

## Supporting Information

### **Quinine bis-Conjugates with Quinolone Antibiotics and Peptides: Synthesis and Antimalarial Bioassay**

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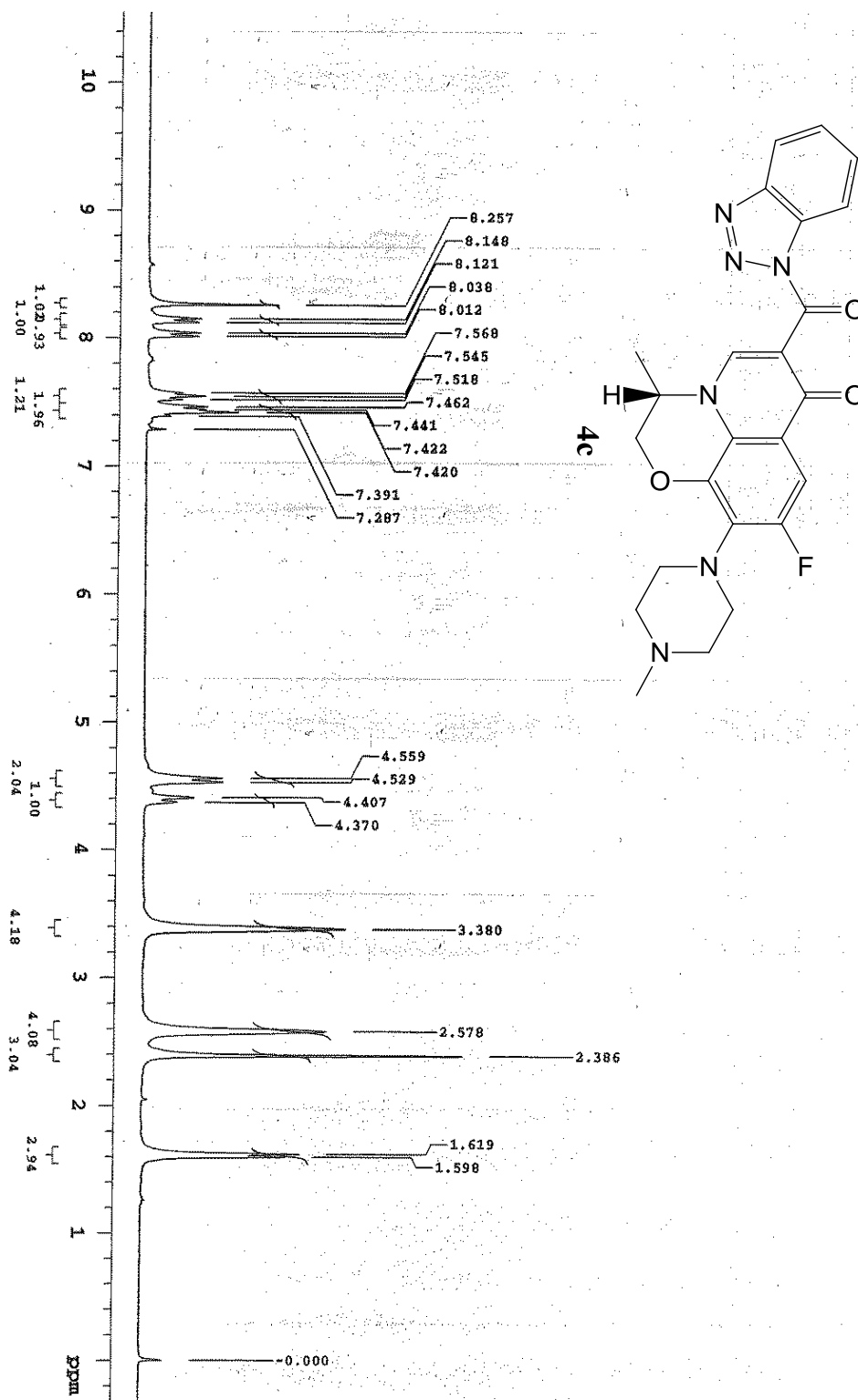
*<sup>a</sup>Center for Heterocyclic Compounds, Department of Chemistry, University of  
Florida, Gainesville, FL 32611-7200 (USA); Email: katritzky@chem.ufl.edu*

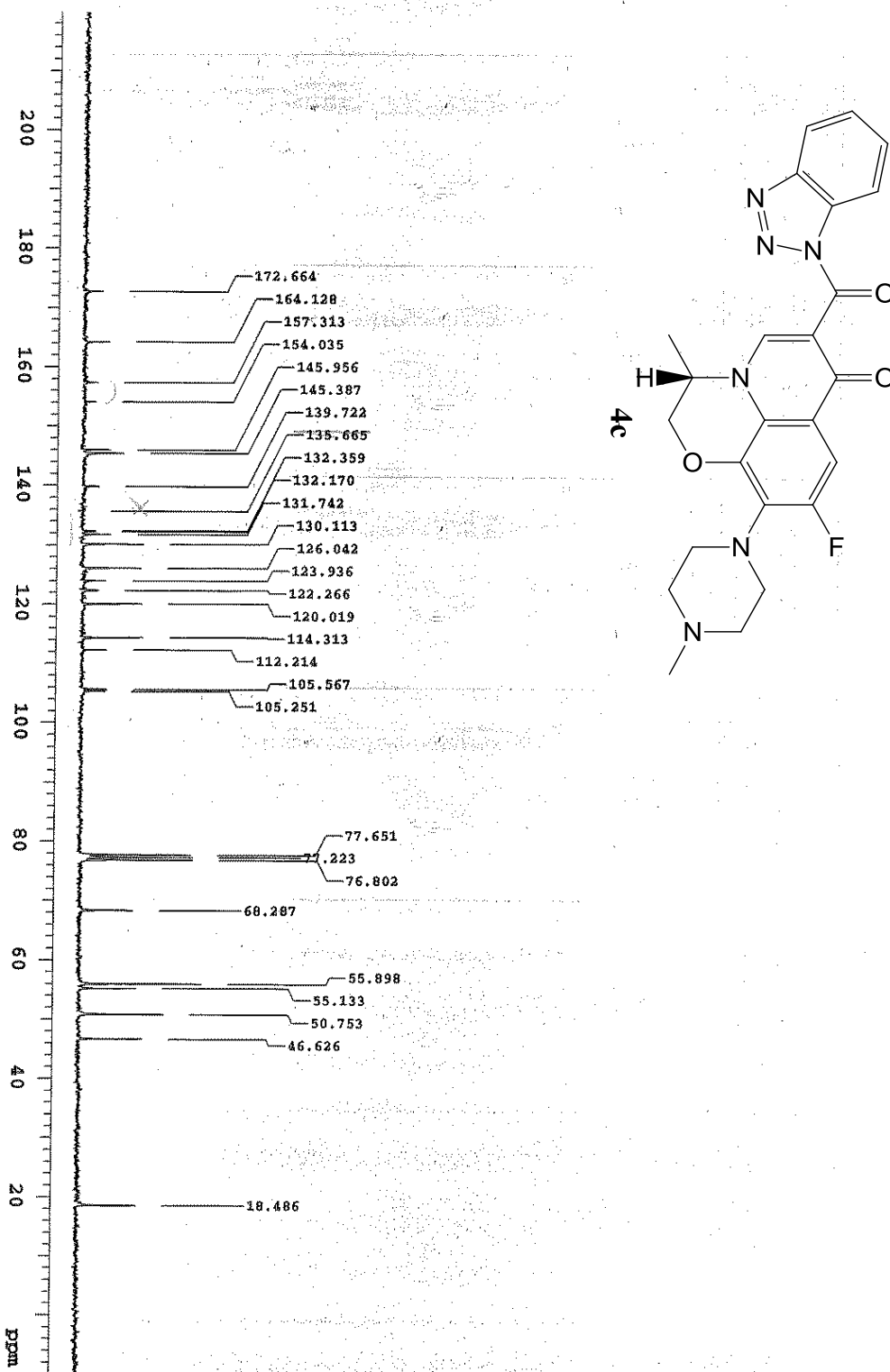
*<sup>b</sup>Center for World Health & Medicine, Saint Louis University, Saint Louis, MO 63104 (USA)*

*<sup>c</sup>Department of Chemistry, King Abdulaziz University, Jeddah, 21589 Saudi Arabia*

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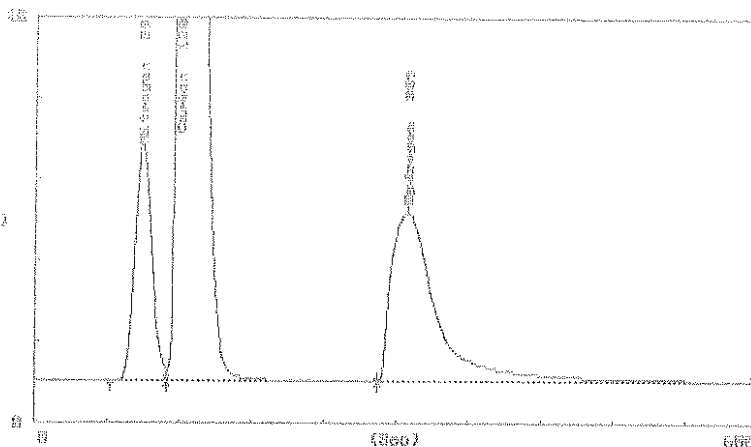
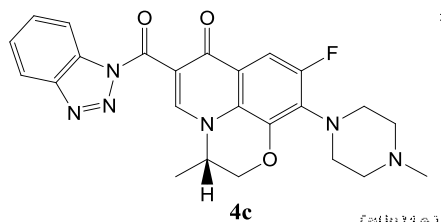
NMR spectra and CHN/HRMS of <b>4c-d</b> , <b>7a-f</b> , <b>8a-k</b> , <b>9d</b> , <b>10a-d</b>	S2-S103
Antimalarial bioassay (Graphs) of <b>8a-k</b> , quinine, antibiotics	S104-S107





### EAGER 200 Stripchart

Sample Ident. : 30 Levo-Bt      Filename : 262530  
 Analysed : 09-14-11 09:36:35      Printed : 09-14-2011 09:46:38



### EAGER 200 Peak Integration Report

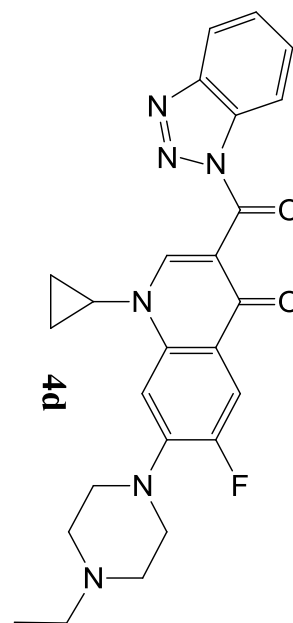
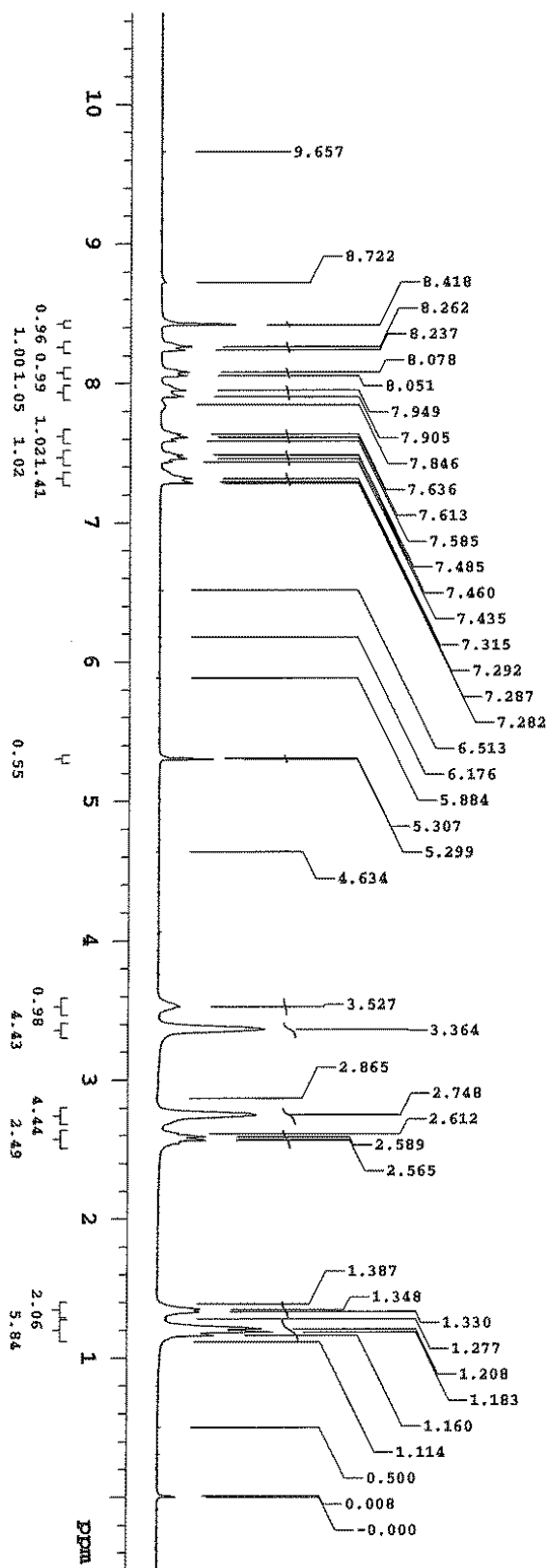
Instrument name : Instrument #1      Bline drift (fV): 1  
 Company Name : U of Florida      Operator Ident. : KOU  
 Analysed : 09-14-11 09:36:35      Printed : 09-14-2011 09:46:38  
 Sample Ident. : 30 Levo-Bt      Filename : 262530  
 Sample Weight : 2.127      Calc.method: using 'K. Factors'

