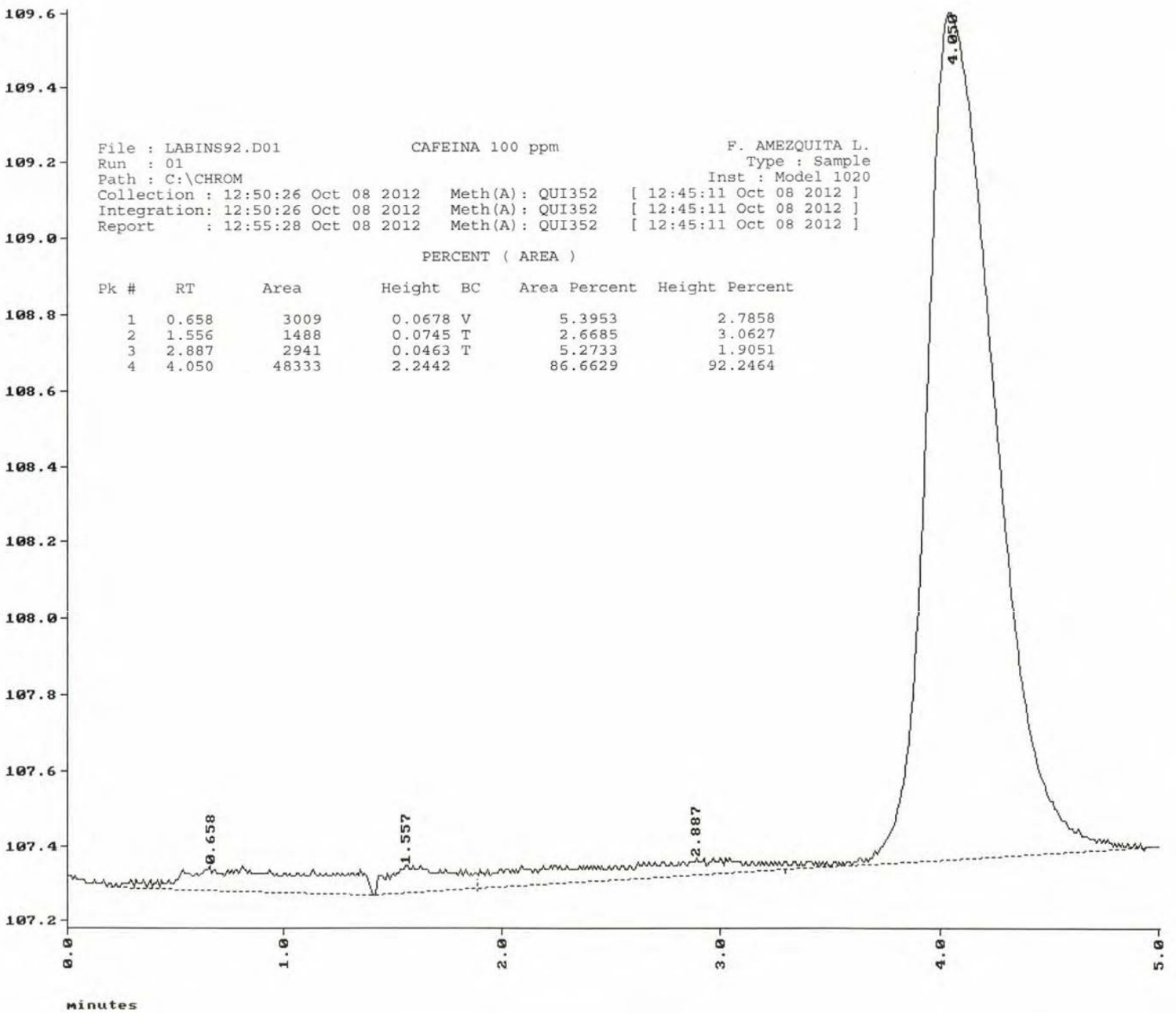
File : LABINS97.D01 CAFEINA 50 ppm F. AMEZQUITA L.
 Run : 01 Type : Sample
 Collection : 13:22:38 Oct 08 2012 Method : QUI352 [12:45:11 Oct 08 2012]

(LABINS97.D01) MU



File : LABINS92.D01
 Run : 01
 Collection : 12:50:26 Oct 08 2012
 Method : QUI352
 CAFEINA 100 ppm
 F. AMEZQUITA L.
 Type : Sample
 [12:45:11 Oct 08 2012]

(LABINS92.D01) MU



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
 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)

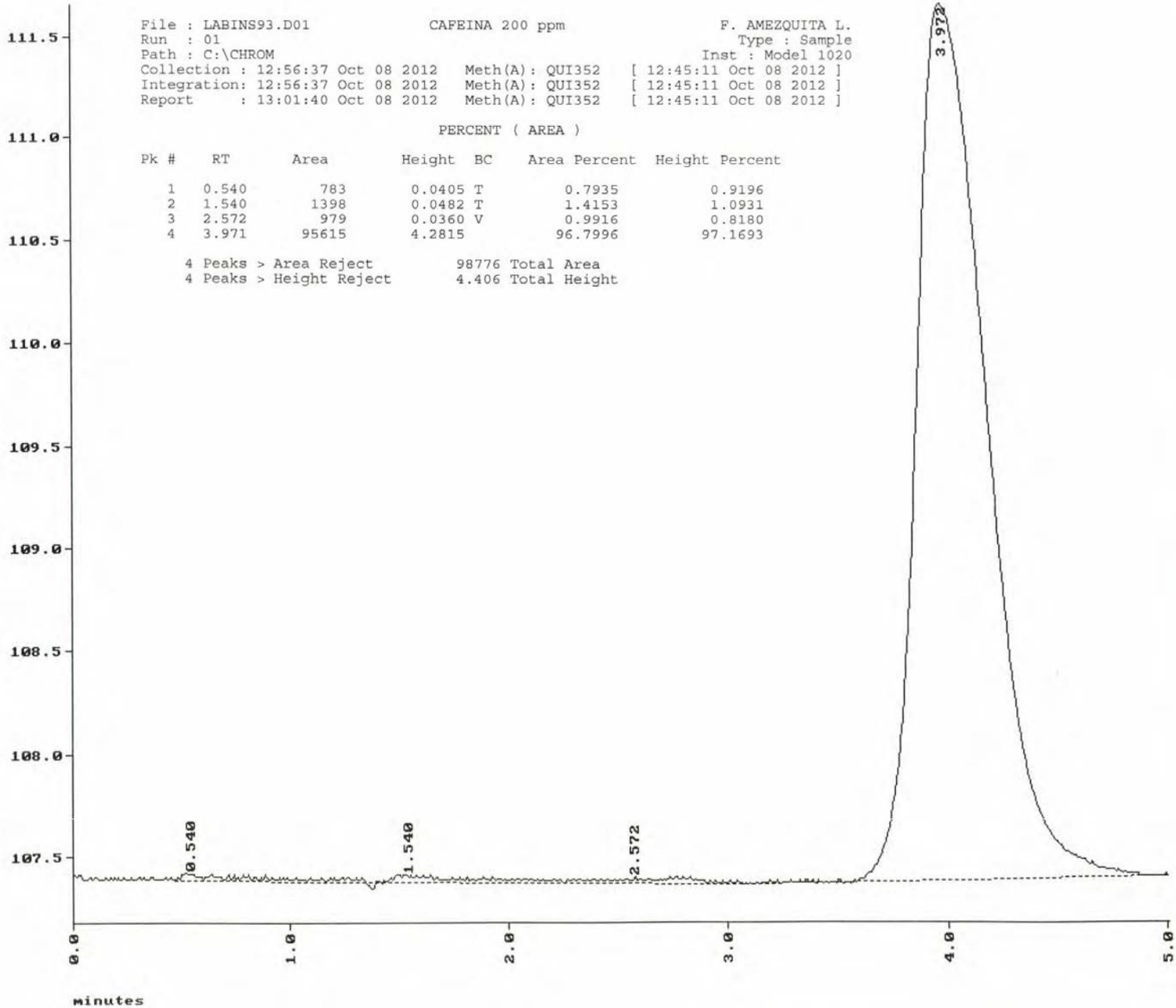
Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.658	3009	0.0678	V	5.3953	2.7858
2	1.556	1488	0.0745	T	2.6685	3.0627
3	2.887	2941	0.0463	T	5.2733	1.9051
4	4.050	48333	2.2442		86.6629	92.2464

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

CAFEINA 200 ppm
Method : QUI352

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

(LABINS93.D01) MU



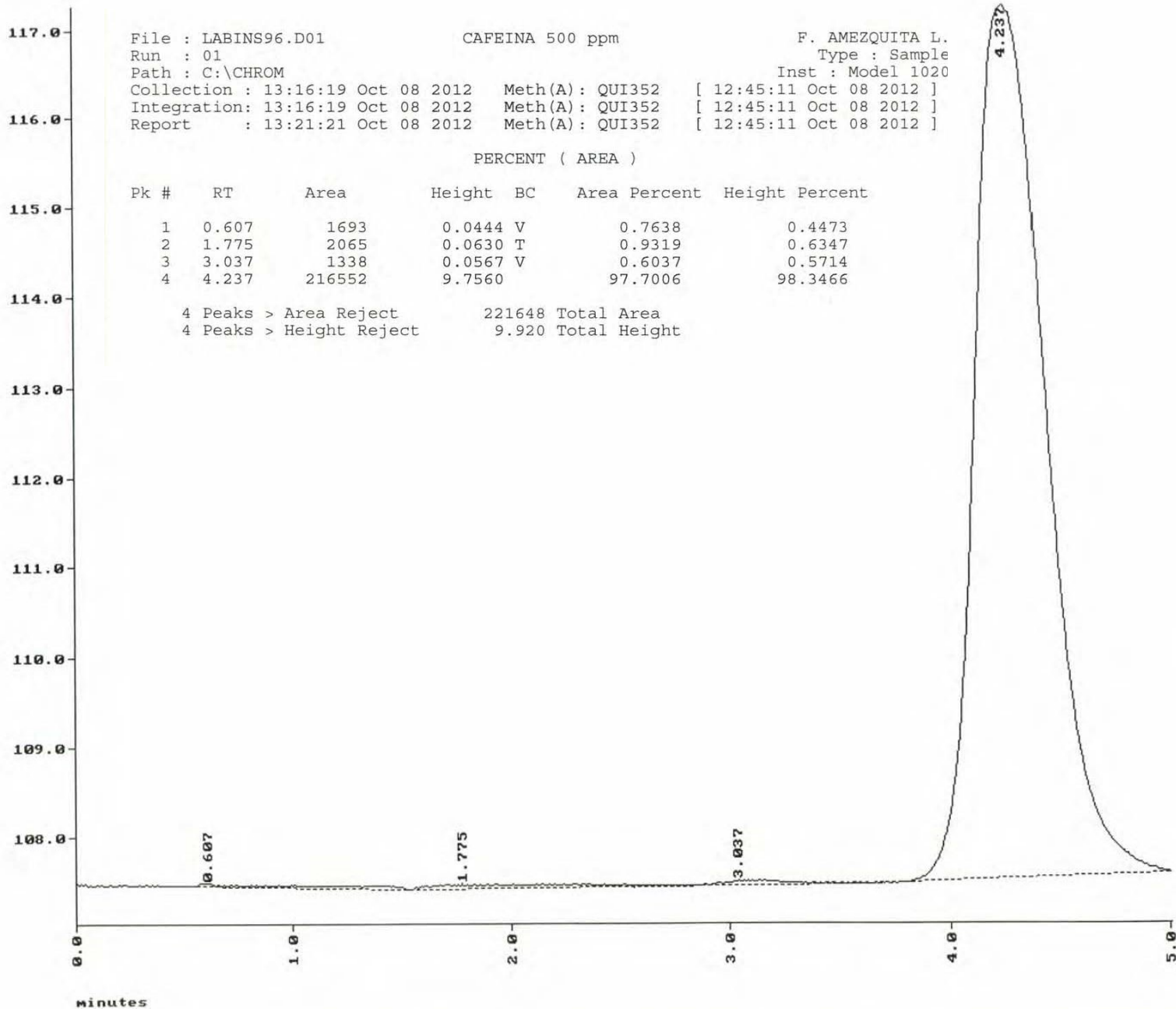
- Después de haber revisado los tres cromatogramas anteriores, es posible que ya puedas decir cual el tiempo de retención de la cafeína.
- ¿Cuál es?
- Recuerda que ese valor es una constante, atendiendo a la fase móvil, tipo de columna y la velocidad de flujo.
- Revisa bien los cromatogramas. Observa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

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

CAFEINA 500 ppm
Method : QUI352

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

(LABINS96.D01) MU



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)

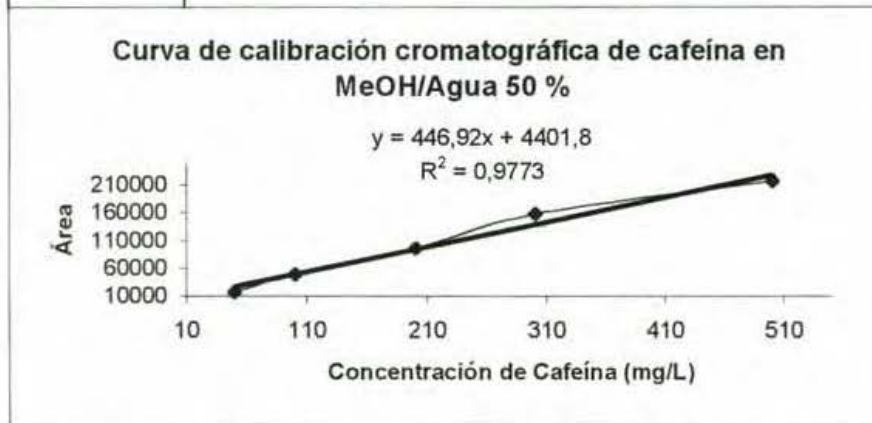
Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.607	1693	0.0444	V	0.7638	0.4473
2	1.775	2065	0.0630	T	0.9319	0.6347
3	3.037	1338	0.0567	V	0.6037	0.5714
4	4.237	216552	9.7560		97.7006	98.3466

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

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

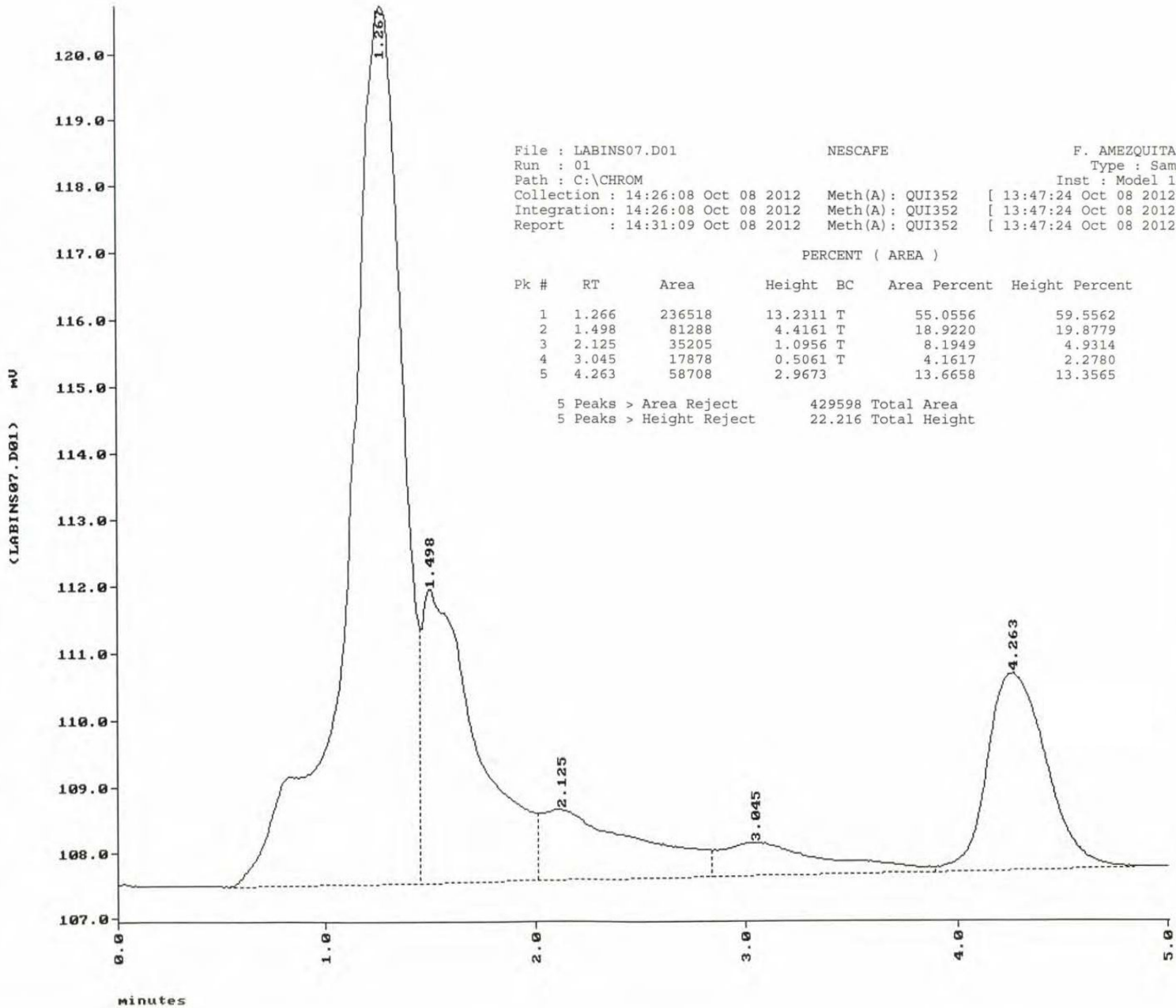


mg/L	Area
50	17577
100	48333
200	95615
300	157890
500	216552

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
 Method : QUI352
 NESCAFE
 F. AMEZQUITA L.
 Type : Sample
 [13:47:24 Oct 08 2012]



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
 NESCAFE
 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]

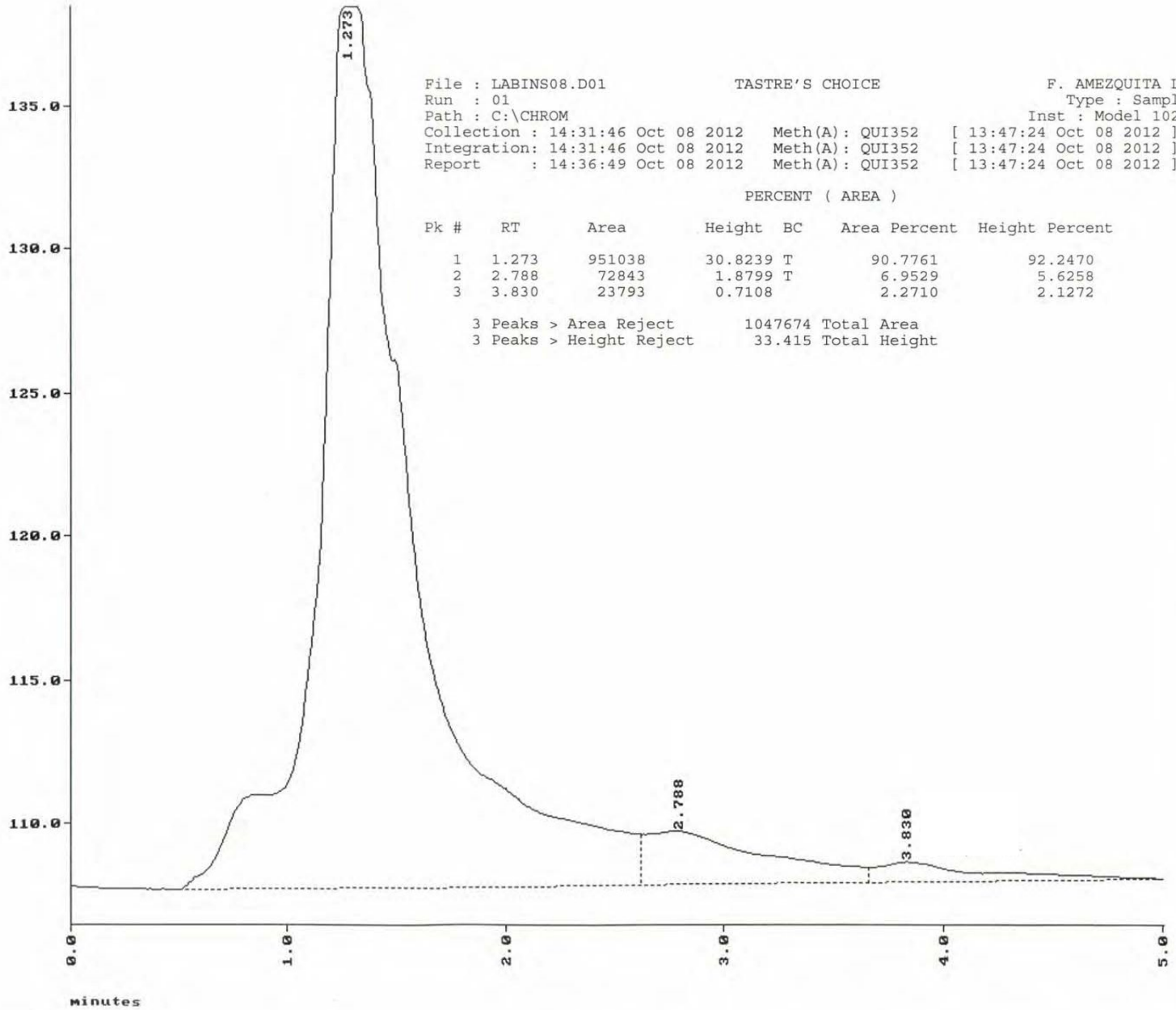
PERCENT (AREA)

PK #	RT	Area	Height	BC	Area Percent	Height Percent
1	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
 5 Peaks > Height Reject
 429598 Total Area
 22.216 Total Height

File : LABINS08.D01
 Run : 01
 Collection : 14:31:46 Oct 08 2012
 Method : QUI352
 TASTRE'S CHOICE
 F. AMEZQUITA L.
 Type : Sample
 I 13:47:24 Oct 08 2012]

(LABINS08.D01) mU



- 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:

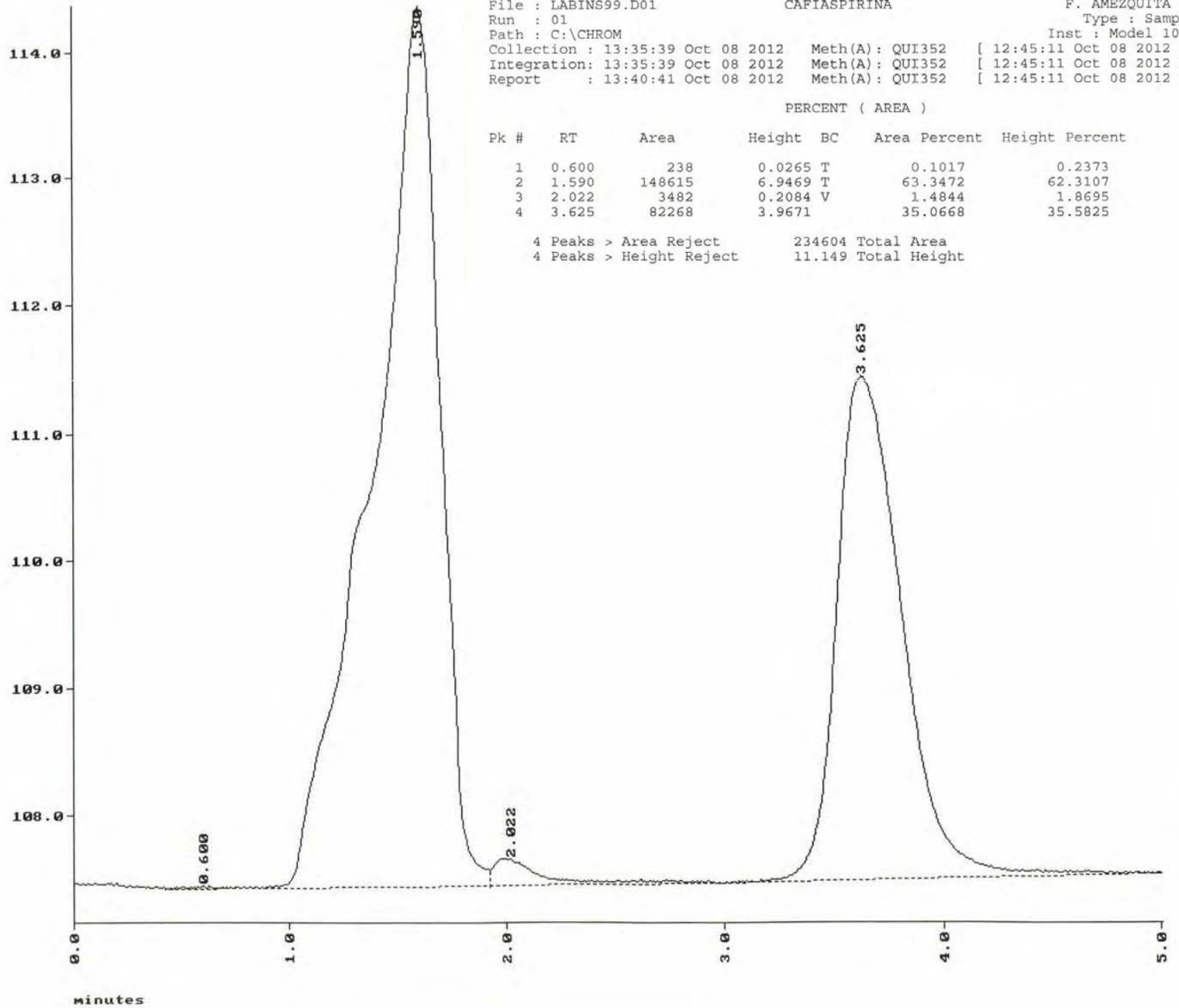
- Ahora se presentan los cromatogramas de los siguientes medicamentos:
- Cafiaspirina
- Empirina
- Sedalmerck
- Andox plus
- Sacidol
- Nordinet

File : LABINS99.D01
Run : 01
Collection : 13:35:39 Oct 08 2012 Method : QUI352 [12:45:11 Oct 08 2012]

CAFIASPIRINA

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

(LABINS99.D01) mU



File : LABINS99.D01
Run : 01
Path : C:\CHROM
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

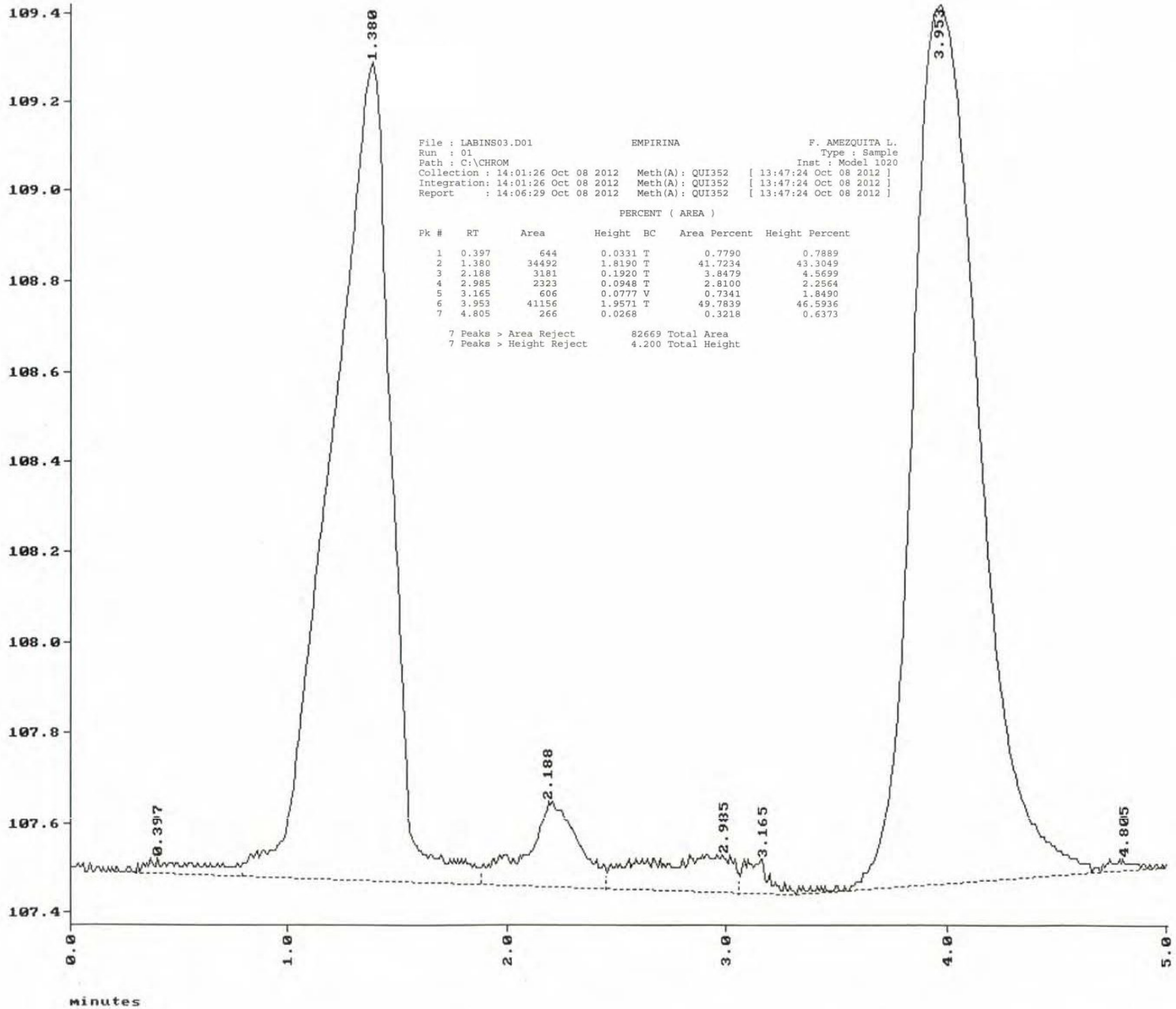
4 Peaks > Area Reject 234604 Total Area
4 Peaks > Height Reject 11.149 Total Height