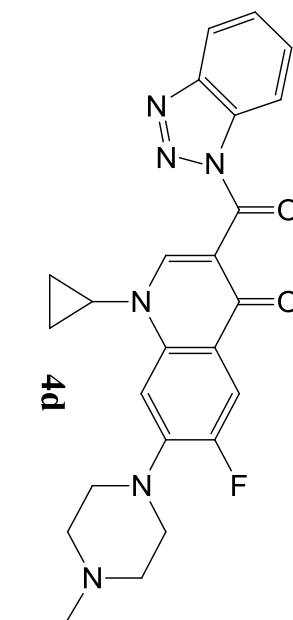
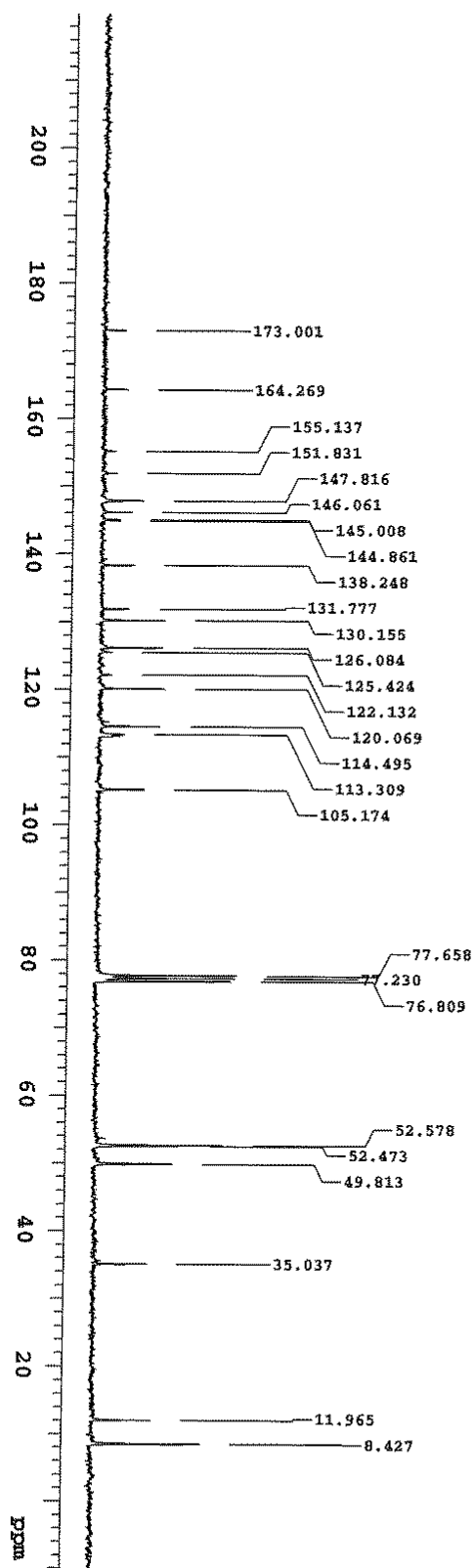
No. (#)	Type (#)	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name
1	FU	63	109	89	5801.7	89721	7.97	Nitrogen
2	FU	109	284	120	49962.6	849475	75.47	Carbon
3	RS	284	598	309	4124.0	186329	16.55	Hydrogen
						1125524	100.00	

### EAGER 200 Unk Report

Instrument name : Instrument #1      Bline drift (fV): 1  
 Company Name : U of Florida      Operator Ident. : KOU  
 Analysed : 09-14-11 09:36:35      Printed : 09-14-2011 09:46:38  
 Sample Ident. : 30 Levo-Bt      Filename : 262530  
 Sample Weight : 2.127      Calc.method: using 'K. Factors'

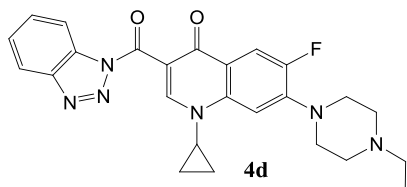
Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	89	89721	18.208	.246801E+01	Nitrogen
2	120	849475	62.194	.100000E+01	Carbon
3	309	186329	5.154	.455901E+01	Hydrogen



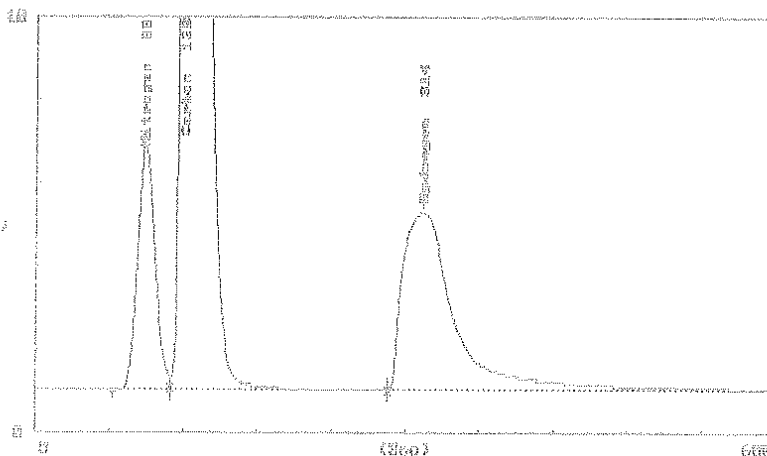


### EAGER 200 Stripchart

Sample Ident. : 26 EN-BT      Filename : 262726  
 Analysed : 09-21-11 09:00:31      Printed : 09-21-2011 09:10:34



(mV/sec)



### EAGER 200 Peak Integration Report

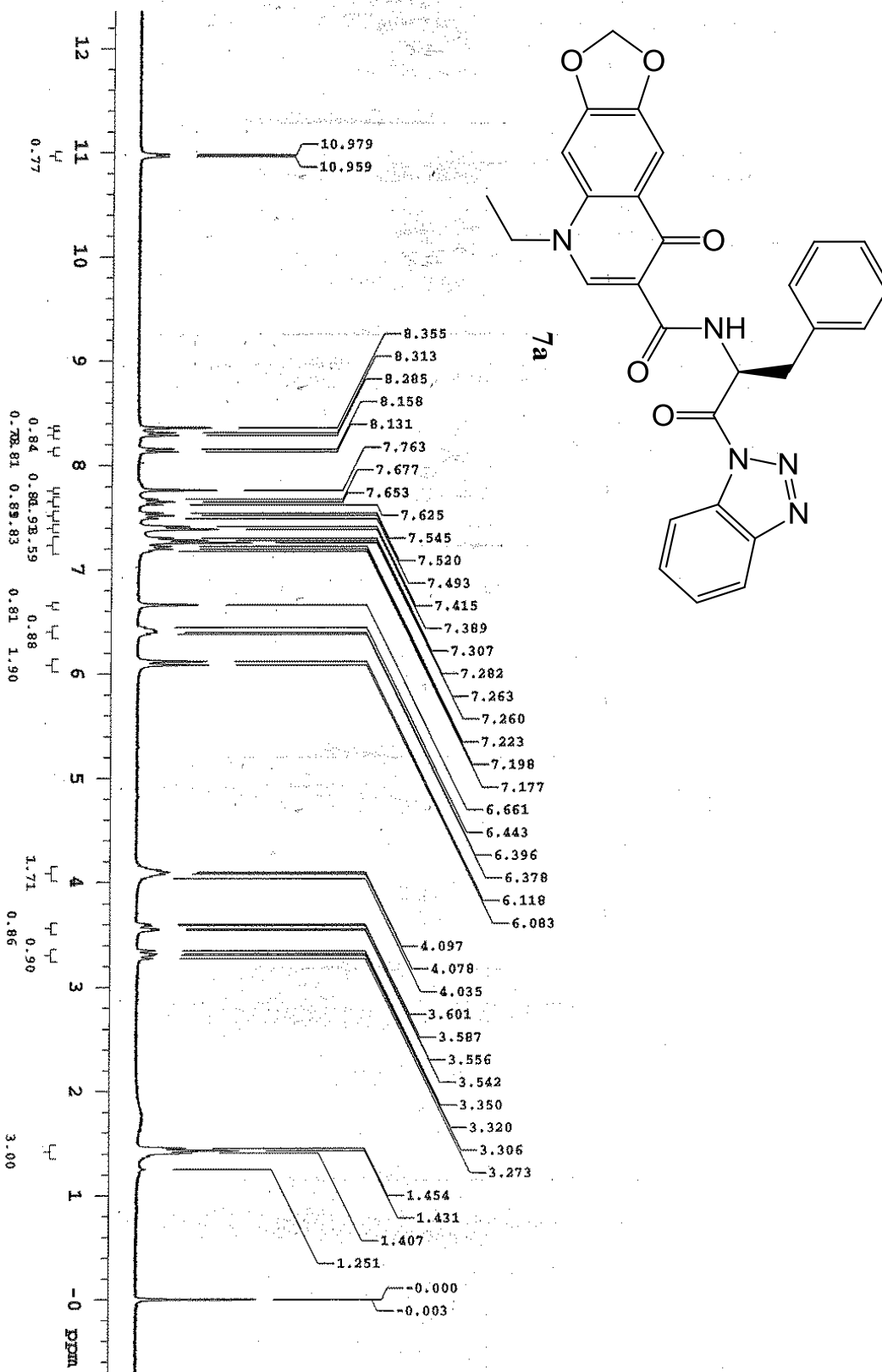
Instrument name : Instrument #1      Bline drift (fV): .9  
 Company Name : U of Florida      Operator Ident. : KOU  
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 Sample Ident. : 26 EN-BT      Filename : 262726  
 Sample Weight : 2.14      Calc.method: using 'K. Factors'

No. (#)	Type (#)	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name	
1	FU	63	109	88	5809.5	89953	7.59	Nitrogen	
2	FU	109	285	120	51610.3	886945	74.81	Carbon	
3	IC	285	598	314	4267.7	208718	17.60	Hydrogen	
							1185617	100.00	