File : LABINS03.D01
 Run : 01
 Collection : 14:01:26 Oct 08 2012 Method : QUI352

EMPIRINA

F. AMEZQUITA L.
 Type : Sample
 I 13:47:24 Oct 08 2012 J

(LABINS03.D01) mU



File : LABINS03.D01
 Run : 01
 Path : C:\CHROM
 Collection : 14:01:26 Oct 08 2012 Meth(A) : QUI352 [13:47:24 Oct 08 2012]
 Integration : 14:01:26 Oct 08 2012 Meth(A) : QUI352 [13:47:24 Oct 08 2012]
 Report : 14:06:29 Oct 08 2012 Meth(A) : QUI352 [13:47:24 Oct 08 2012]

EMPIRINA

F. AMEZQUITA L.
 Type : Sample

Inst : Model 1020

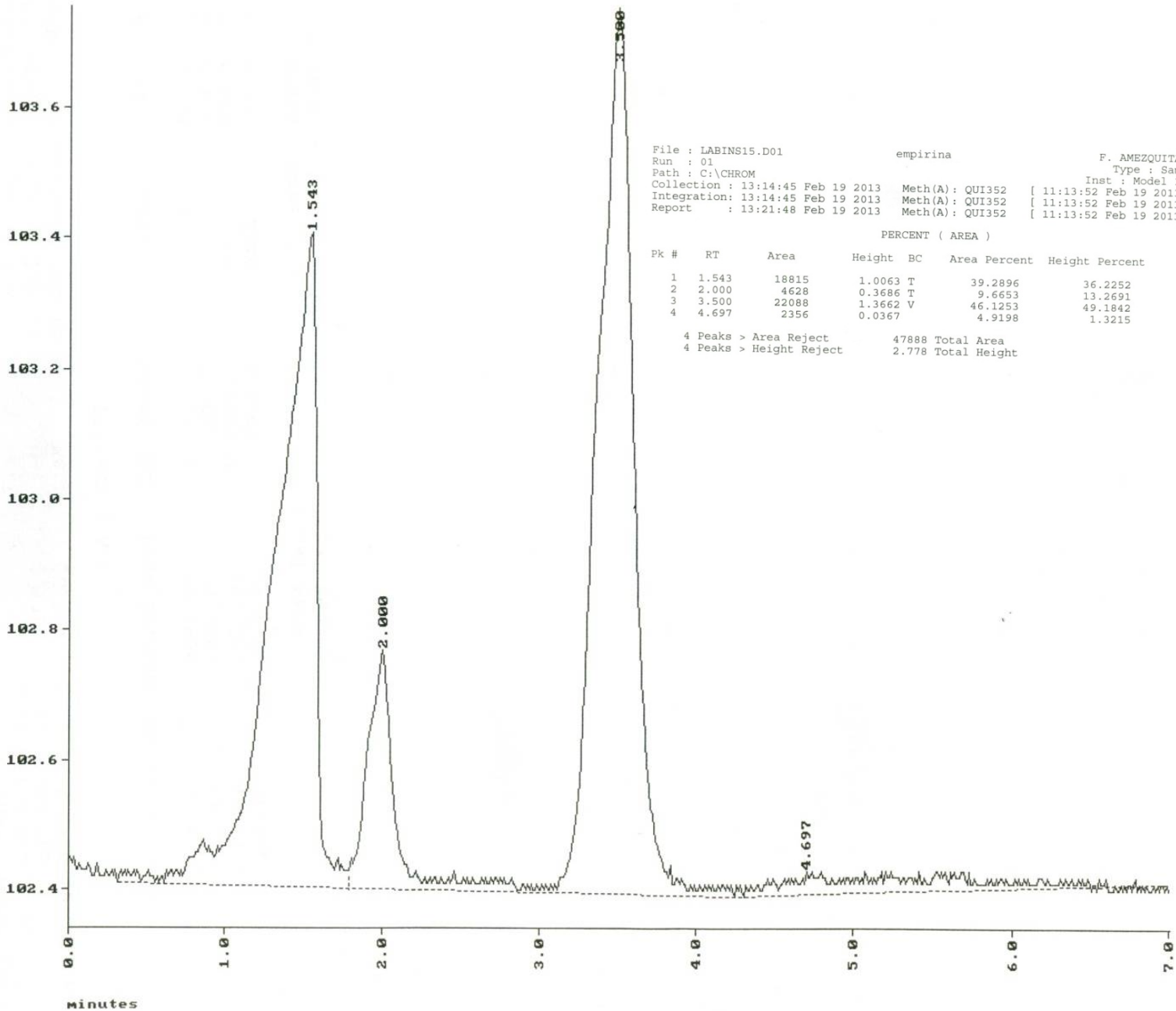
PERCENT (AREA)

PK #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.397	644	0.0331	T	0.7790	0.7889
2	1.380	34492	1.8190	T	41.7234	43.3049
3	2.188	3181	0.1920	T	3.8479	4.5699
4	2.985	2323	0.0948	T	2.8100	2.2564
5	3.165	606	0.0777	V	0.7341	1.8490
6	3.953	41156	1.9571	T	49.7839	46.5936
7	4.805	266	0.0268		0.3218	0.6373

7 Peaks > Area Reject 82669 Total Area
 7 Peaks > Height Reject 4.200 Total Height

File : LABINS15.D01
 Run : 01
 Collection : 13:14:45 Feb 19 2013
 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
 Meth(A) : QUI352 [11:13:52 Feb 19 2013]
 Meth(A) : QUI352 [11:13:52 Feb 19 2013]
 Meth(A) : QUI352 [11:13:52 Feb 19 2013]

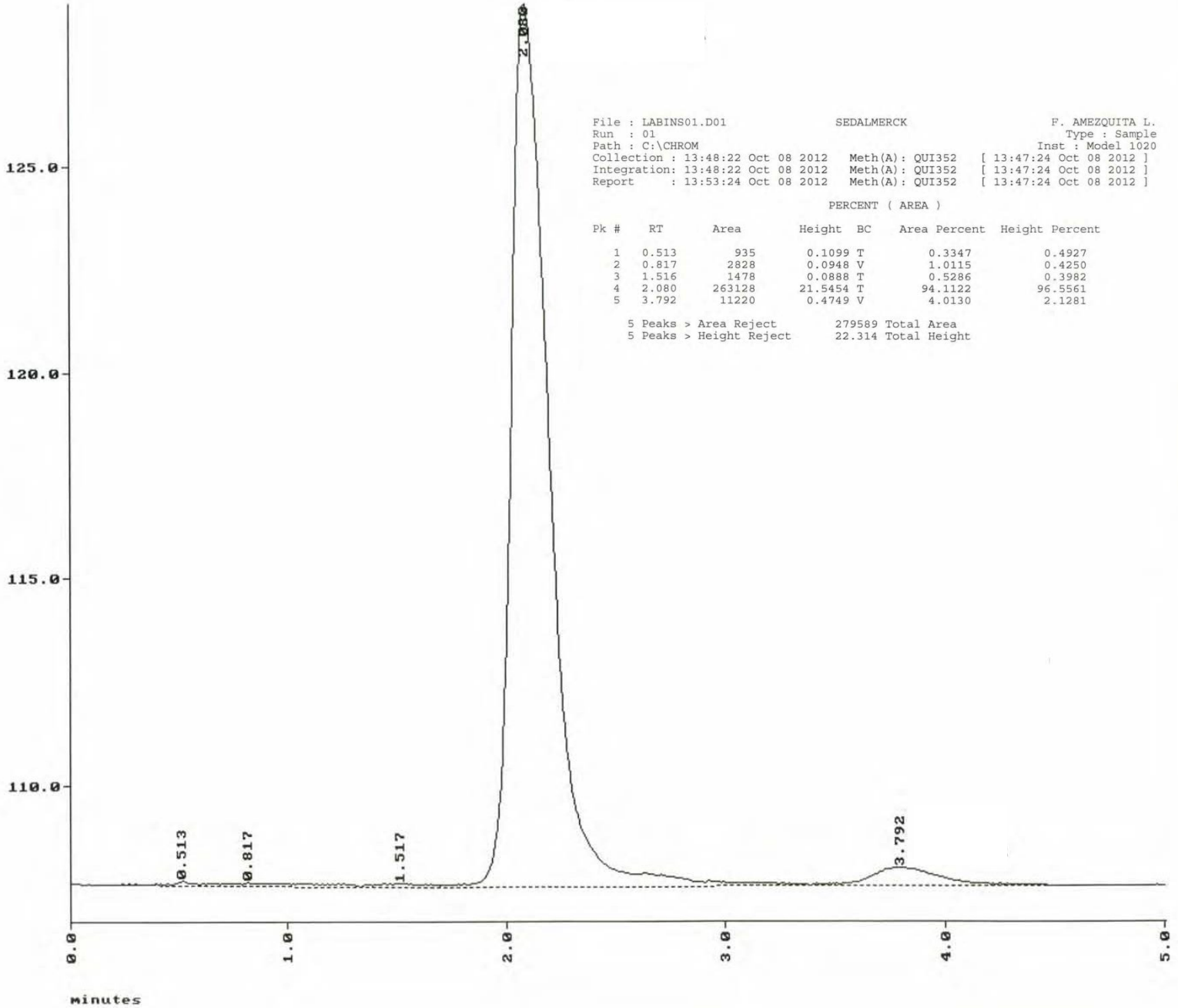
PERCENT (AREA)

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
 Run : 01
 Collection : 13:48:22 Oct 08 2012
 Method : QUI352
 SEDALMERCK
 F. AMEZQUITA L.
 Type : Sample
 I 13:47:24 Oct 08 2012 J

(LABINS01.D01) MU



File : LABINS01.D01
 Run : 01
 Path : C:\CHROM
 Collection : 13:48:22 Oct 08 2012
 Integration : 13:48:22 Oct 08 2012
 Report : 13:53:24 Oct 08 2012
 SEDALMERCK
 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]

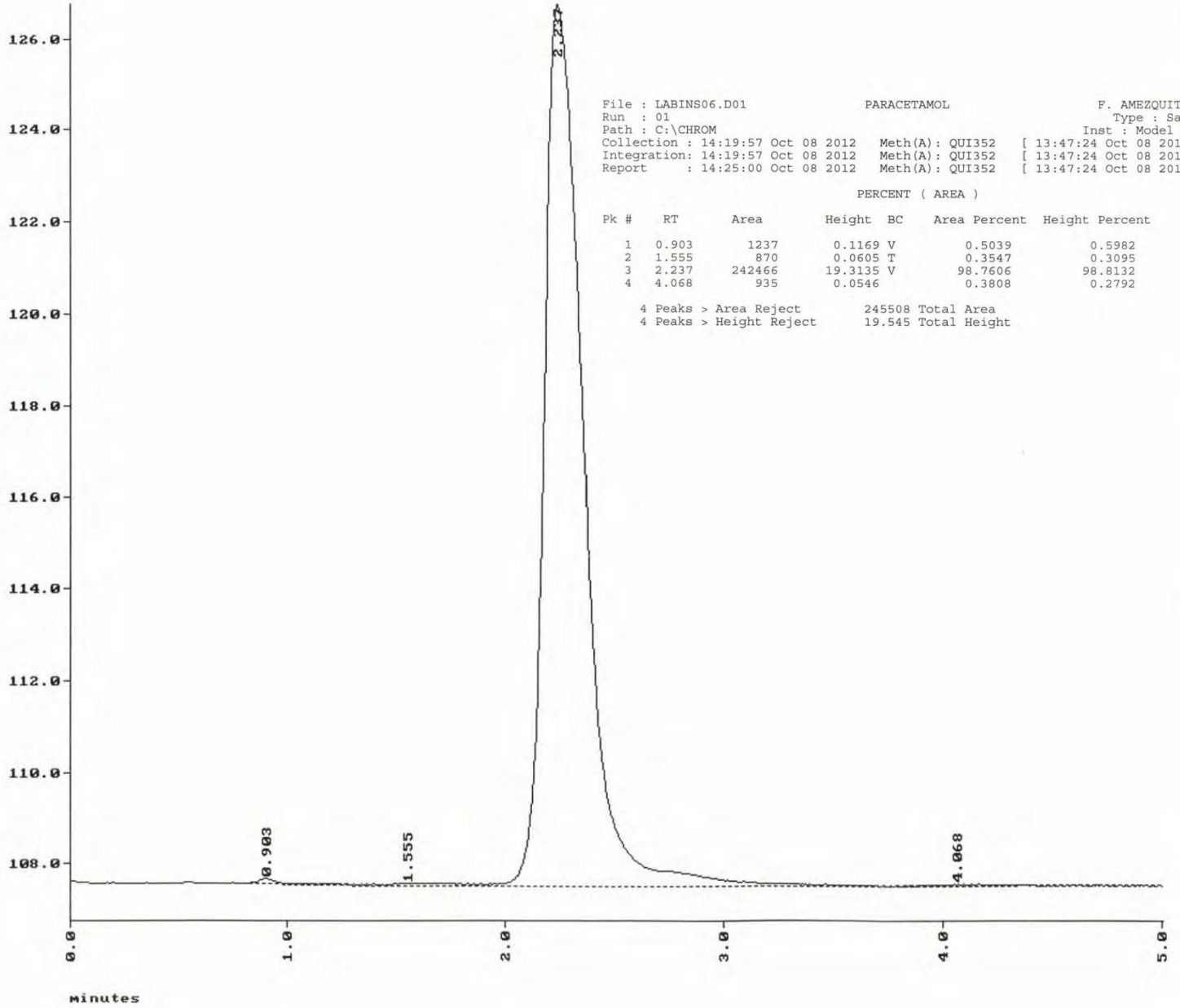
PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.513	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
 Method : QUI352
 PARACETAMOL
 F. AMEZQUITA L.
 Type : Sample
 I 13:47:24 Oct 08 2012]

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

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

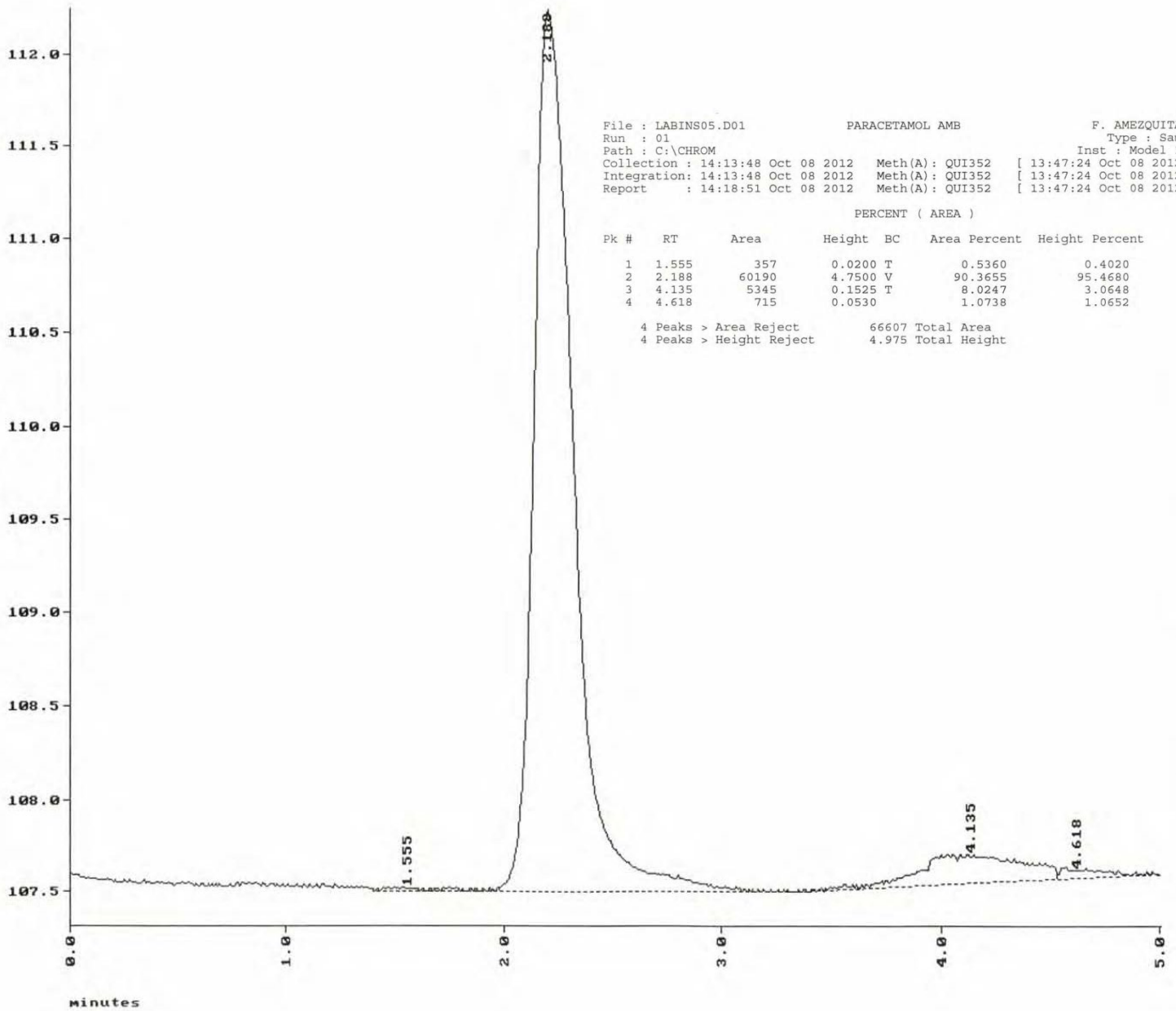
4 Peaks > Area Reject 245508 Total Area
 4 Peaks > Height Reject 19.545 Total Height

File : LABINS05.D01
Run : 01
Collection : 14:13:48 Oct 08 2012 Method : QUI352 [13:47:24 Oct 08 2012]

PARACETAMOL AMB

F. AMEZQUITA L.
Type : Sample

(LABINS05.D01) MU



File : LABINS05.D01
Run : 01
Path : C:\CHROM
Collection : 14:13:48 Oct 08 2012 Meth(A) : QUI352 [13:47:24 Oct 08 2012]
Integration : 14:13:48 Oct 08 2012 Meth(A) : QUI352 [13:47:24 Oct 08 2012]
Report : 14:18:51 Oct 08 2012 Meth(A) : QUI352 [13:47:24 Oct 08 2012]

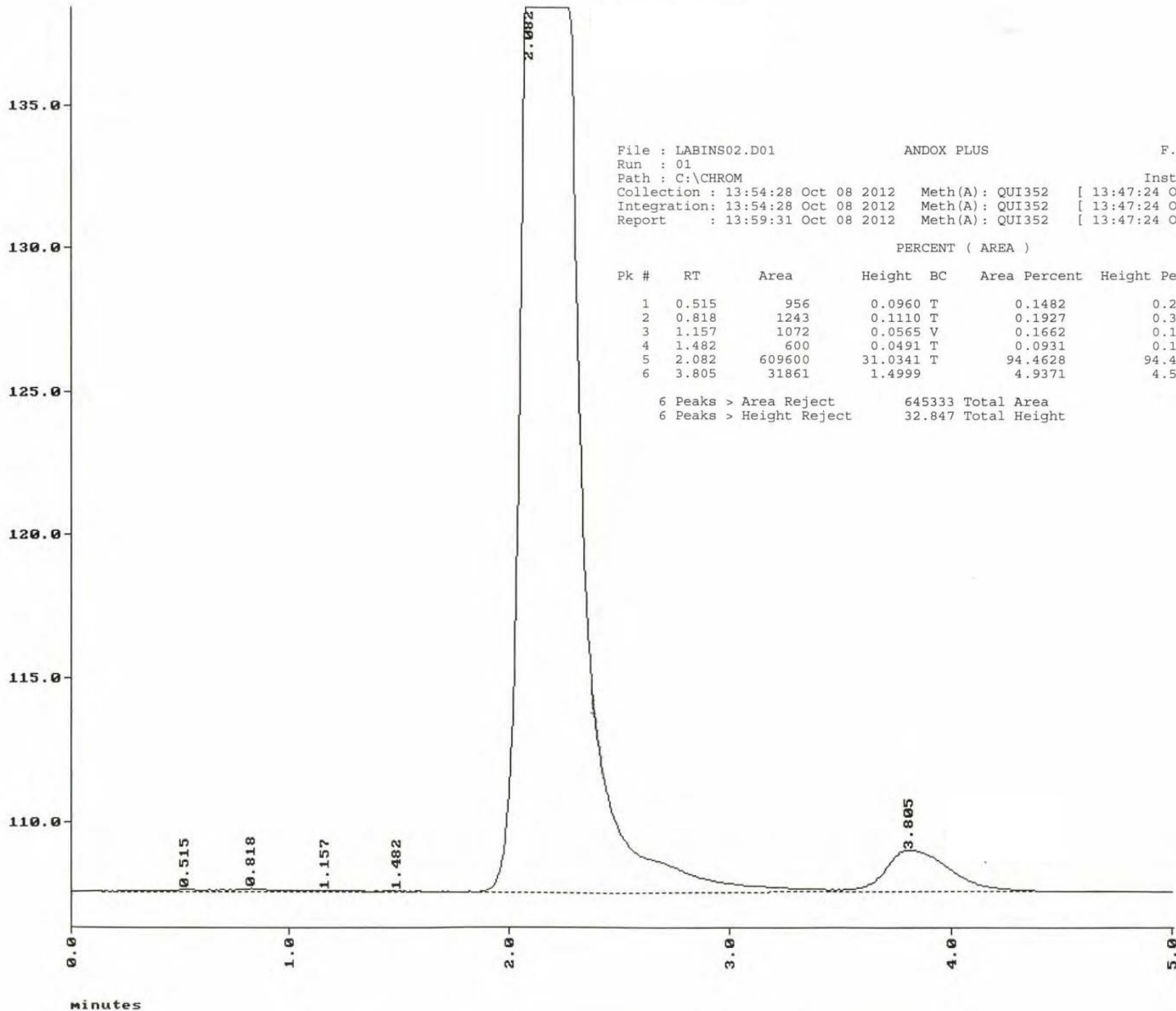
PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	1.555	357	0.0200	T	0.5360	0.4020
2	2.188	60190	4.7500	V	90.3655	95.4680
3	4.135	5345	0.1525	T	8.0247	3.0648
4	4.618	715	0.0530		1.0738	1.0652

4 Peaks > Area Reject 66607 Total Area
4 Peaks > Height Reject 4.975 Total Height

File : LABINS02.D01
 Run : 01
 Collection : 13:54:28 Oct 08 2012
 Method : QUI352
 ANDOX PLUS
 F. AMEZQUITA L.
 Type : Sample
 [13:47:24 Oct 08 2012]

(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

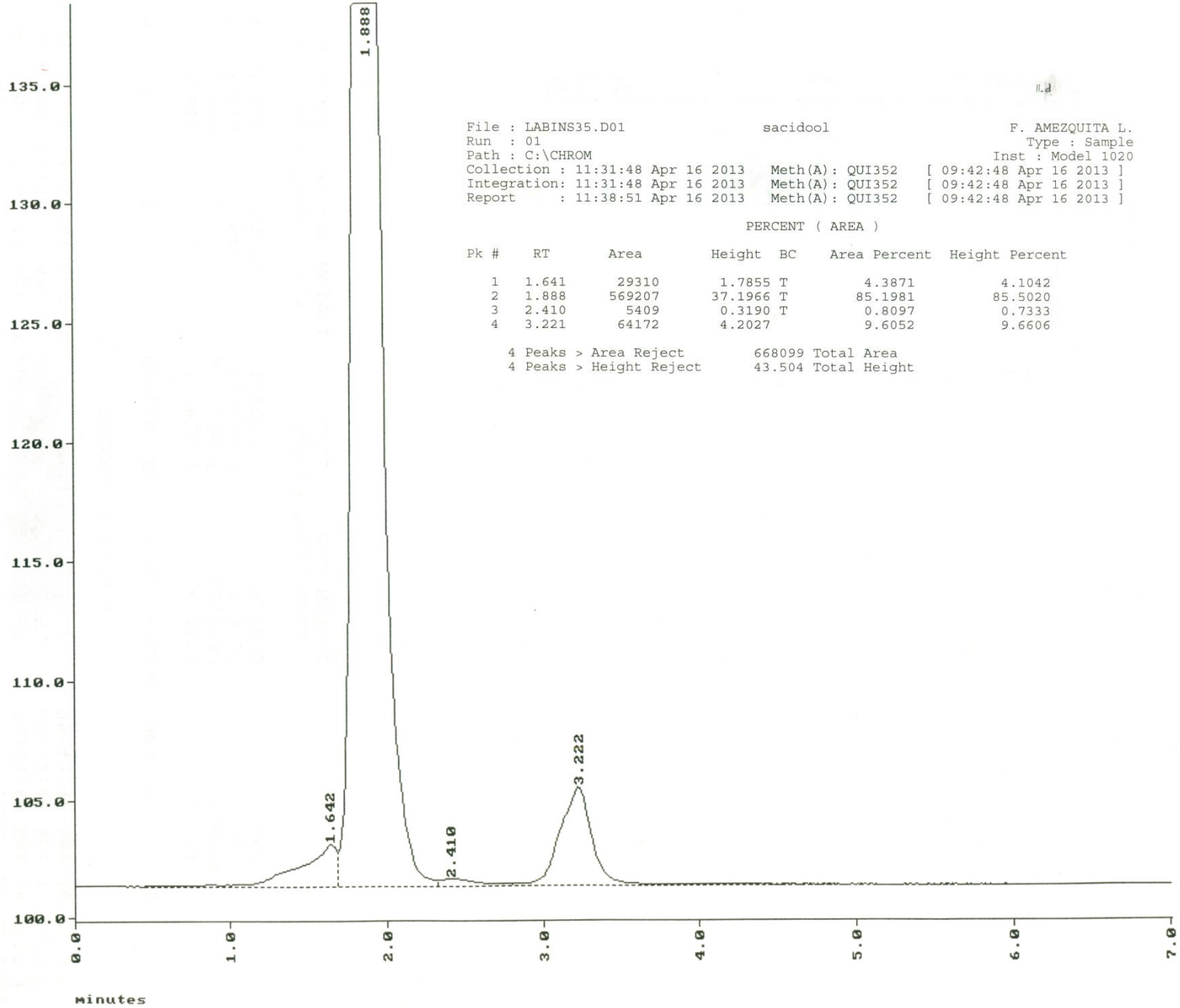
6 Peaks > Area Reject 645333 Total Area
 6 Peaks > Height Reject 32.847 Total Height

File : LABINS35.D01
 Run : 01
 Collection : 11:31:48 Apr 16 2013

sacidool
 Method : QUI352

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

(LABINS35.D01) mU



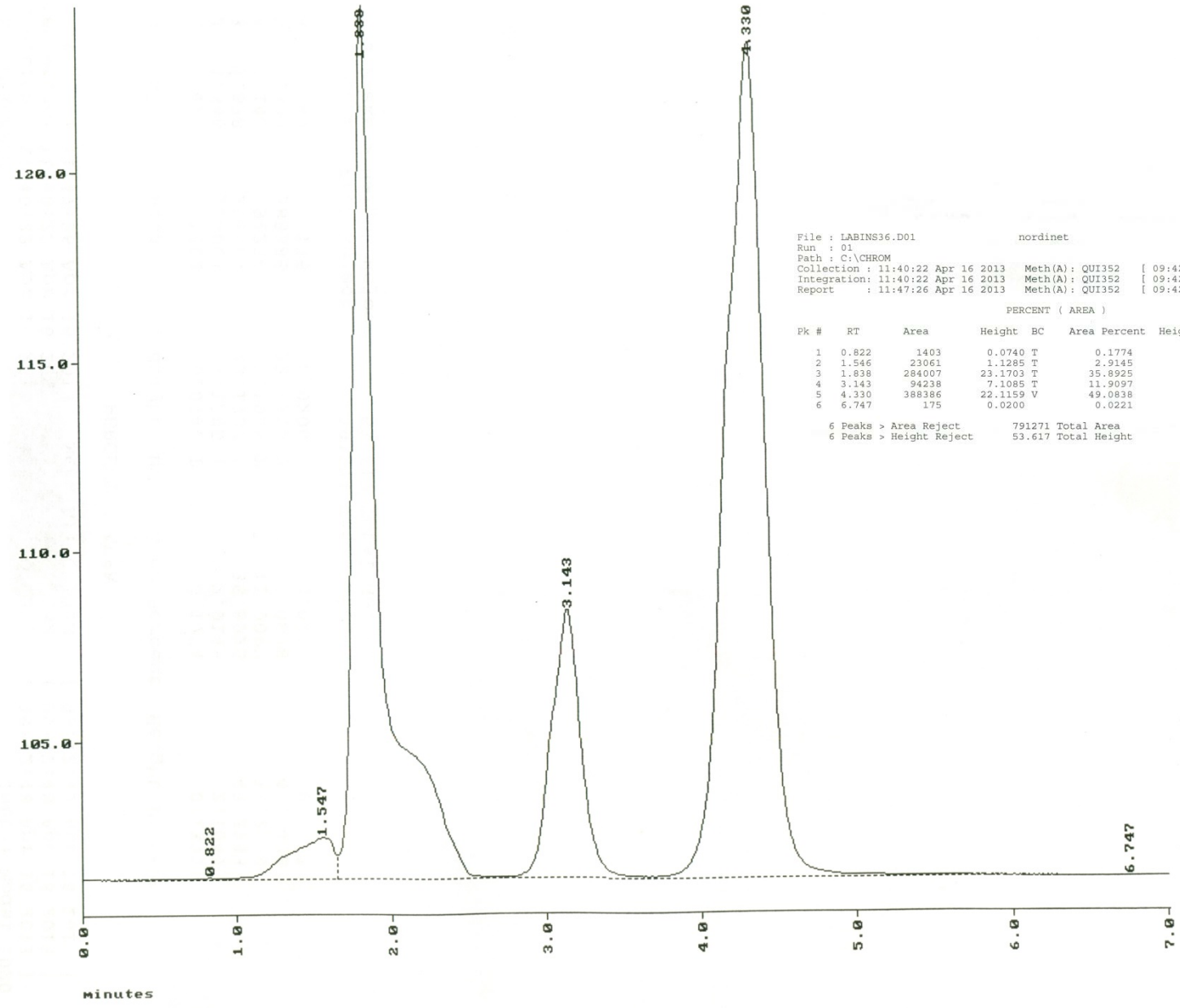
File : LABINS35.D01 sacidool F. AMEZQUITA L.
 Run : 01 Type : Sample
 Path : C:\CHROM Inst : Model 1020
 Collection : 11:31:48 Apr 16 2013 Meth(A) : QUI352 [09:42:48 Apr 16 2013]
 Integration: 11:31:48 Apr 16 2013 Meth(A) : QUI352 [09:42:48 Apr 16 2013]
 Report : 11:38:51 Apr 16 2013 Meth(A) : QUI352 [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			668099 Total Area				
4 Peaks > Height Reject			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
 Type : Sample
 Inst : Model 1020
 Meth(A) : QUI352 [09:42:48 Apr 16 2013]
 Meth(A) : QUI352 [09:42:48 Apr 16 2013]
 Meth(A) : QUI352 [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. Auxíliate de los cromatogramas de paracetamol.