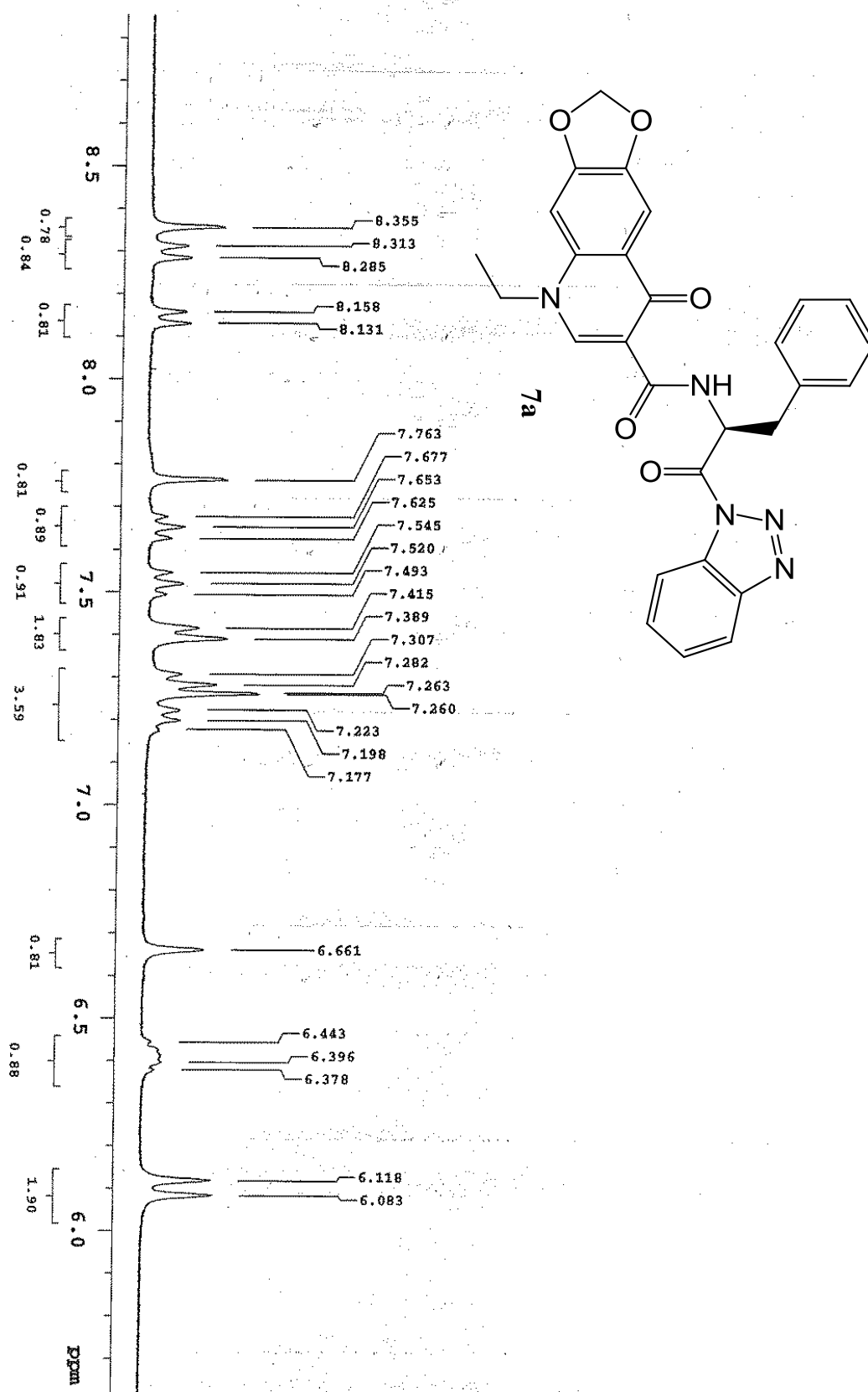
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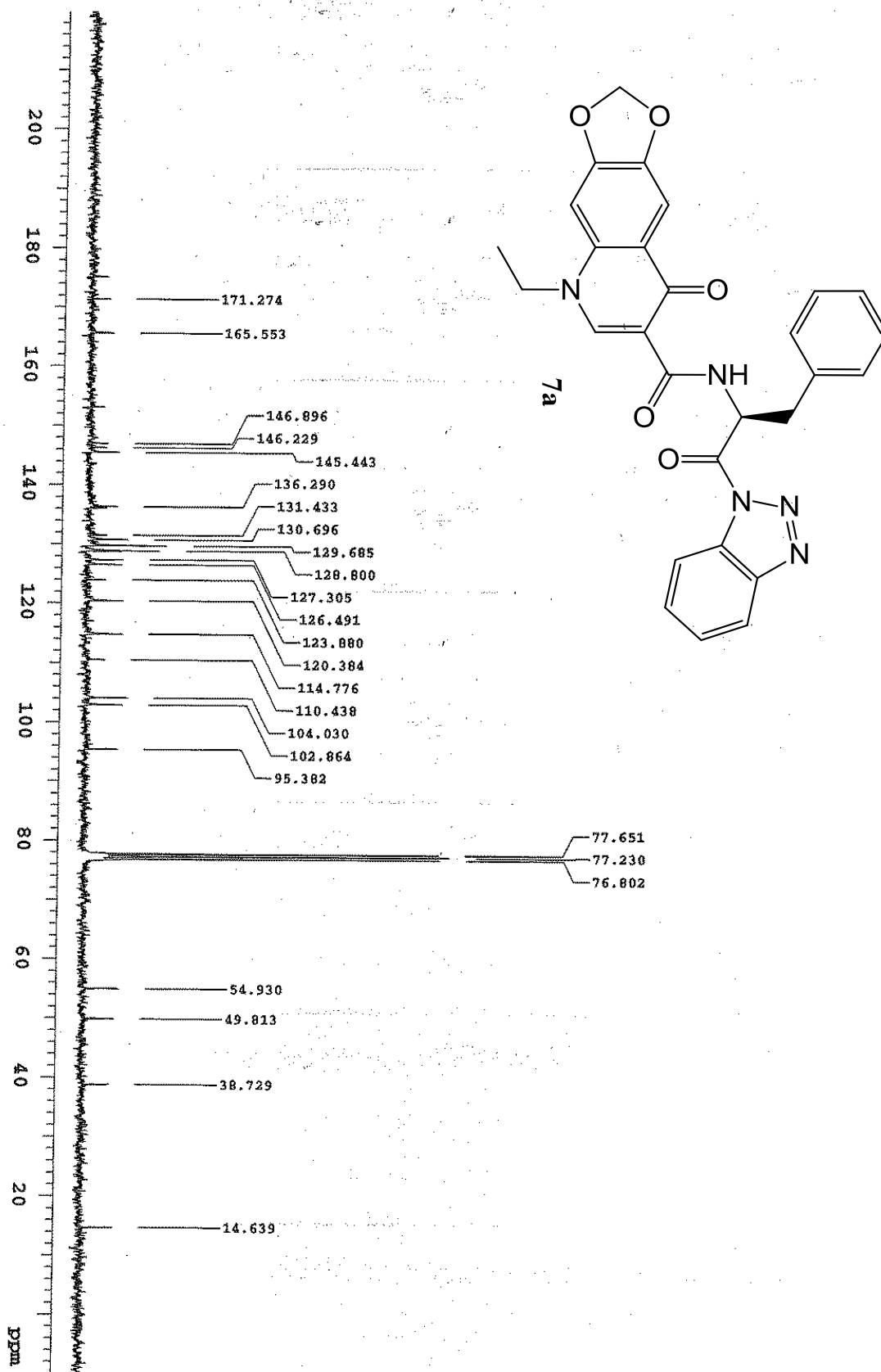
Instrument name : Instrument #1      Bline drift (fV): .9  
 Company Name : U of Florida      Operator Ident. : KOU  
 Analysed : 09-21-11 09:00:31      Printed : 09-21-2011 09:10:34  
 Sample Ident. : 26 EN-BT      Filename : 262726  
 Sample Weight : 2.14      Calc.method: using 'K. Factors'

Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	88	89953	18.166	.936009E+01	Nitrogen
2	120	886945	64.949	.100000E+01	Carbon
3	314	208718	5.905	.424948E+01	Hydrogen



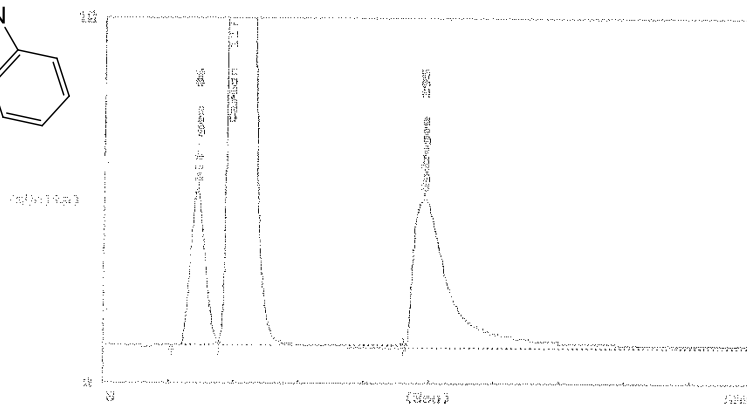
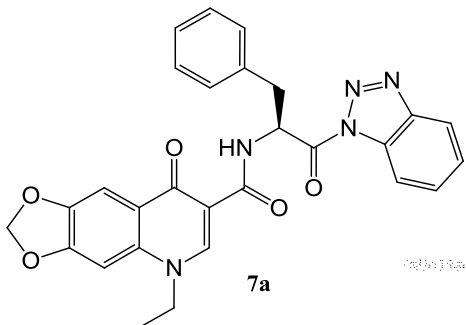






EAGER 200 Stripchart

Sample Ident. : 28 OX0-Phe-Bt      Filename : 258928  
 Analysed : 06-14-11 09:14:37      Printed : 06-14-2011 11:23:09



EAGER 200 Peak Integration Report

Instrument name : Instrument #1      Bline drift (fV):-3.6  
 Company Name : U of Florida      Operator Ident. : KOU  
 Analysed : 06-14-11 09:14:37      Printed : 06-14-2011 11:23:10  
 Sample Ident. : 28 OX0-Phe-Bt      Filename : 258928  
 Sample Weight : 2.066      Calc.method: using 'K. Factors'

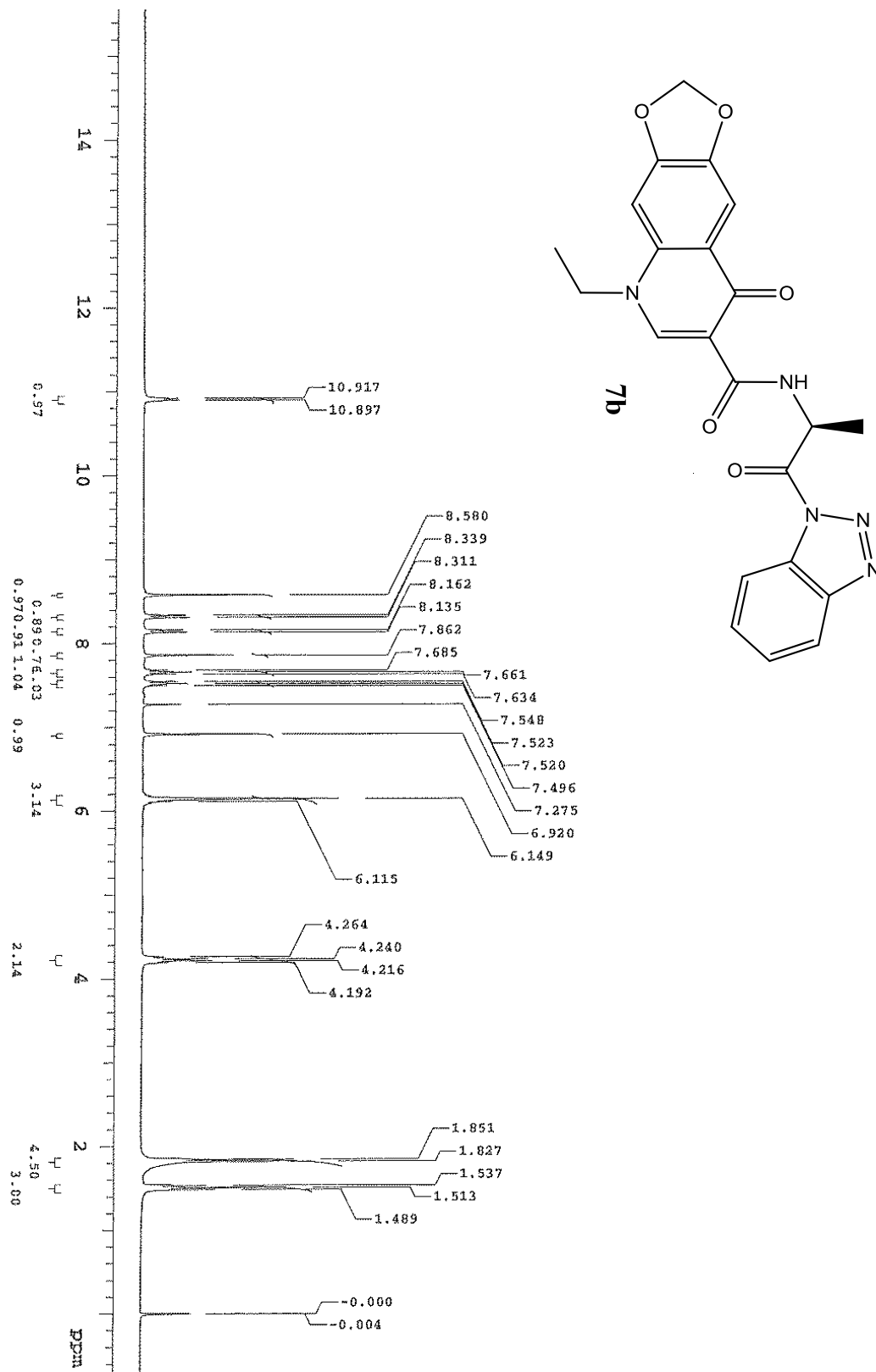
No. (#)	Type (#)	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name
1	FU	63	106	86	4289.6	63205	5.95	Nitrogen
2	FU	106	277	117	51047.2	837355	78.82	Carbon
3	RS	277	598	225	4040.5	161767	15.23	Hydrogen

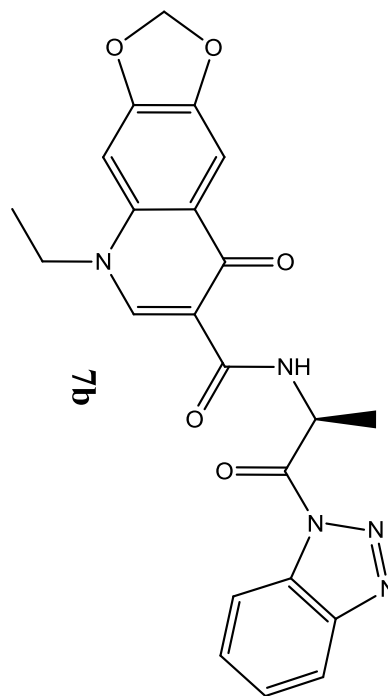
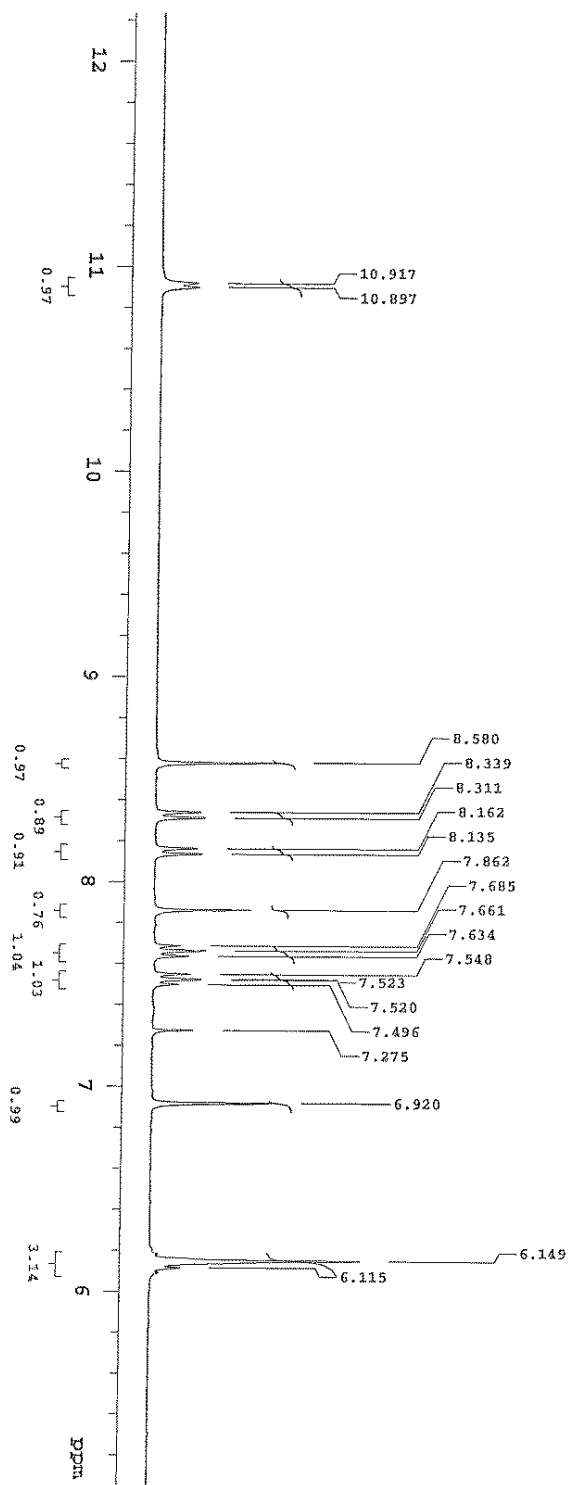
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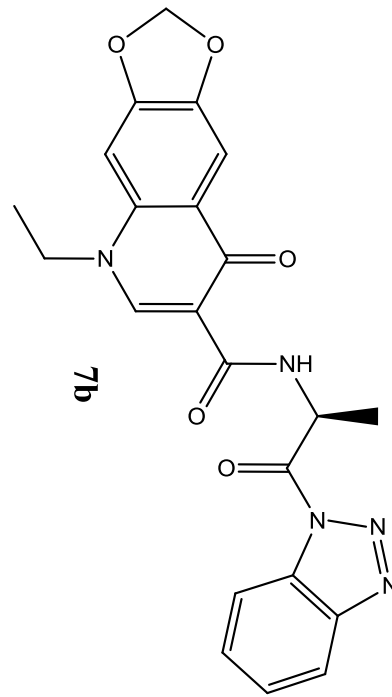
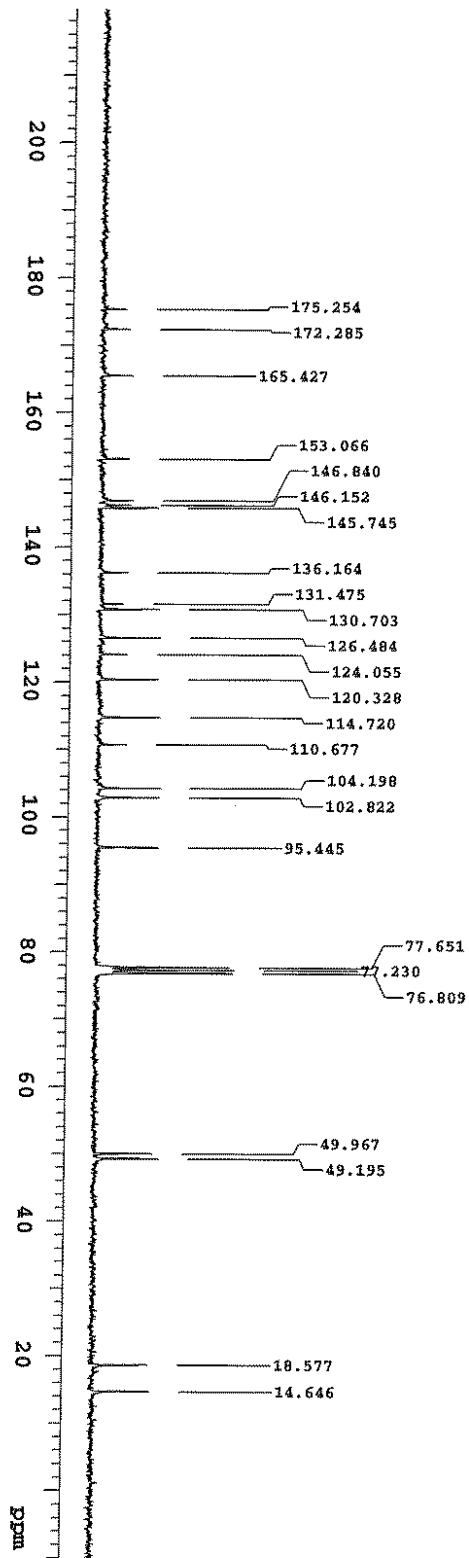
EAGER 200 Unk Report

Instrument name : Instrument #1      Bline drift (fV):-3.6  
 Company Name : U of Florida      Operator Ident. : KOU  
 Analysed : 06-14-11 09:14:37      Printed : 06-14-2011 11:23:10  
 Sample Ident. : 28 OX0-Phe-Bt      Filename : 258928  
 Sample Weight : 2.066      Calc.method: using 'K. Factors'

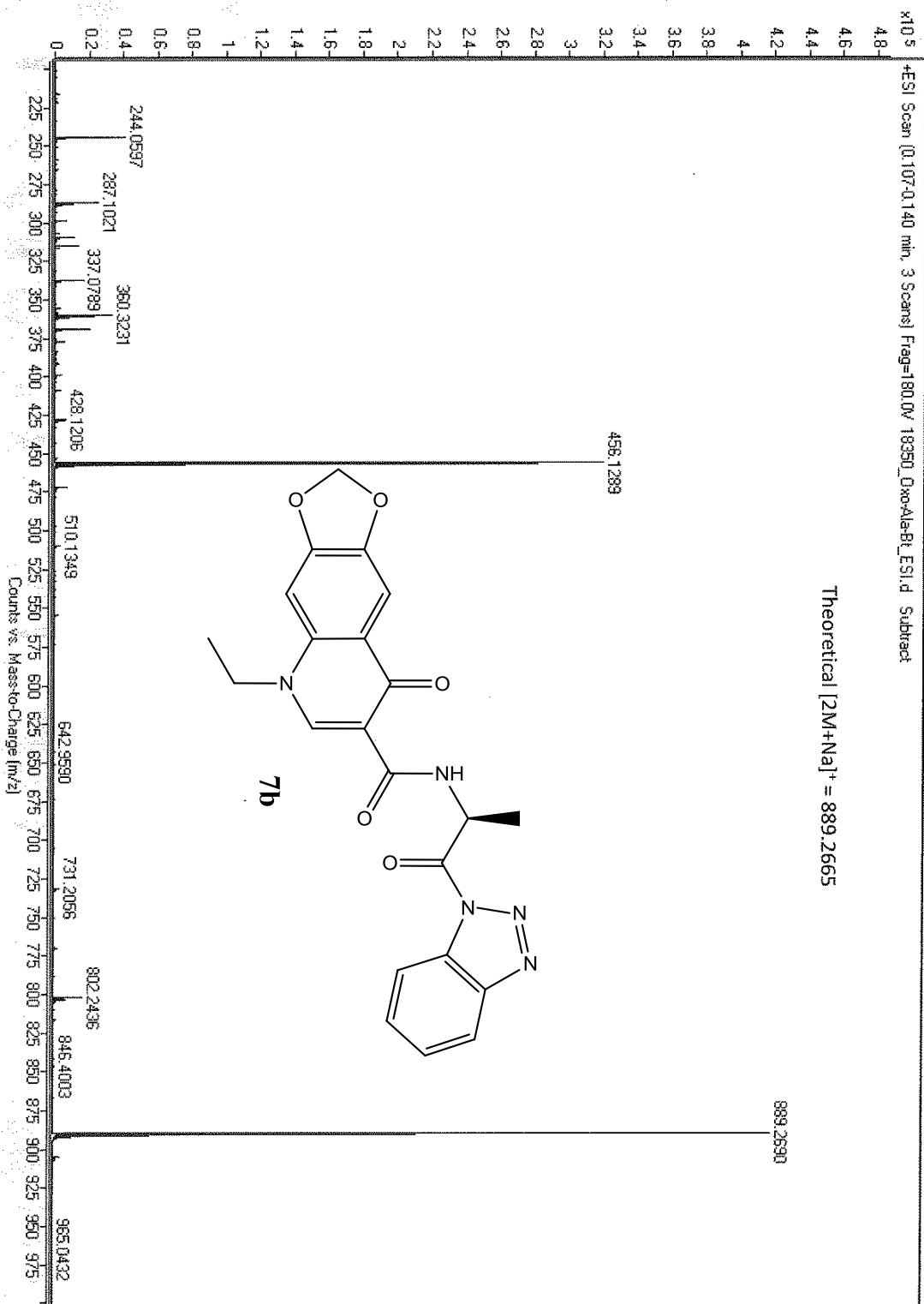
Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	86	63205	13.642	.132483E+02	Nitrogen
2	117	837355	65.779	.100000E+01	Carbon
3	225	161767	4.400	.517631E+01	Hydrogen