Tercera parte:

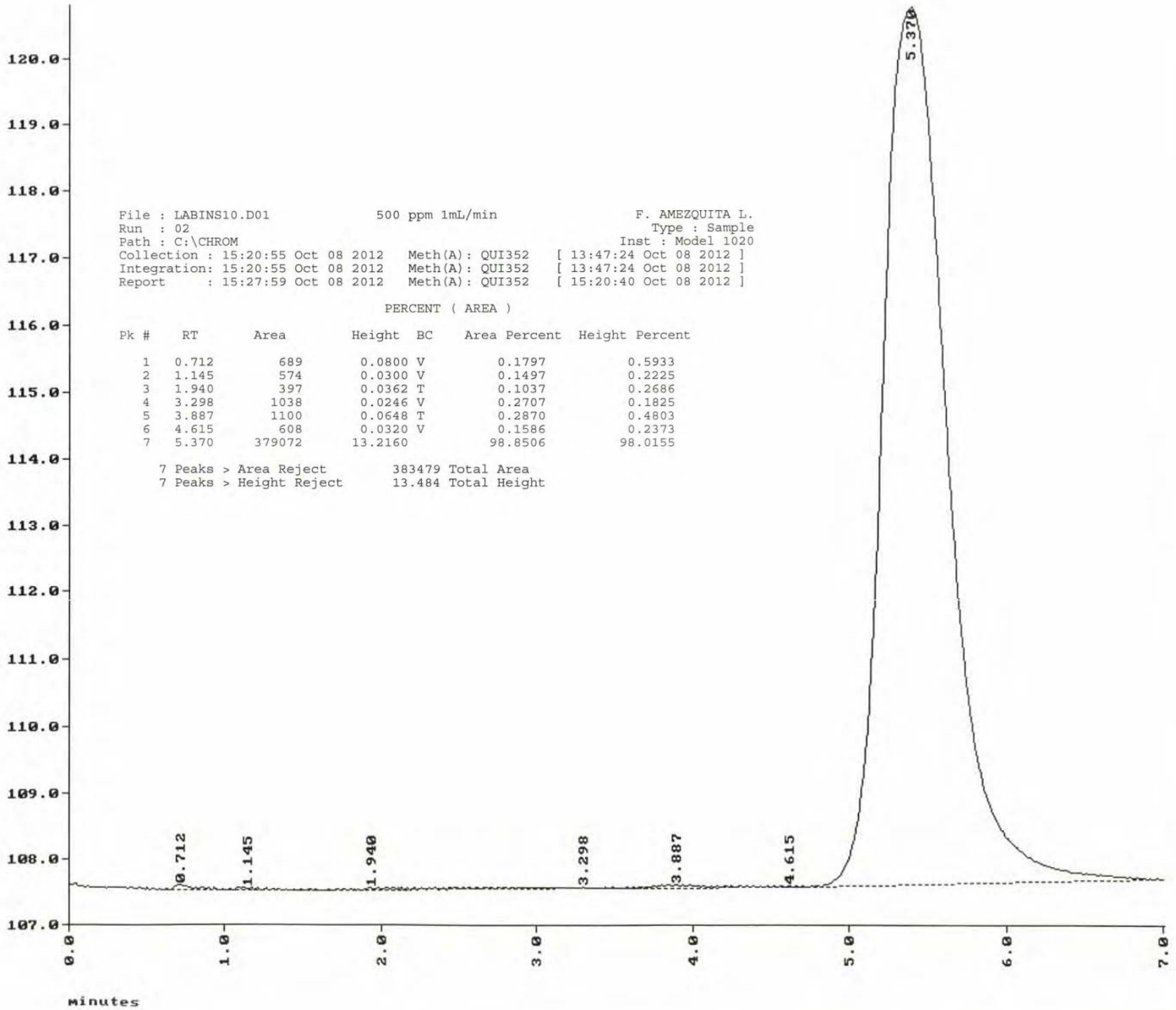
Ahora harás el estudio del efecto de la velocidad de flujo en el tiempo de retención.

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

(LABINS10.D01) MU



File : LABINS10.D01
 Run : 02
 Path : C:\CHROM
 Collection : 15:20:55 Oct 08 2012
 Integration : 15:20:55 Oct 08 2012
 Report : 15:27:59 Oct 08 2012
 500 ppm 1mL/min
 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 [15:20:40 Oct 08 2012]

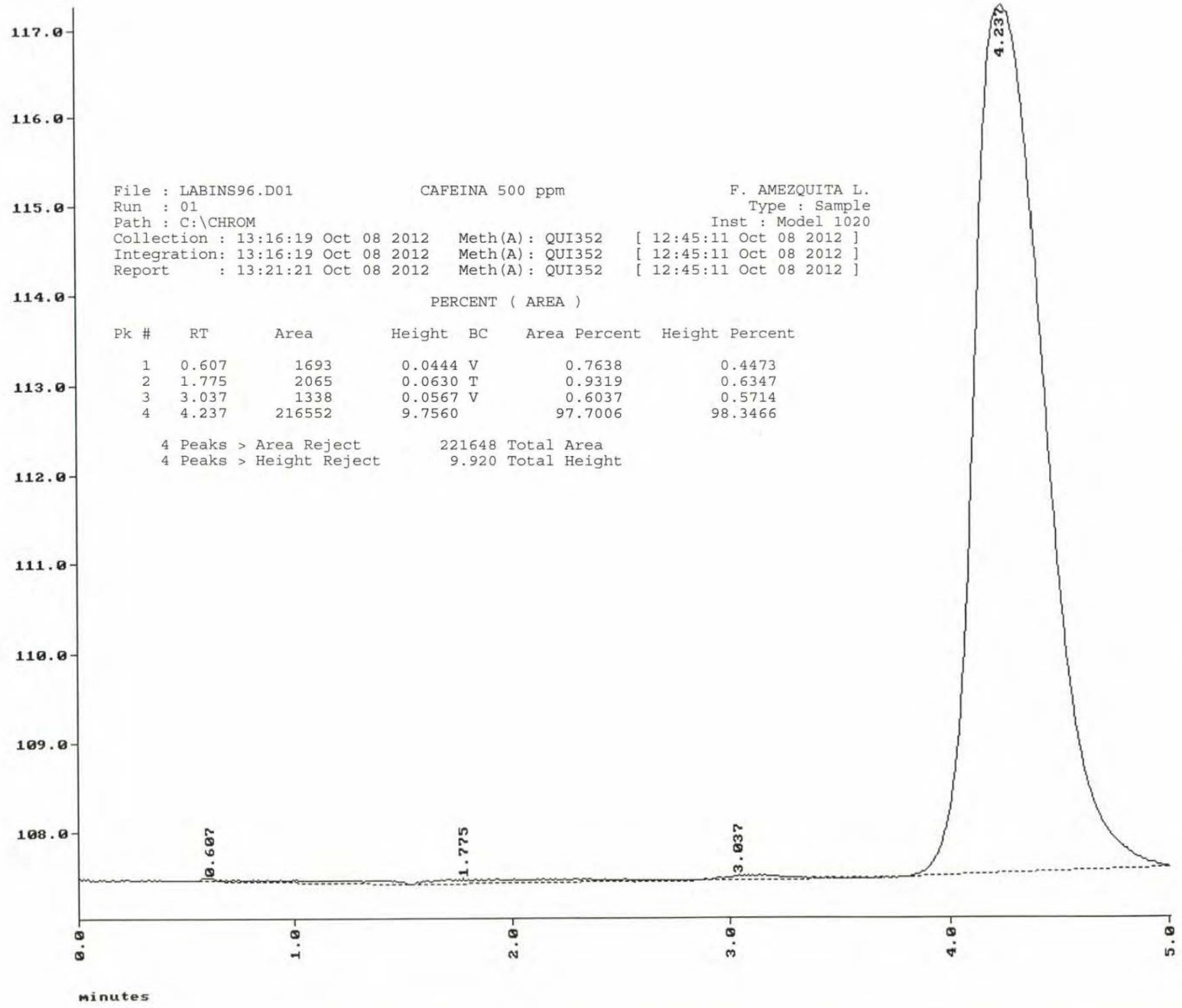
PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.712	689	0.0800	V	0.1797	0.5933
2	1.145	574	0.0300	V	0.1497	0.2225
3	1.940	397	0.0362	T	0.1037	0.2686
4	3.298	1038	0.0246	V	0.2707	0.1825
5	3.887	1100	0.0648	T	0.2870	0.4803
6	4.615	608	0.0320	V	0.1586	0.2373
7	5.370	379072	13.2160		98.8506	98.0155

7 Peaks > Area Reject 383479 Total Area
 7 Peaks > Height Reject 13.484 Total Height

File : LABINS96.D01
 Run : 01
 Collection : 13:16:19 Oct 08 2012
 Method : QUI352
 CAFEINA 500 ppm
 F. AMEZQUITA L.
 Type : Sample
 I 12:45:11 Oct 08 2012 J

(LABINS96.D01) mU



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

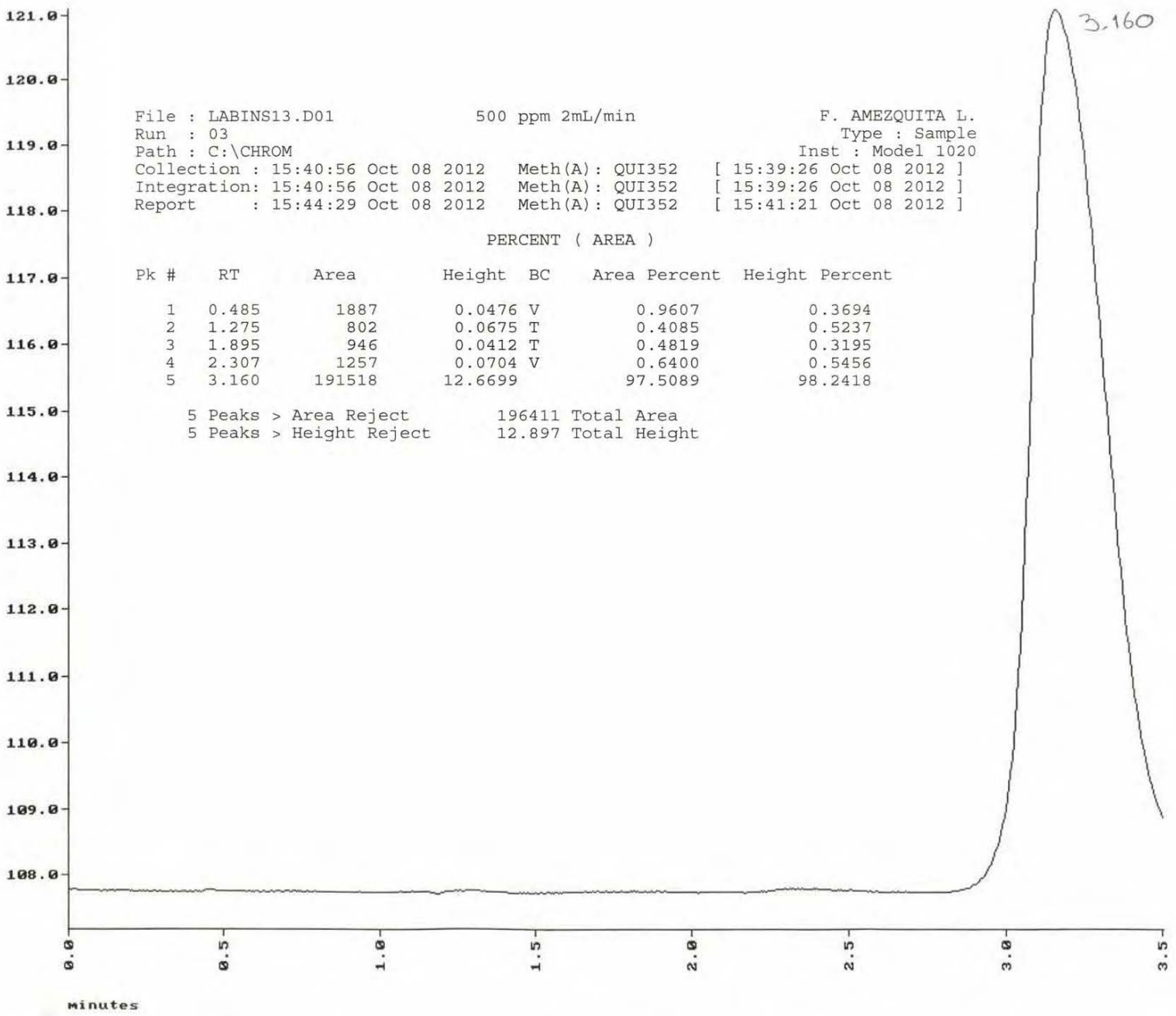
4 Peaks > Area Reject 221648 Total Area
 4 Peaks > Height Reject 9.920 Total Height

File : LABINS13.D01
 Run : 03
 Collection : 15:40:56 Oct 08 2012 Method : QUI352

500 ppm 2mL/min

F. AMEZQUITA L.
 Type : Sample
 [15:39:26 Oct 08 2012]

(LABINS13.D01) mU



File : LABINS13.D01
 Run : 03
 Path : C:\CHROM
 Collection : 15:40:56 Oct 08 2012 Meth(A) : QUI352 [15:39:26 Oct 08 2012]
 Integration: 15:40:56 Oct 08 2012 Meth(A) : QUI352 [15:39:26 Oct 08 2012]
 Report : 15:44:29 Oct 08 2012 Meth(A) : QUI352 [15:41:21 Oct 08 2012]

PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.485	1887	0.0476	V	0.9607	0.3694
2	1.275	802	0.0675	T	0.4085	0.5237
3	1.895	946	0.0412	T	0.4819	0.3195
4	2.307	1257	0.0704	V	0.6400	0.5456
5	3.160	191518	12.6699		97.5089	98.2418

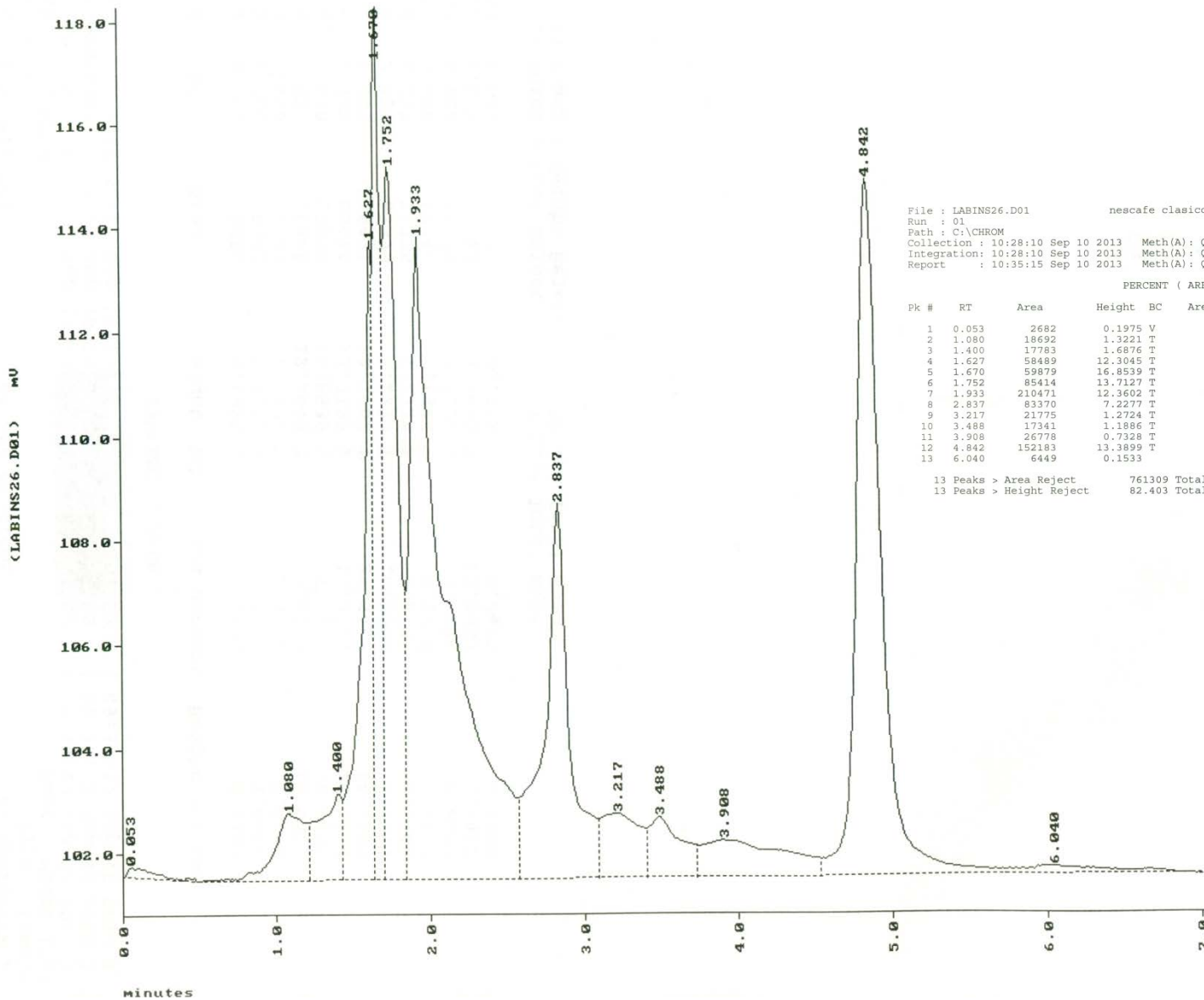
5 Peaks > Area Reject 196411 Total Area
 5 Peaks > Height Reject 12.897 Total Height

- 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]

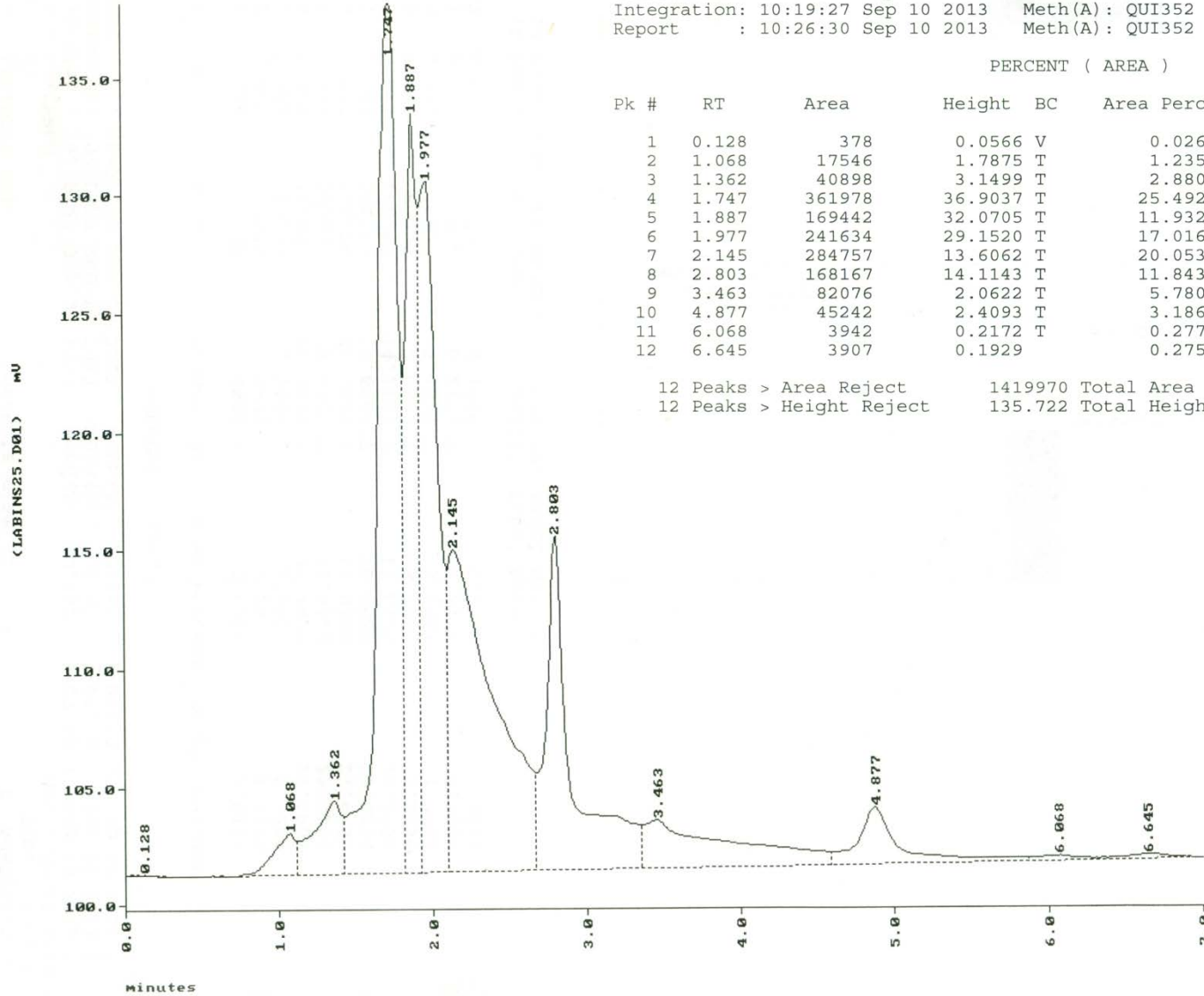
PERCENT (AREA)						
Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.053	2682	0.1975	V	0.3523	0.2397
2	1.080	18692	1.3221	T	2.4552	1.6044
3	1.400	17783	1.6876	T	2.3359	2.0480
4	1.627	58489	12.3045	T	7.6827	14.9320
5	1.670	59879	16.8539	T	7.8653	20.4530
6	1.752	85414	13.7127	T	11.2194	16.6410
7	1.933	210471	12.3602	T	27.6459	14.9997
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	26778	0.7328	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 I 09:39:19 Sep 10 2013 J

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]



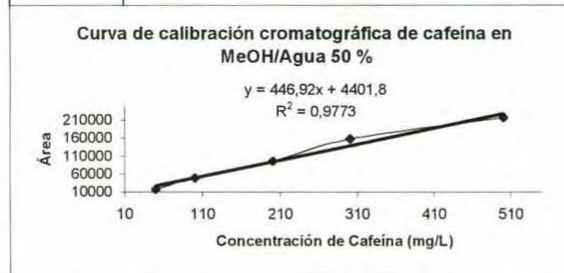
PERCENT (AREA)

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	Área
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.

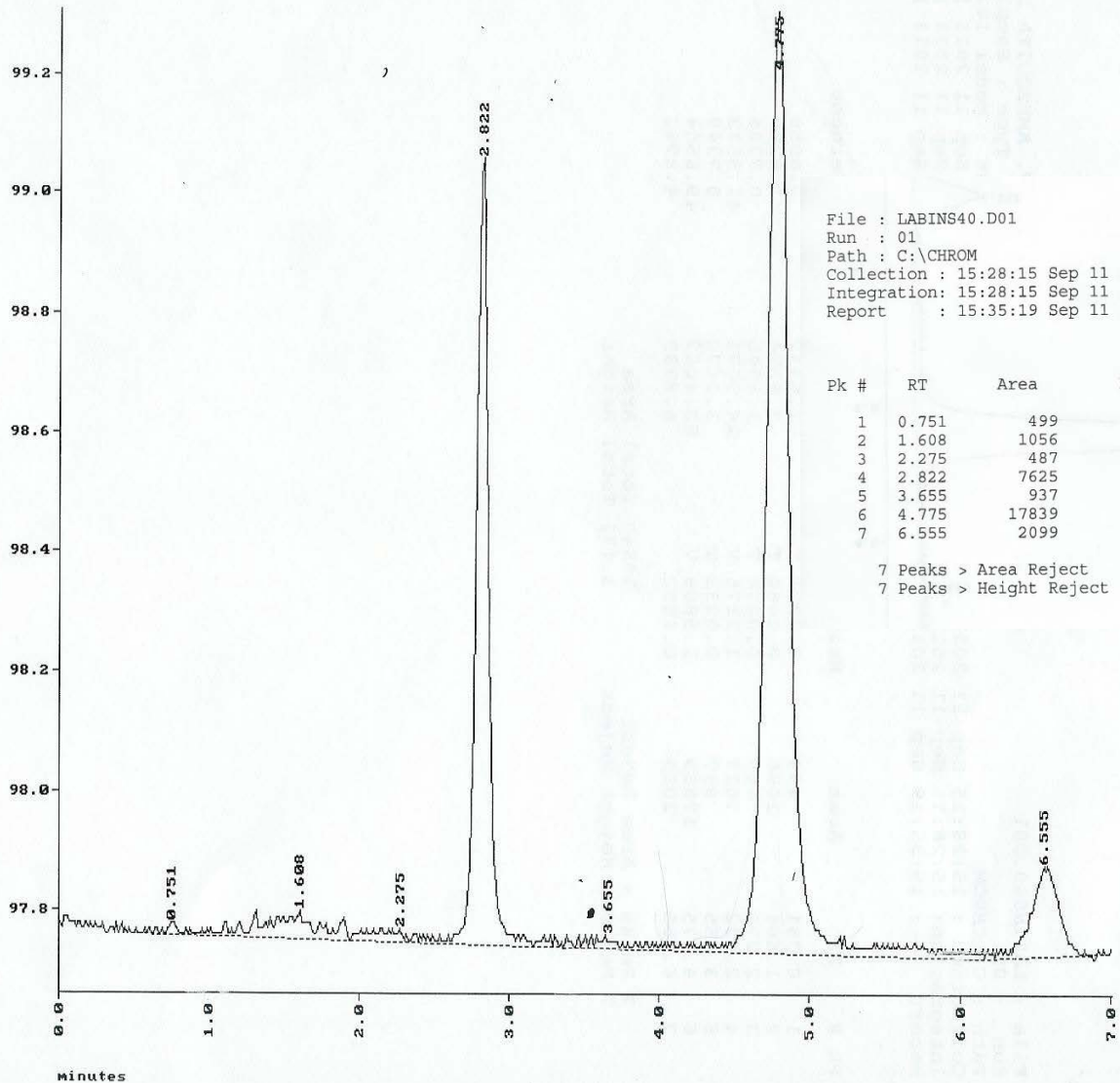
(a) ¿Te queda claro porque la elución se hizo a 7 minutos?