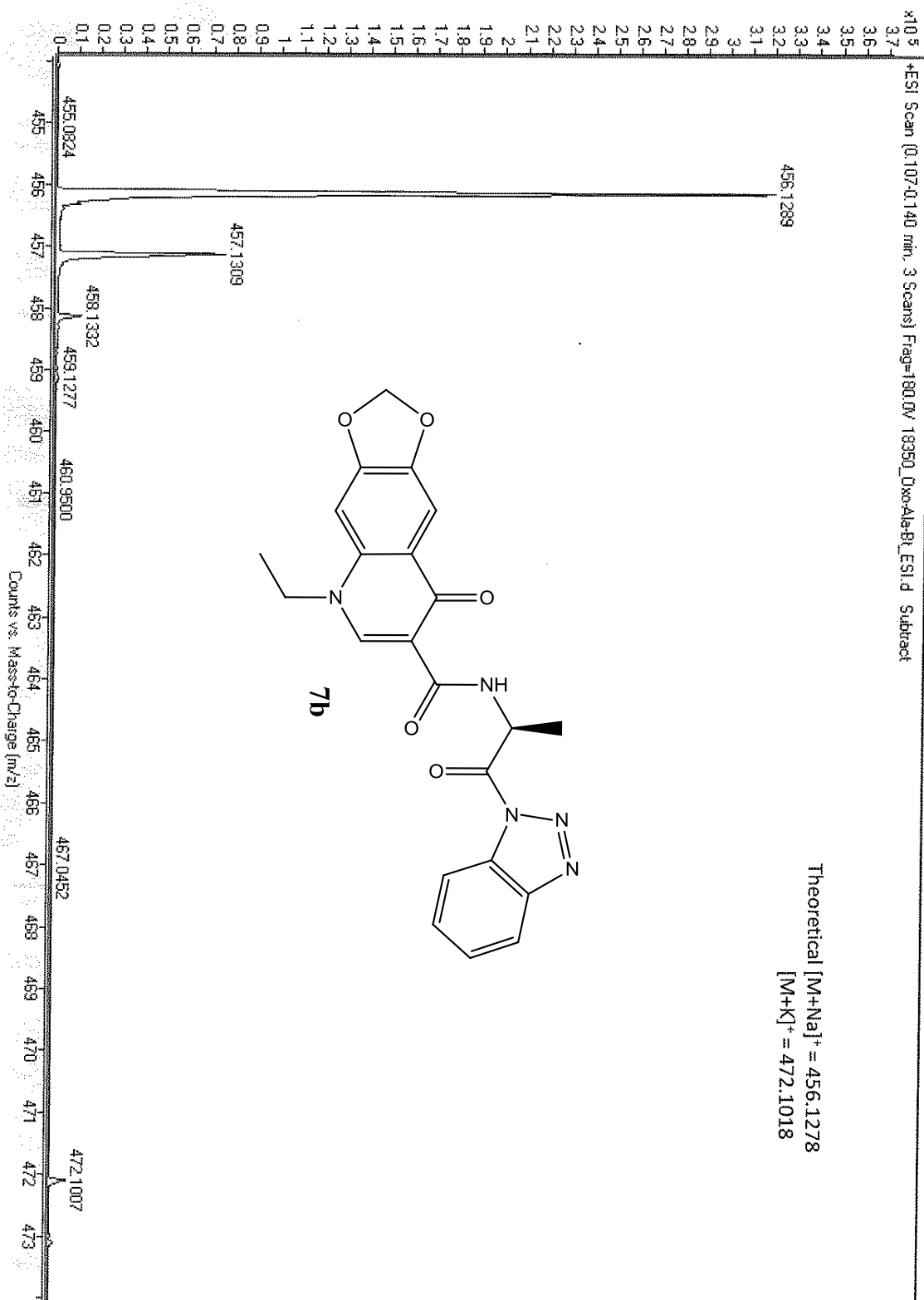


# Full mass spectrum

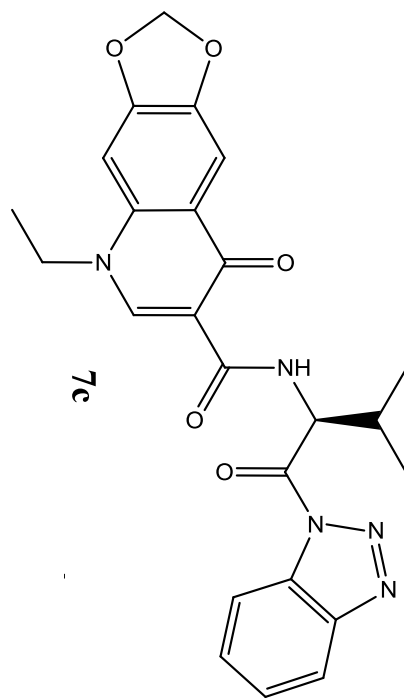
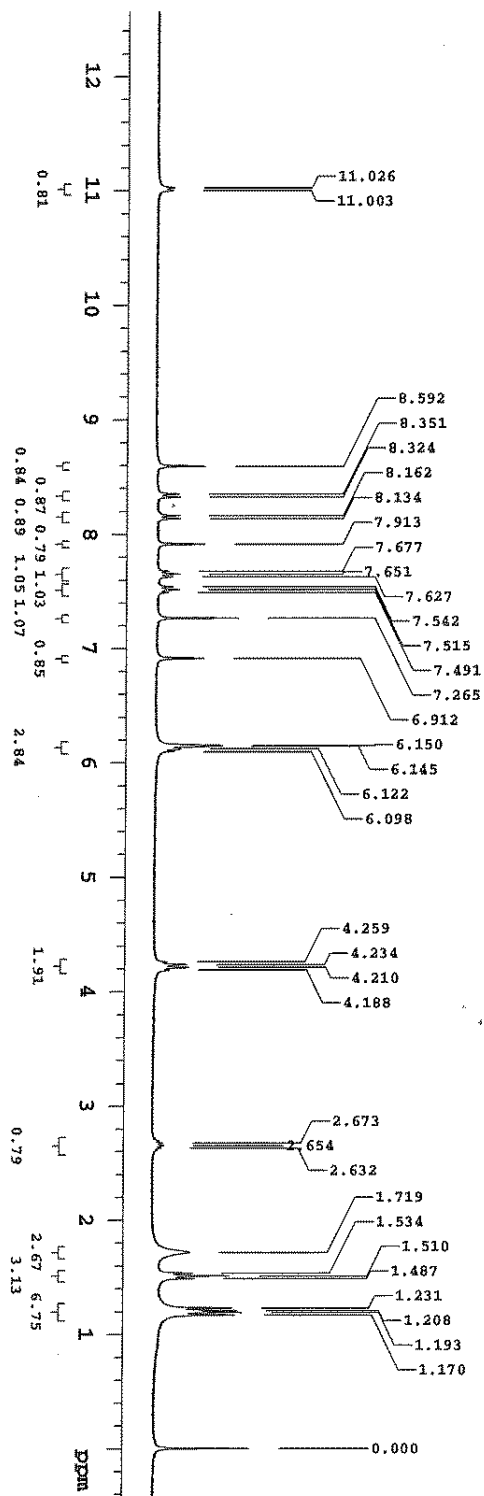


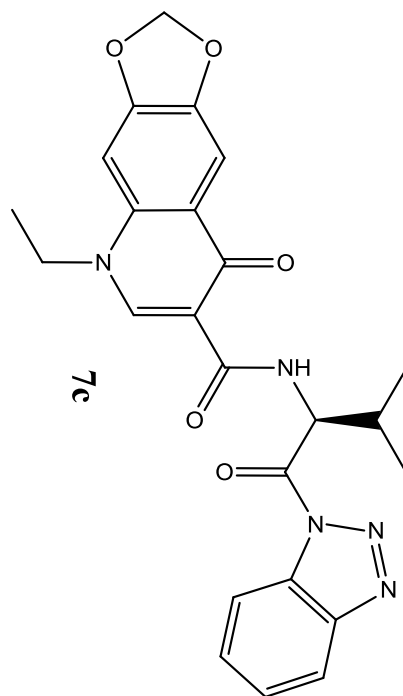
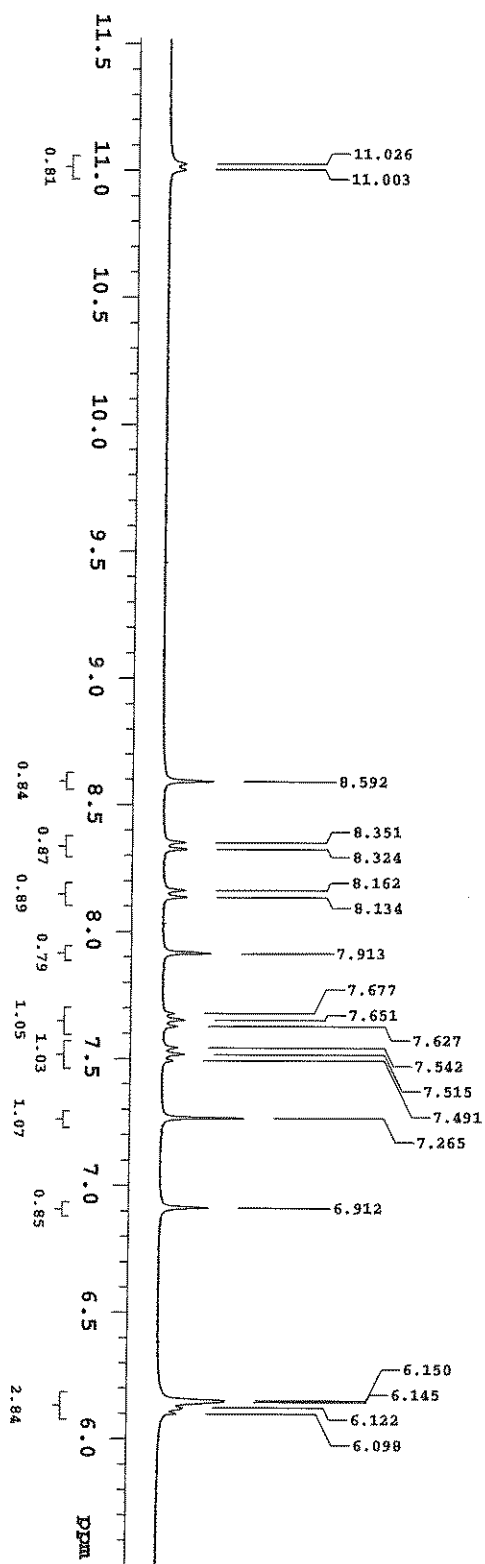
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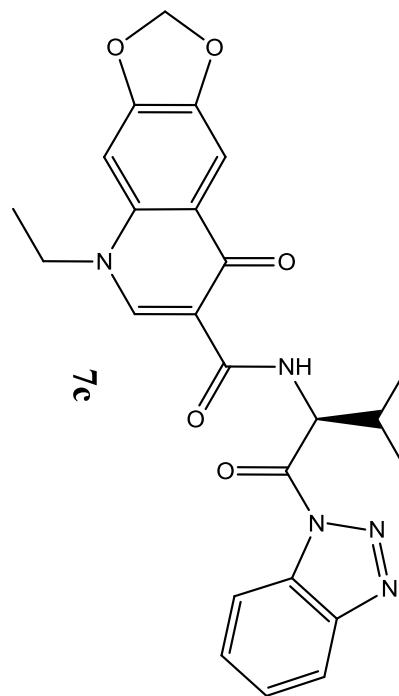
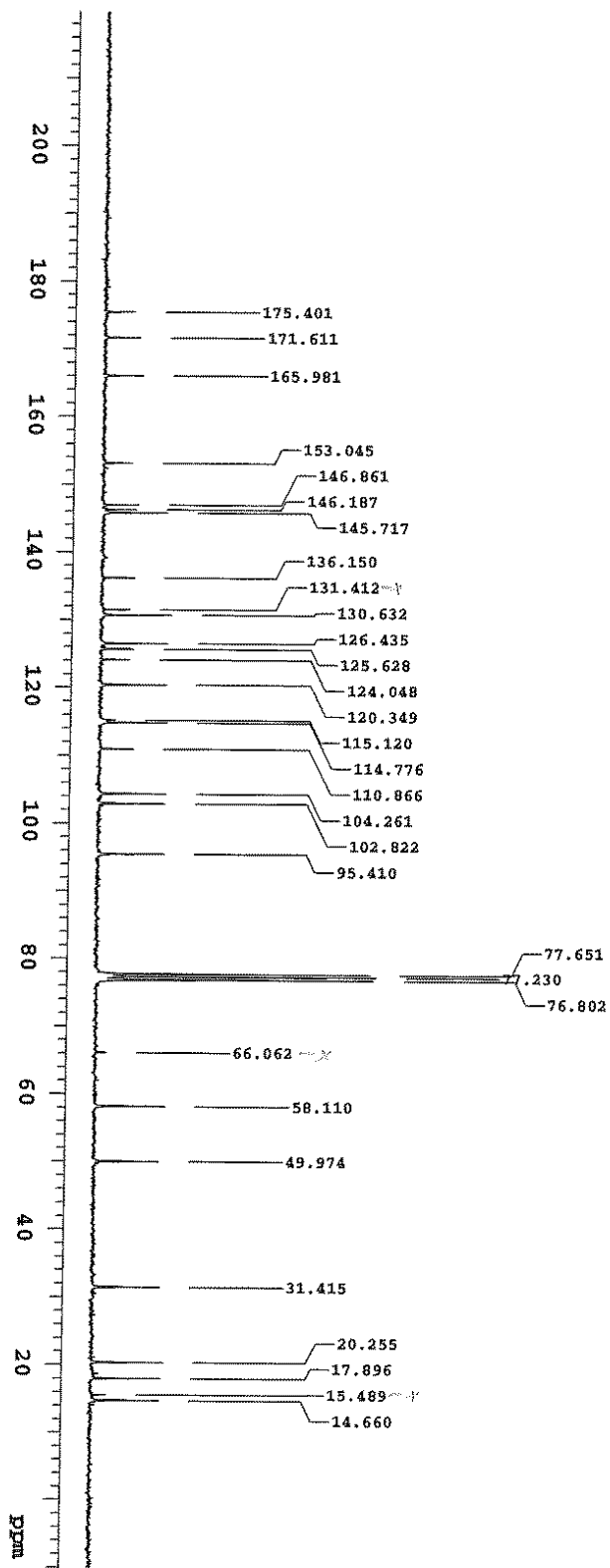
CB