(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]

(LABINS40.D01) mU



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)

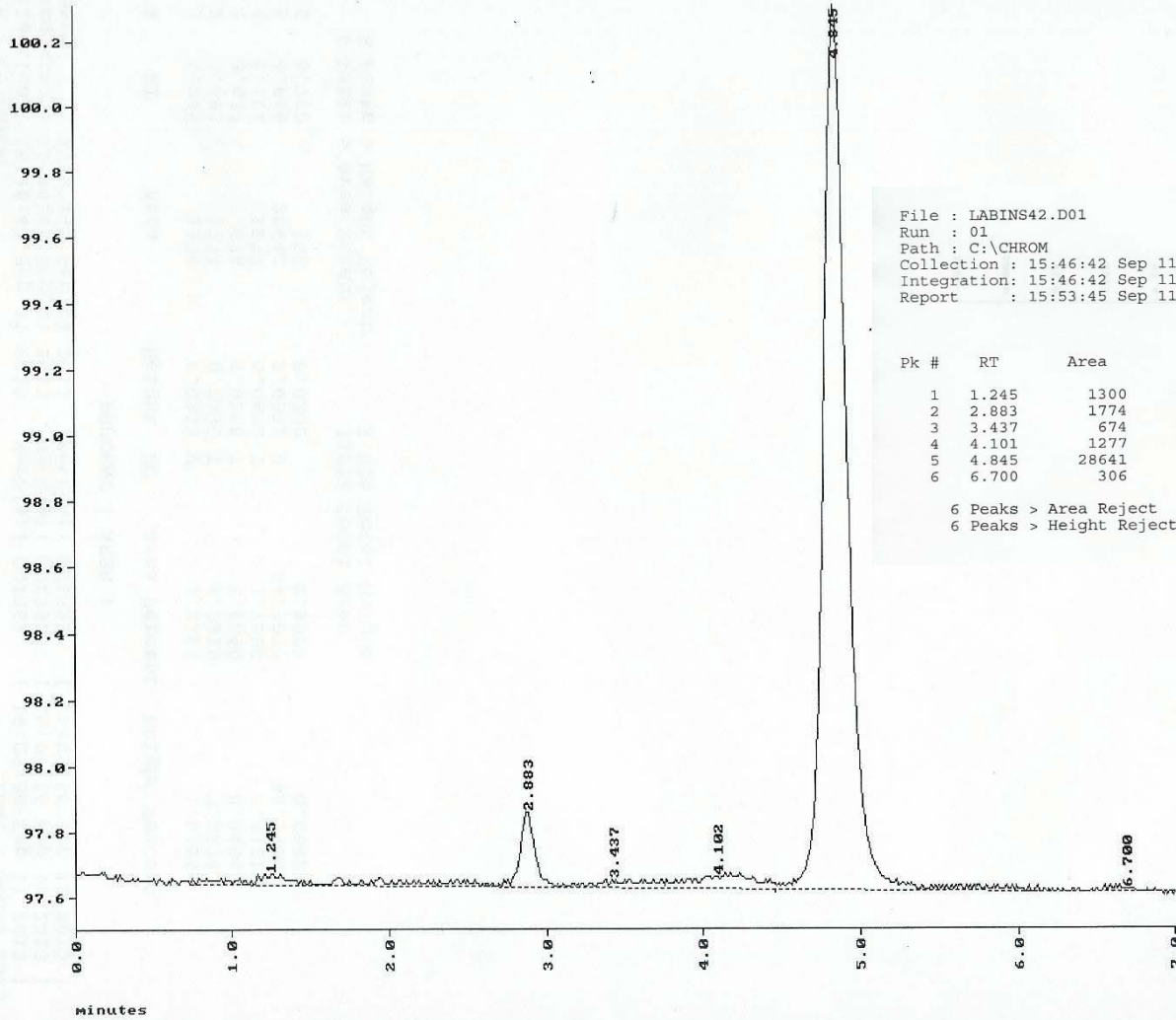
Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	0.751	499	0.0221	T	1.6337	0.6958
2	1.608	1056	0.0484	T	3.4574	1.5280
3	2.275	487	0.0234	T	1.5945	0.7386
4	2.822	7625	1.3175	V	24.9671	41.5513
5	3.655	937	0.0233	T	3.0678	0.7349
6	4.775	17839	1.5808	V	58.4057	49.8554
7	6.555	2099	0.1552		6.8739	4.8962

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

File : LABINS42.D01
Run : 01
Collection : 15:46:42 Sep 11 2013
cafeina 100 ppm
Method : QUI352

F. AMEZQUITA L.
Type : Sample
Inst : Model 1020
Collection : 15:09:56 Sep 11 2013
Integration: 15:46:42 Sep 11 2013
Report : 15:53:45 Sep 11 2013

(LABINS42.D01) mAU



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
Meth(A): QUI352 [15:09:56 Sep 11 2013]
Meth(A): QUI352 [15:09:56 Sep 11 2013]
Meth(A): QUI352 [15:09:56 Sep 11 2013]

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

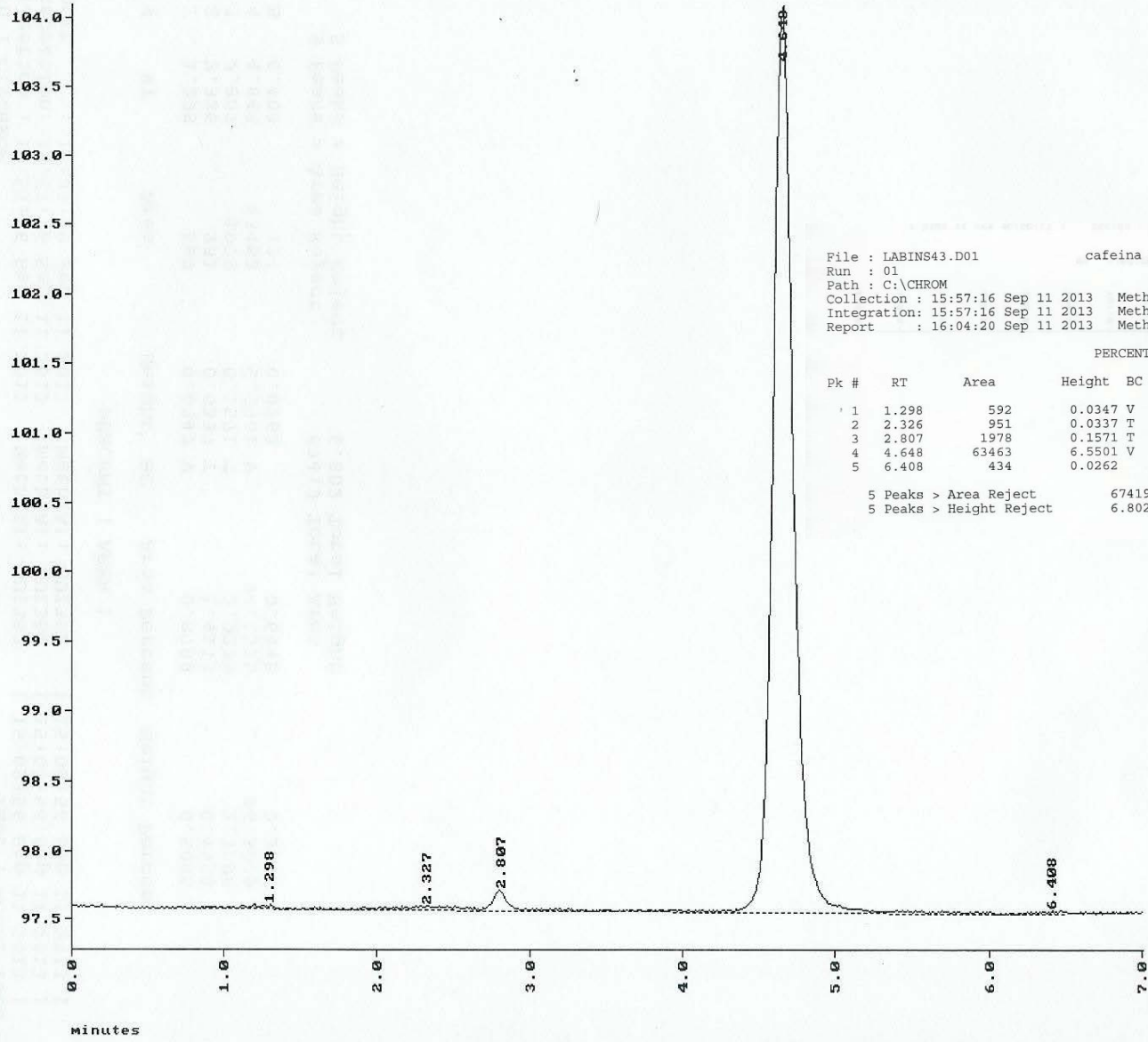
6 Peaks > Area Reject 33972 Total Area
6 Peaks > Height Reject 3.054 Total Height

File : LABINS43.D01
Run : 01
Collection : 15:57:16 Sep 11 2013

cafeina 200 ppm
Method : QUI352

F. AMEZQUITA L.
Type : Sample
[15:09:56 Sep 11 2013]

(LABINS43.D01) mU



File : LABINS43.D01
Run : 01
Path : C:\CHROM
Collection : 15:57:16 Sep 11 2013
Integration : 15:57:16 Sep 11 2013
Report : 16:04:20 Sep 11 2013

cafeina 200 ppm
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	1.298	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

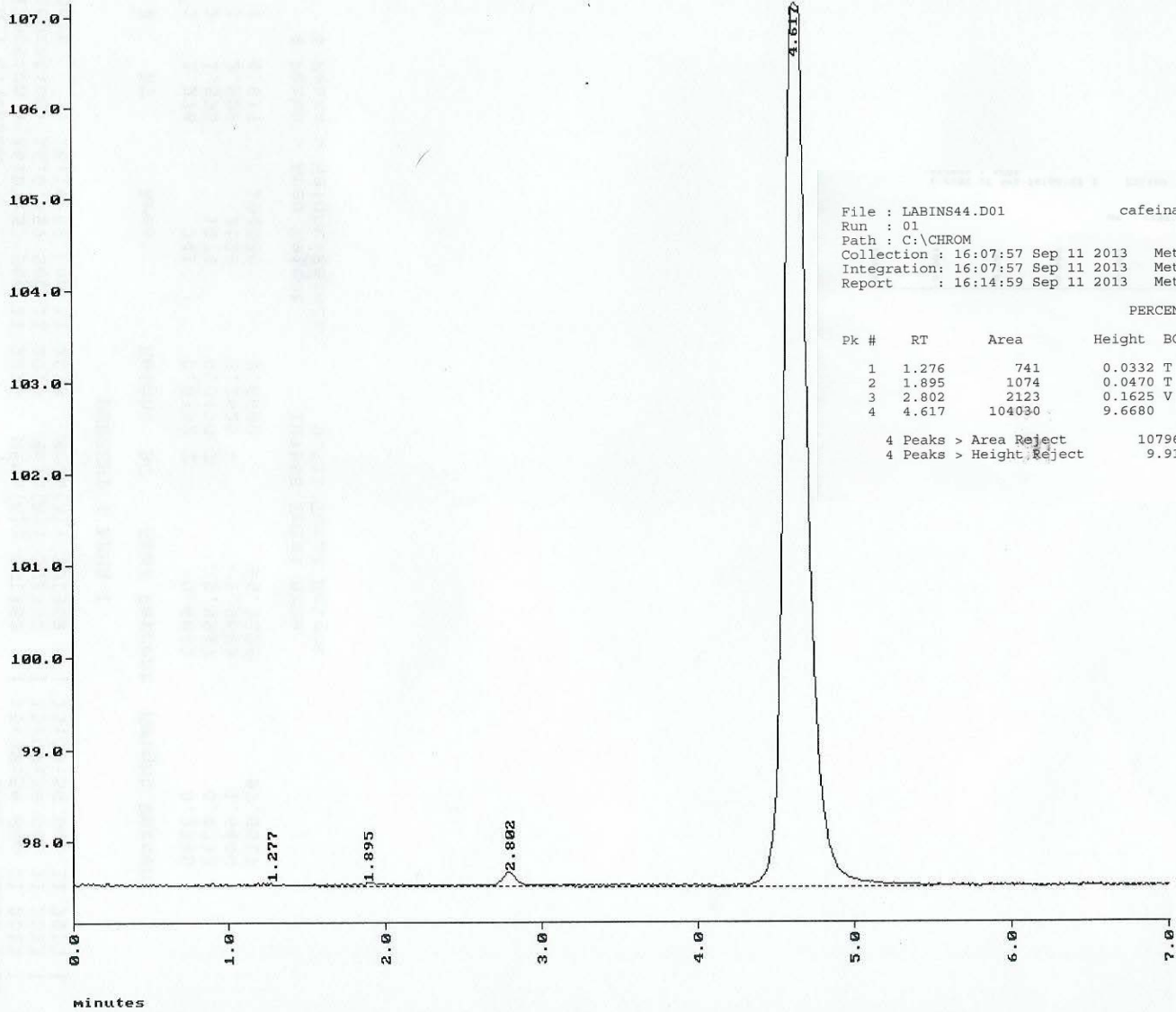
File : LABINS44.D01
Run : 01
Collection : 16:07:57 Sep 11 2013

cafeína 300ppm

F. AMEZQUITA L.
Type : Sample
Collection : 15:09:56 Sep 11 2013

Method : QUI352

(LABINS44.D01) MU



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

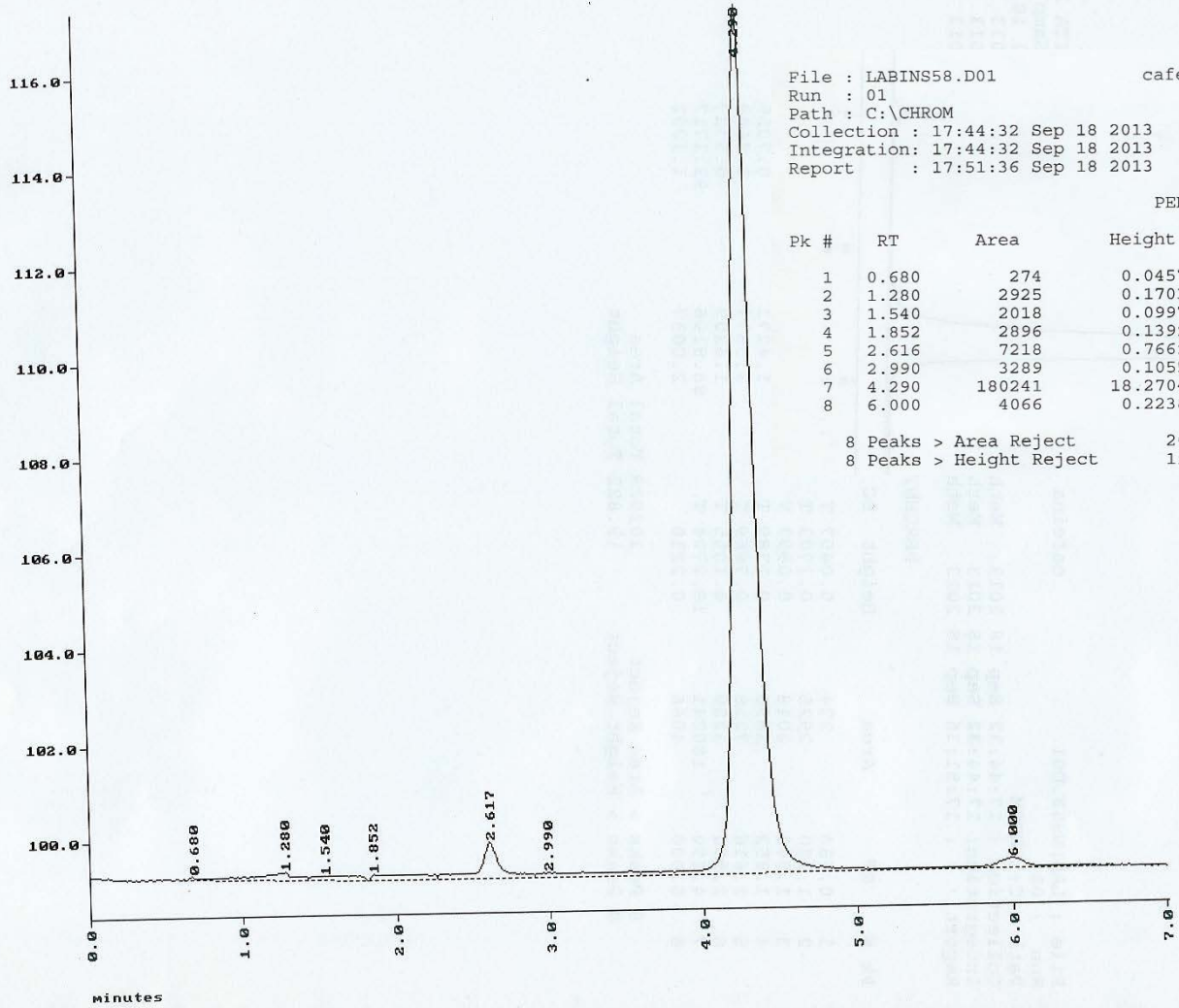
PERCENT (AREA)