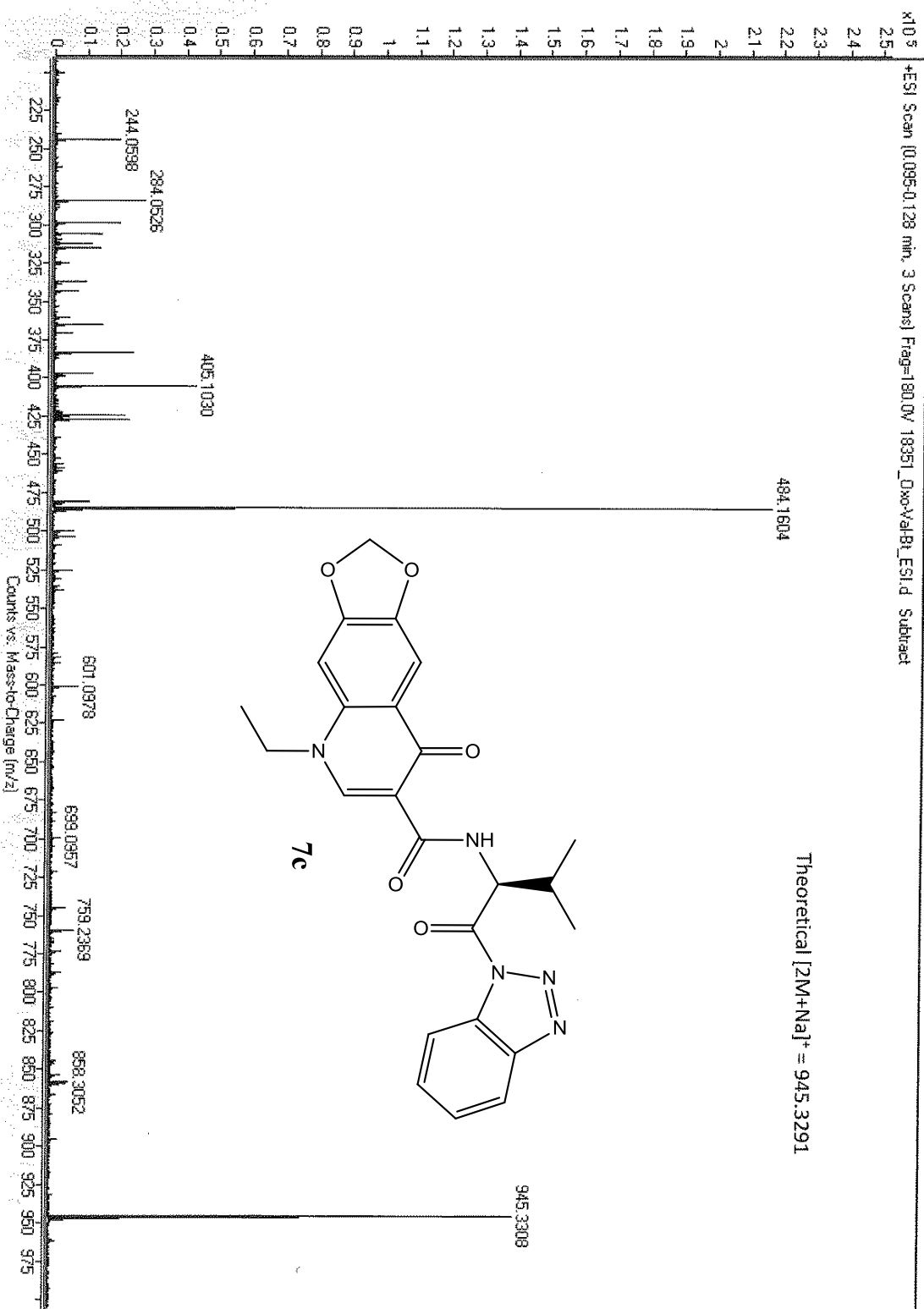






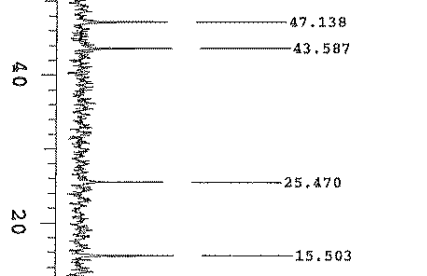
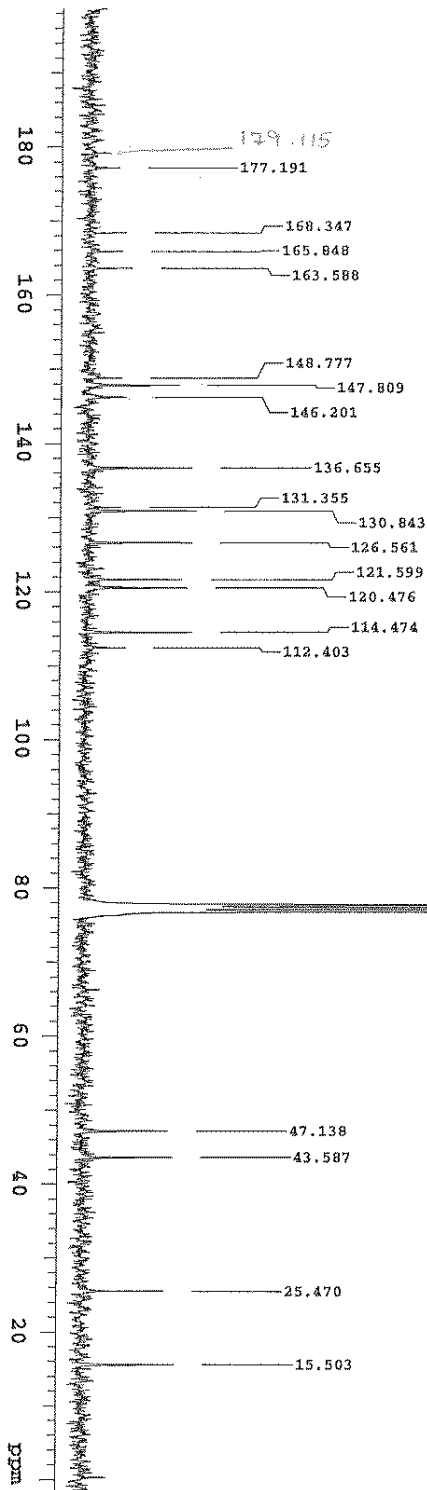
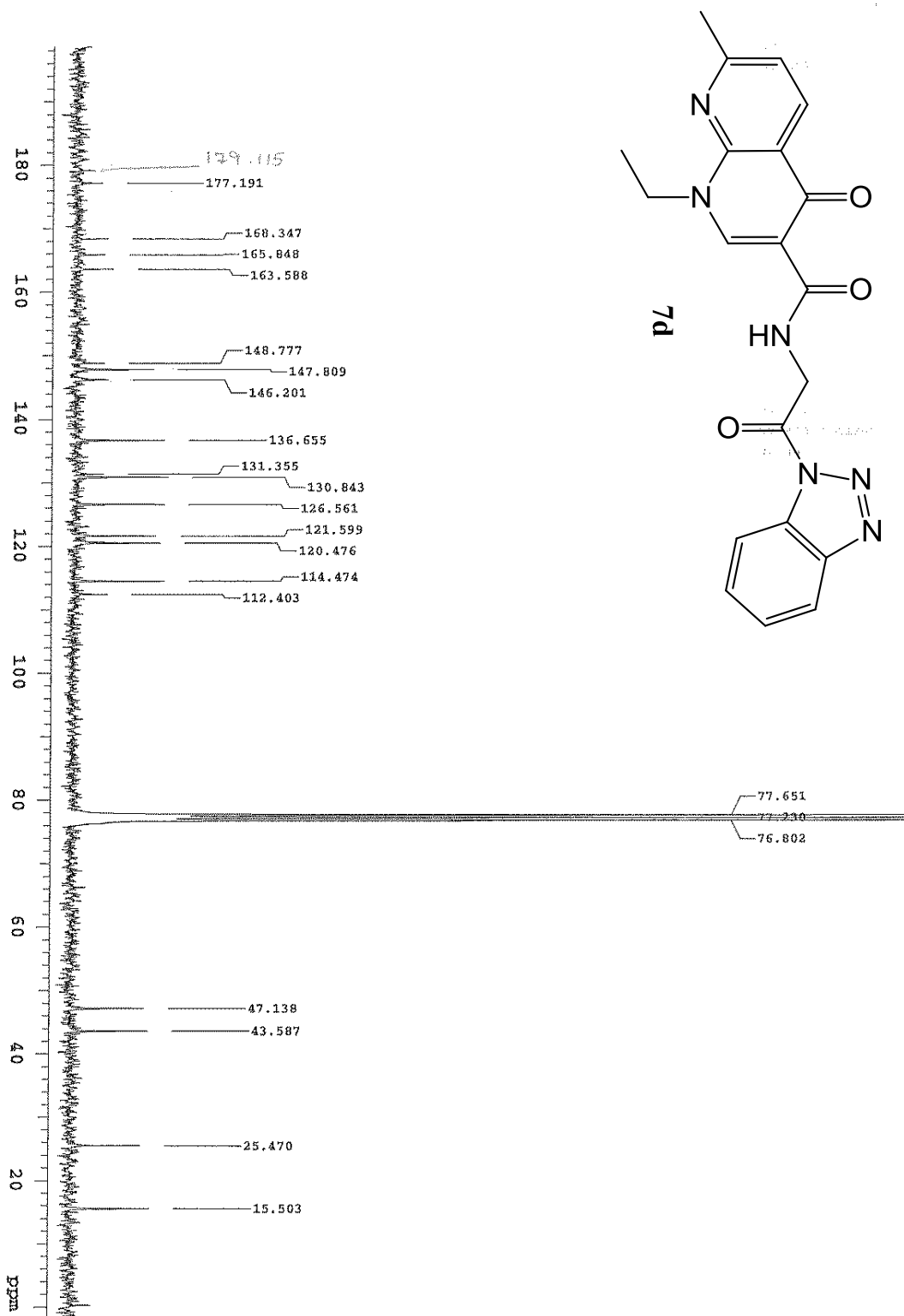


## Full mass spectrum





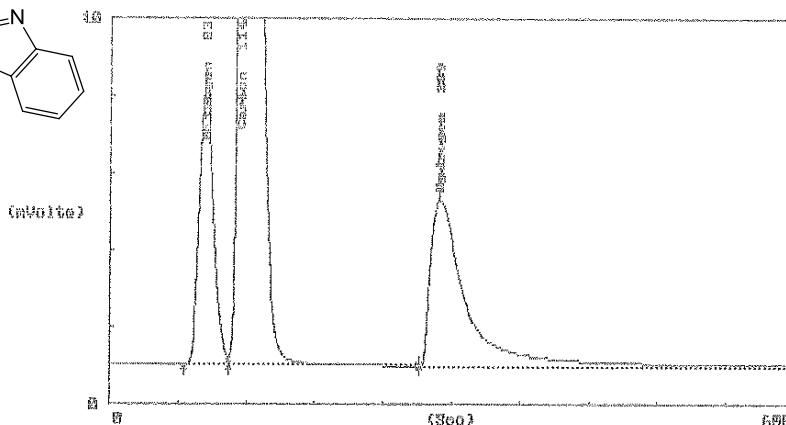
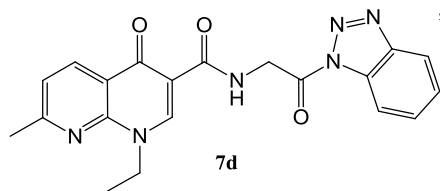




6d

EAGER 200 Stripchart

Sample Ident. : 19 NGB                      Filename : 267019  
 Analysed : 02-10-12 08:22:11           Printed : 02-10-2012 08:32:14



EAGER 200 Peak Integration Report

Instrument name : Instrument #1                      Bline drift (fV):-4.7  
 Company Name : U of Florida                      Operator Ident. : KOU  
 Analysed : 02-10-12 08:22:11                      Printed : 02-10-2012 08:32:14  
 Sample Ident. : 19 NGB                              Filename : 267019  
 Sample Weight : 2.115                              Calc.method: using 'K. Factors'

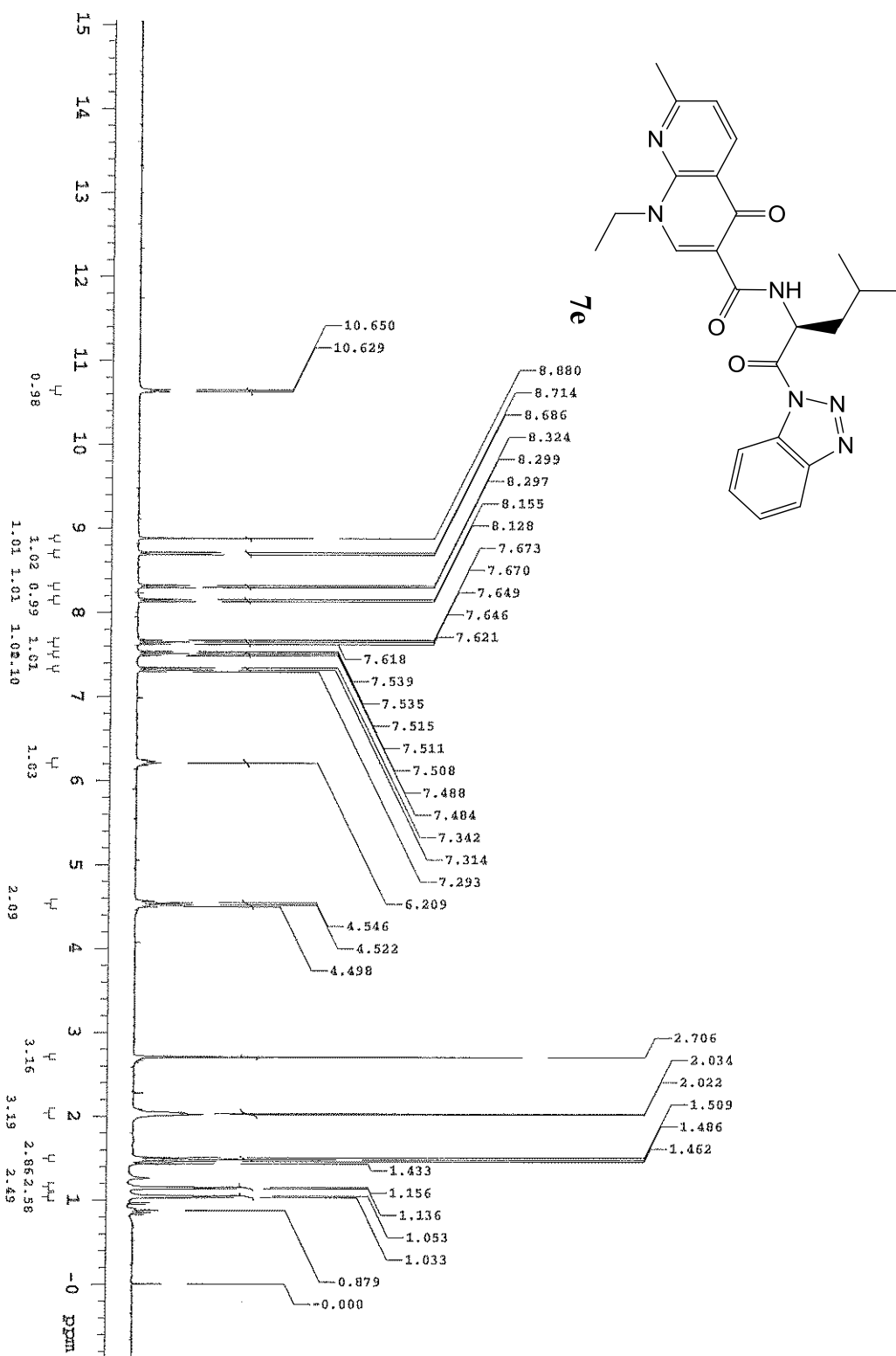
No. (#)	Type	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name
1	FU	65	104	83	7263.9	98884	9.52	Nitrogen
2	FU	104	271	114	51093.1	782265	75.28	Carbon
3	RS	271	598	289	4286.6	158011	15.21	Hydrogen
							1039160	100.00

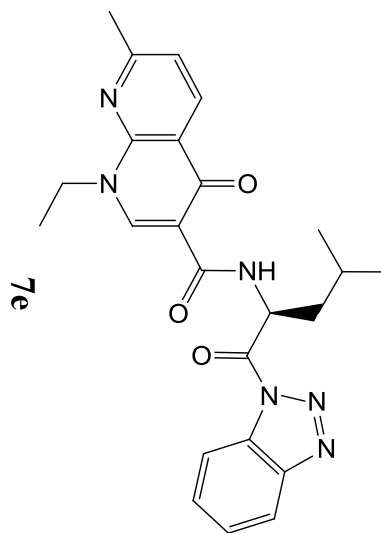
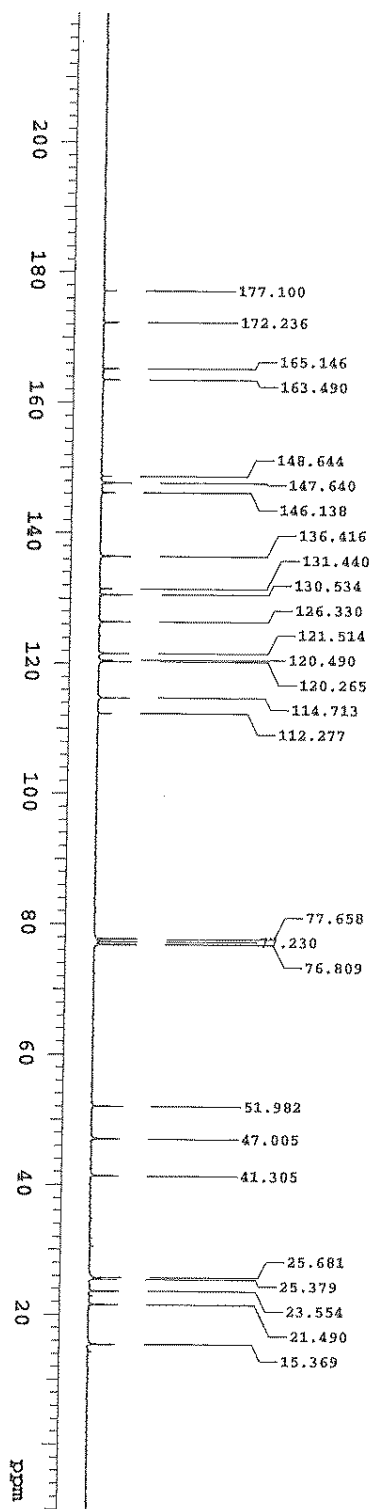
EAGER 200 Unk Report

Instrument name : Instrument #1                      Bline drift (fV):-4.7  
 Company Name : U of Florida                      Operator Ident. : KOU  
 Analysed : 02-10-12 08:22:11                      Printed : 02-10-2012 08:32:14  
 Sample Ident. : 19 NGB                              Filename : 267019  
 Sample Weight : 2.115                              Calc.method: using 'K. Factors'

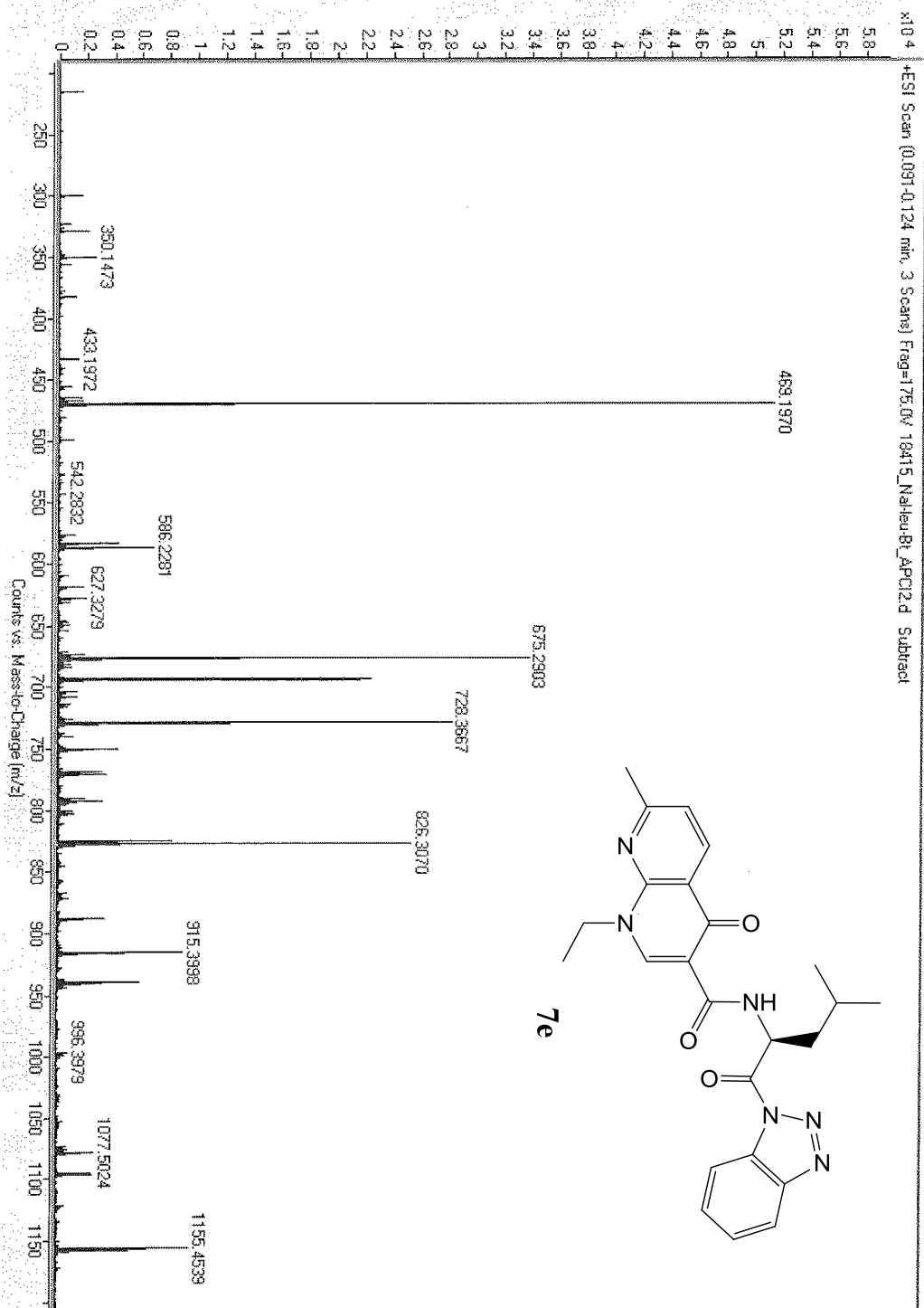
Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	83	98884	21.254	.791093E+01	Nitrogen
2	114	782265	61.160	.100000E+01	Carbon
3	289	158011	4.653	.495069E+01	Hydrogen