Pk #	RT	Area	Height	BC	Area Percent	Height Percent
1	1.276	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 cafeina 500mg/L
 Run : 01 Type : Sample
 Collection : 17:44:32 Sep 18 2013 Method : QUI352 I 16:57:05 Sep 18 2013 J

(LABINS58.D01) mU



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]

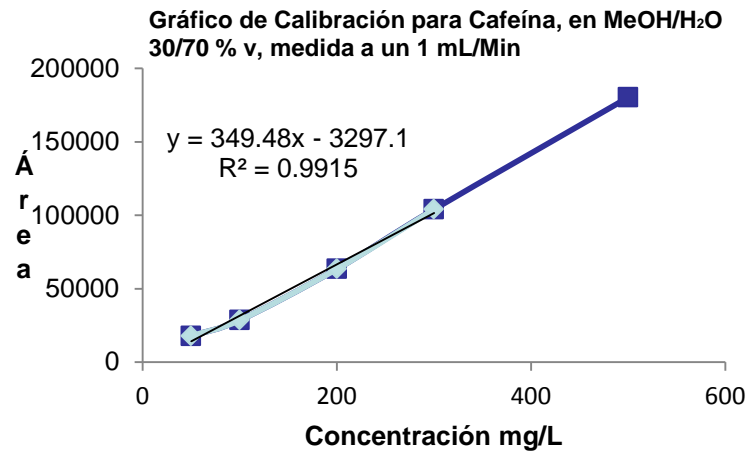
PERCENT (AREA)

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		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

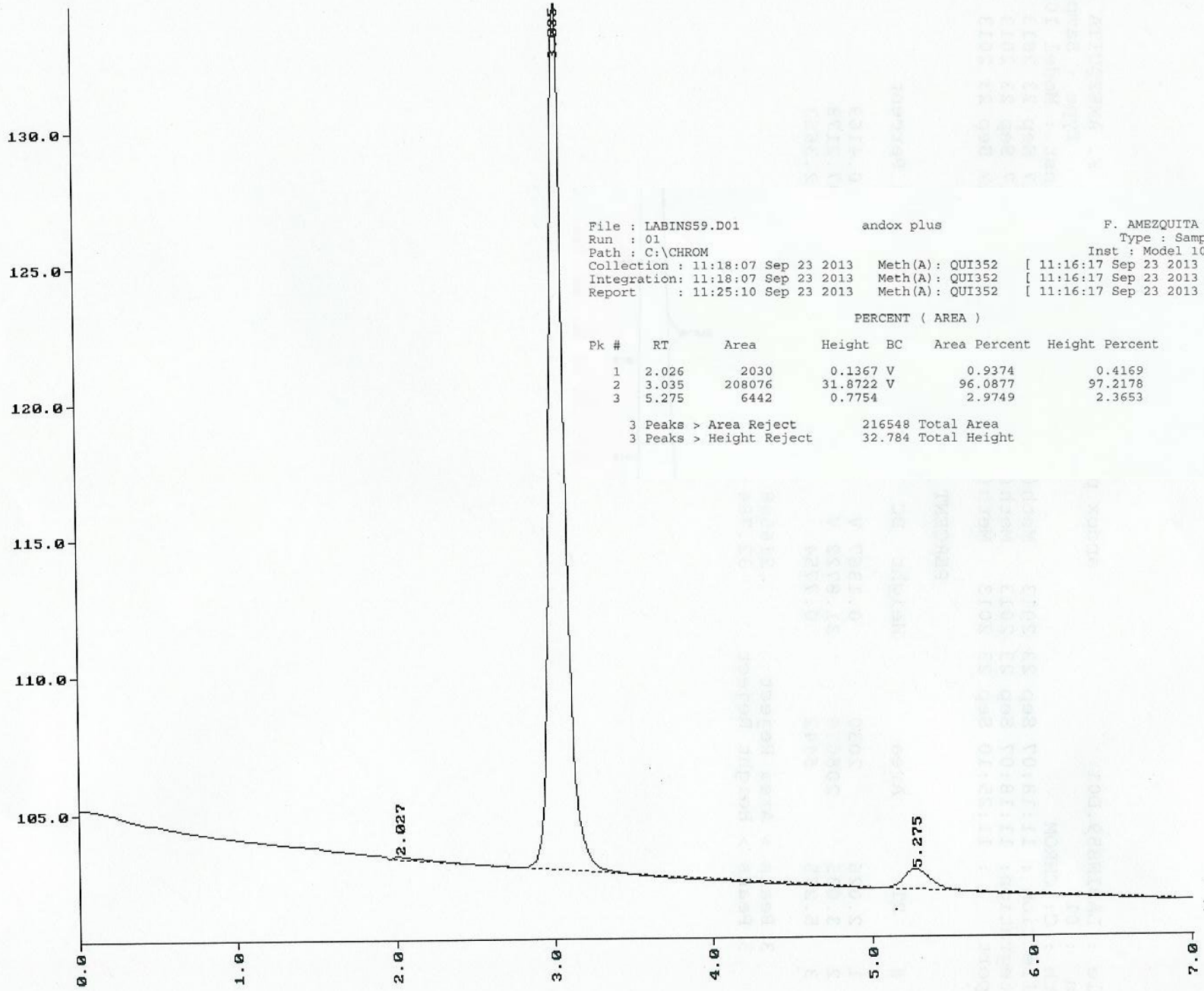
Nordinet a 15 min

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
 L 11:16:17 Sep 23 2013 I

(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

8A

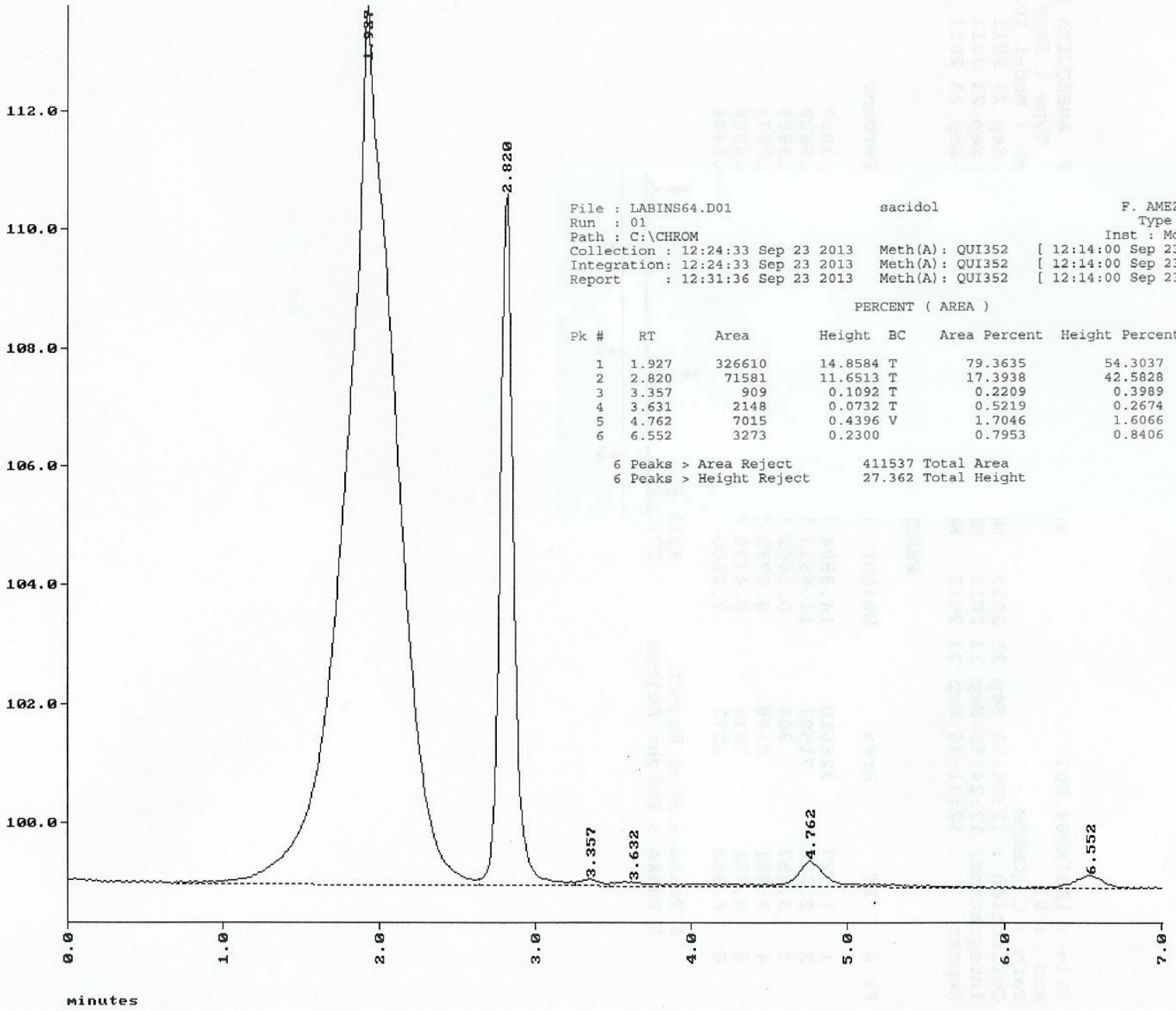
File : LABINS64.D01
 Run : 01
 Collection : 12:24:33 Sep 23 2013

sacidol

F. AMEZQUITA L.
 Type : Sample
 Collection : 12:14:00 Sep 23 2013

Method : QUI352

(LABINS64.D01) MU



File : LABINS64.D01
 Run : 01
 Path : C:\CHROM
 Collection : 12:24:33 Sep 23 2013
 Integration : 12:24:33 Sep 23 2013
 Report : 12:31:36 Sep 23 2013

sacidol

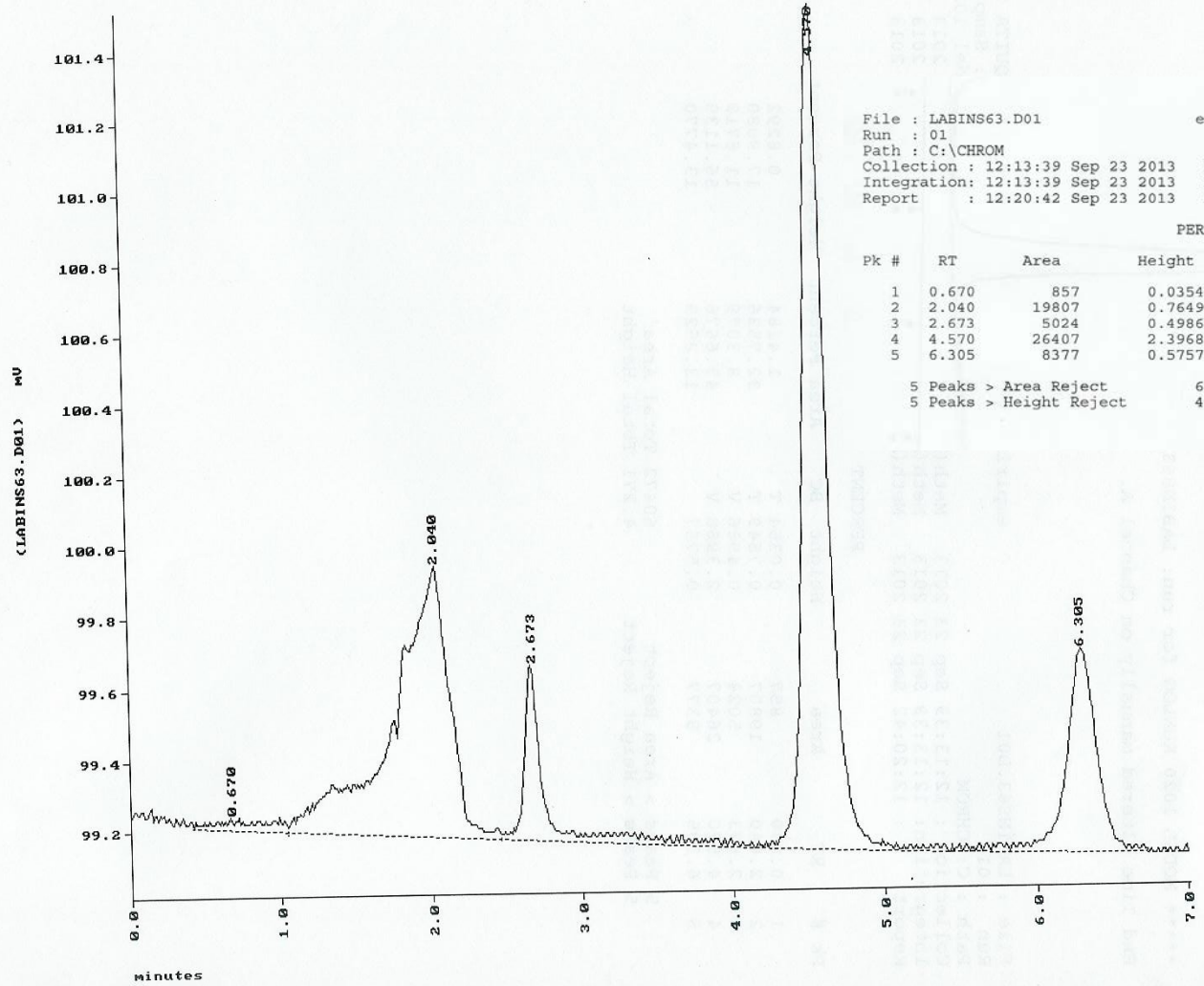
F. AMEZQUITA L.
 Type : Sample
 Inst : Model 1020
 [12:14:00 Sep 23 2013]
 [12:14:00 Sep 23 2013]
 [12:14:00 Sep 23 2013]

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 411537 Total Area
 6 Peaks > Height Reject 27.362 Total Height

File : LABINS63.D01
 Run : 01
 Collection : 12:13:39 Sep 23 2013
 empirina
 Method : QUI352
 F. AMEZQUITA L.
 Type : Sample
 I 11:55:22 Sep 23 2013



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