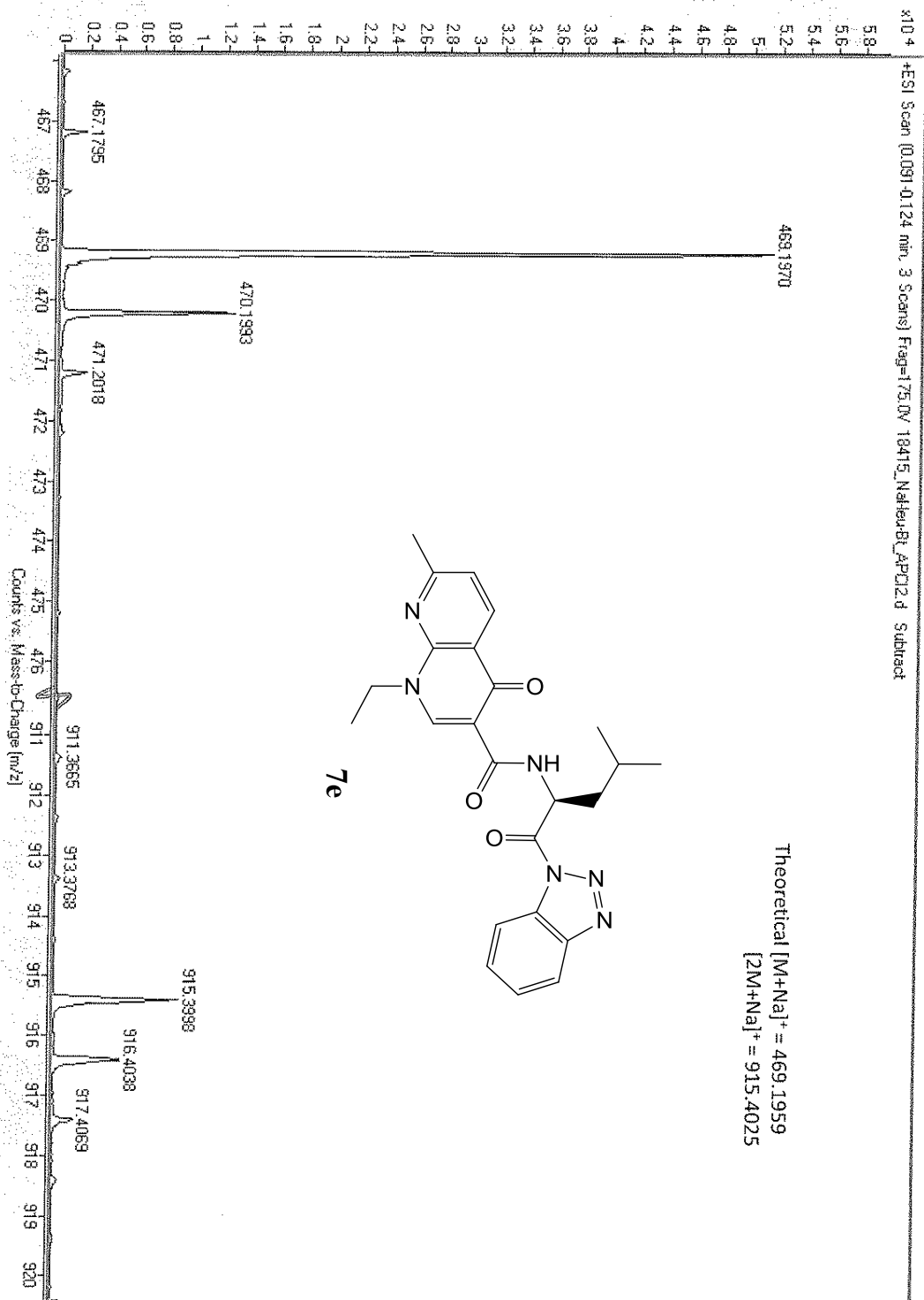


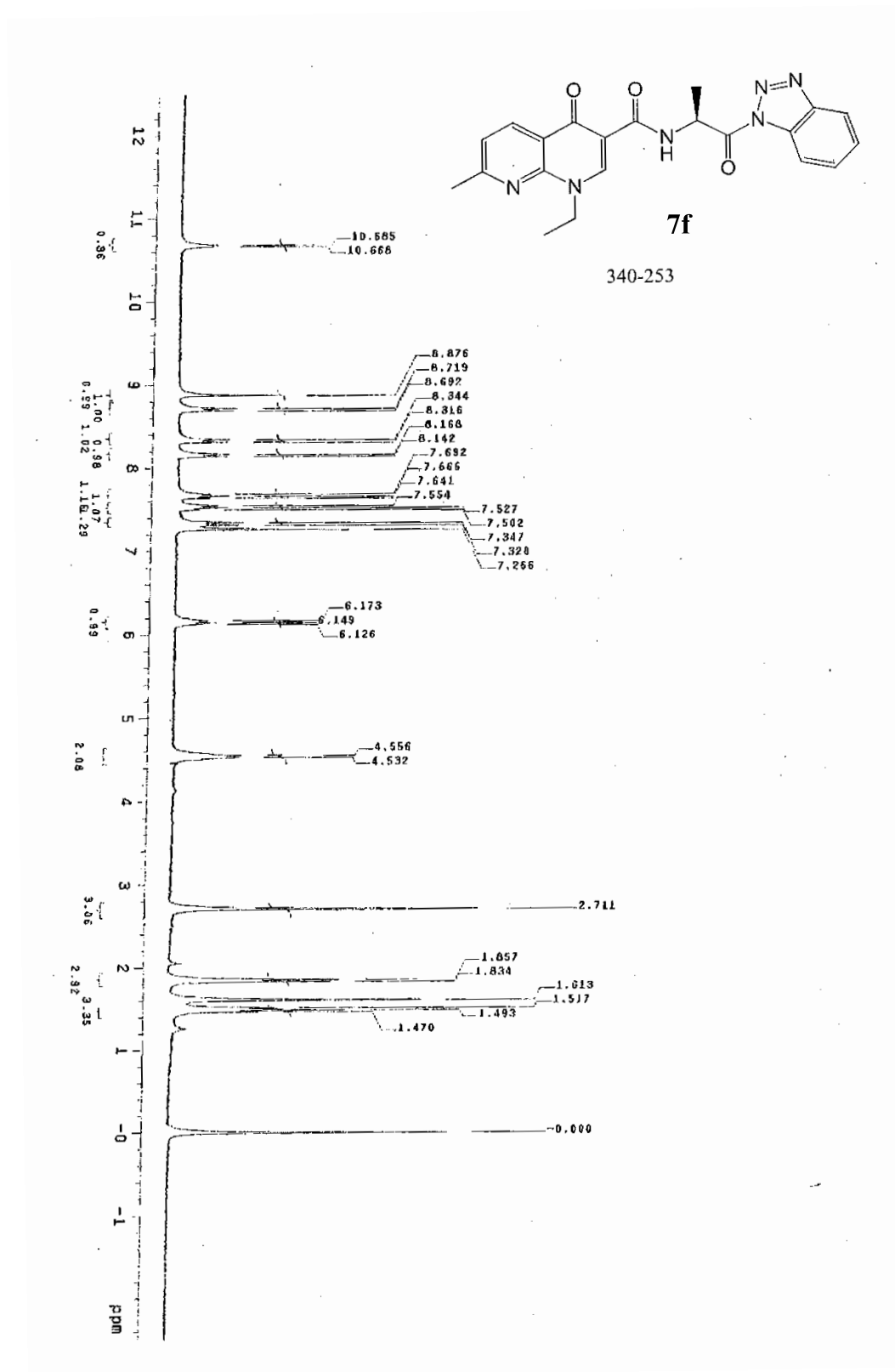


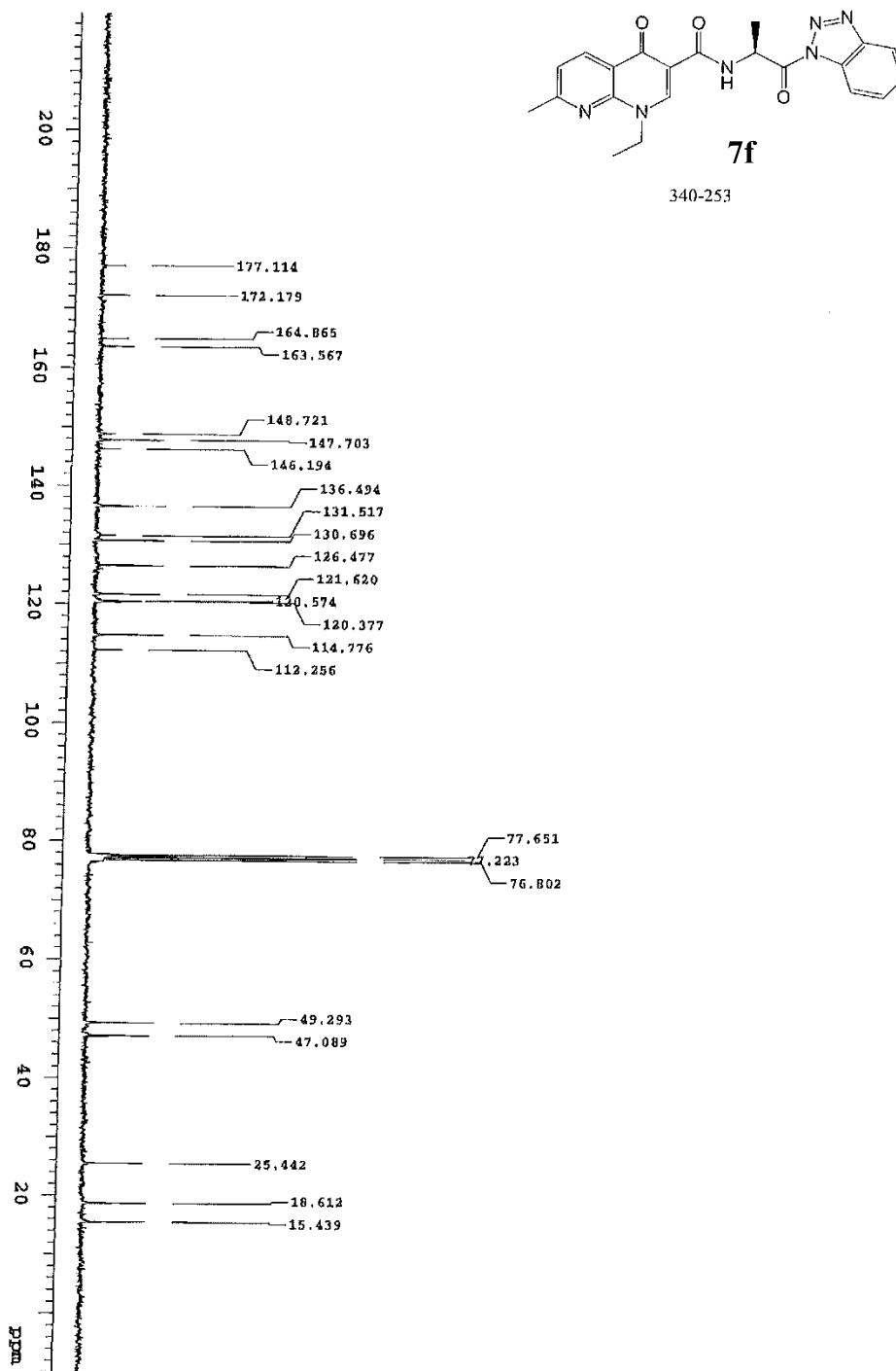
### Full mass spectrum



### Zoom-In View

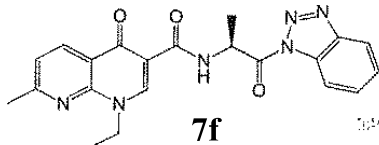




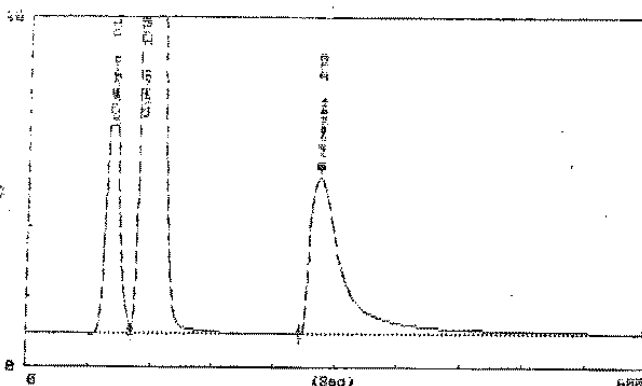


EAGER 200 Stripchart

Sample Ident. : 27 Nal-AB-1      Filename : 265327  
 Analysed : 12-02-11 09:24:28      Printed : 12-02-2011 11:45:16



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EAGER 200 Peak Integration Report

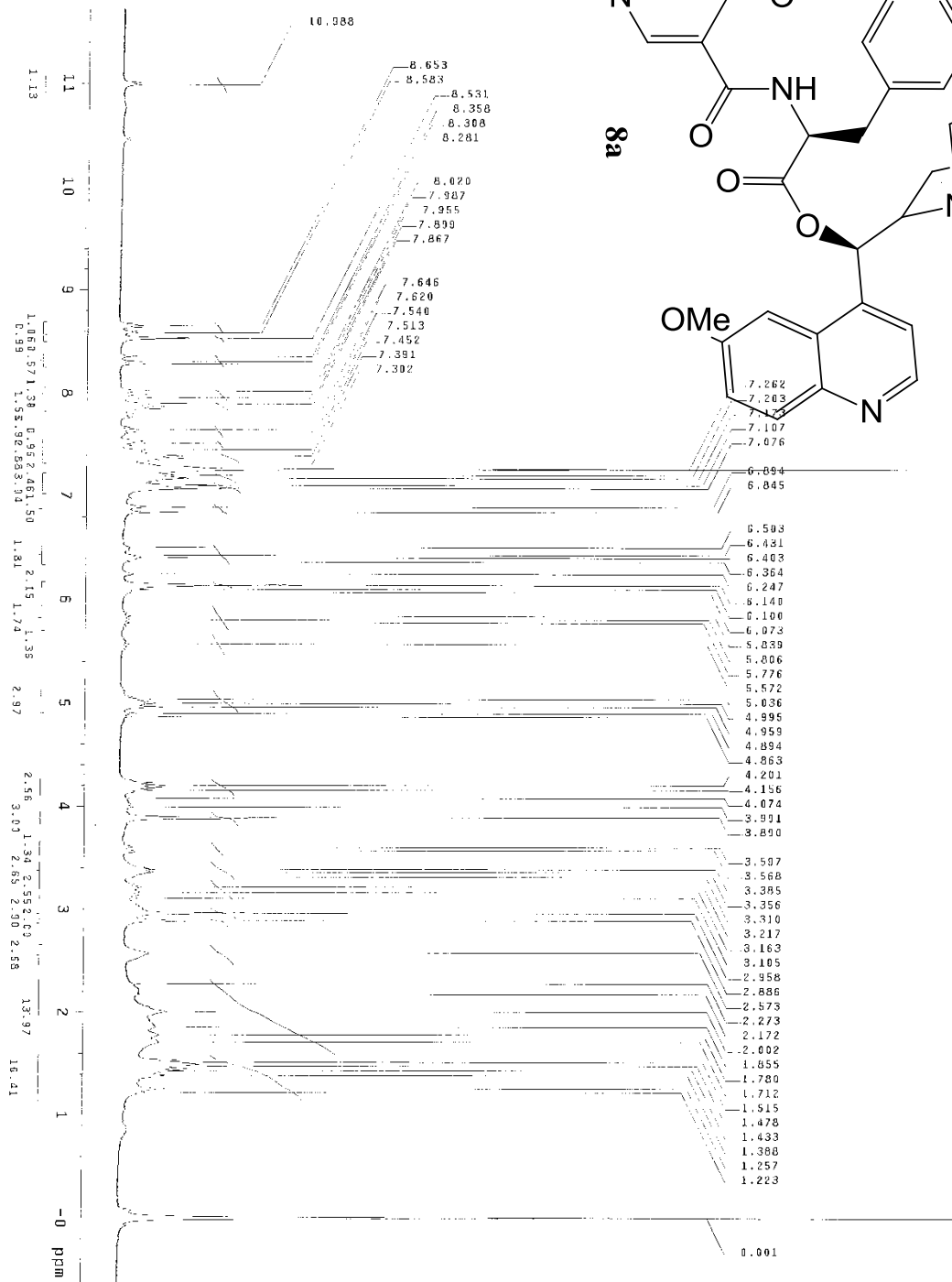
Instrument name : Instrument #1      Bline drift (fV): 3.7  
 Company Name : U of Florida      Operator Ident. : KOU  
 Analysed : 12-02-11 09:24:28      Printed : 12-02-2011 11:45:16  
 Sample Ident. : 27 Nal-AB-1      Filename : 265327  
 Sample Weight : 2.174      Calc.method: using 'K. Factors'

No.	Type	Start (s)	End (s)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name	
1	1	87	131	91	7090.2	25041	2.06	Nitrogen	
2	1	101	200	112	53204.5	701397	74.50	Carbon	
3	10	100	596	200	4430.0	172000	16.41	Hydrogen	
							1043408	100.00	

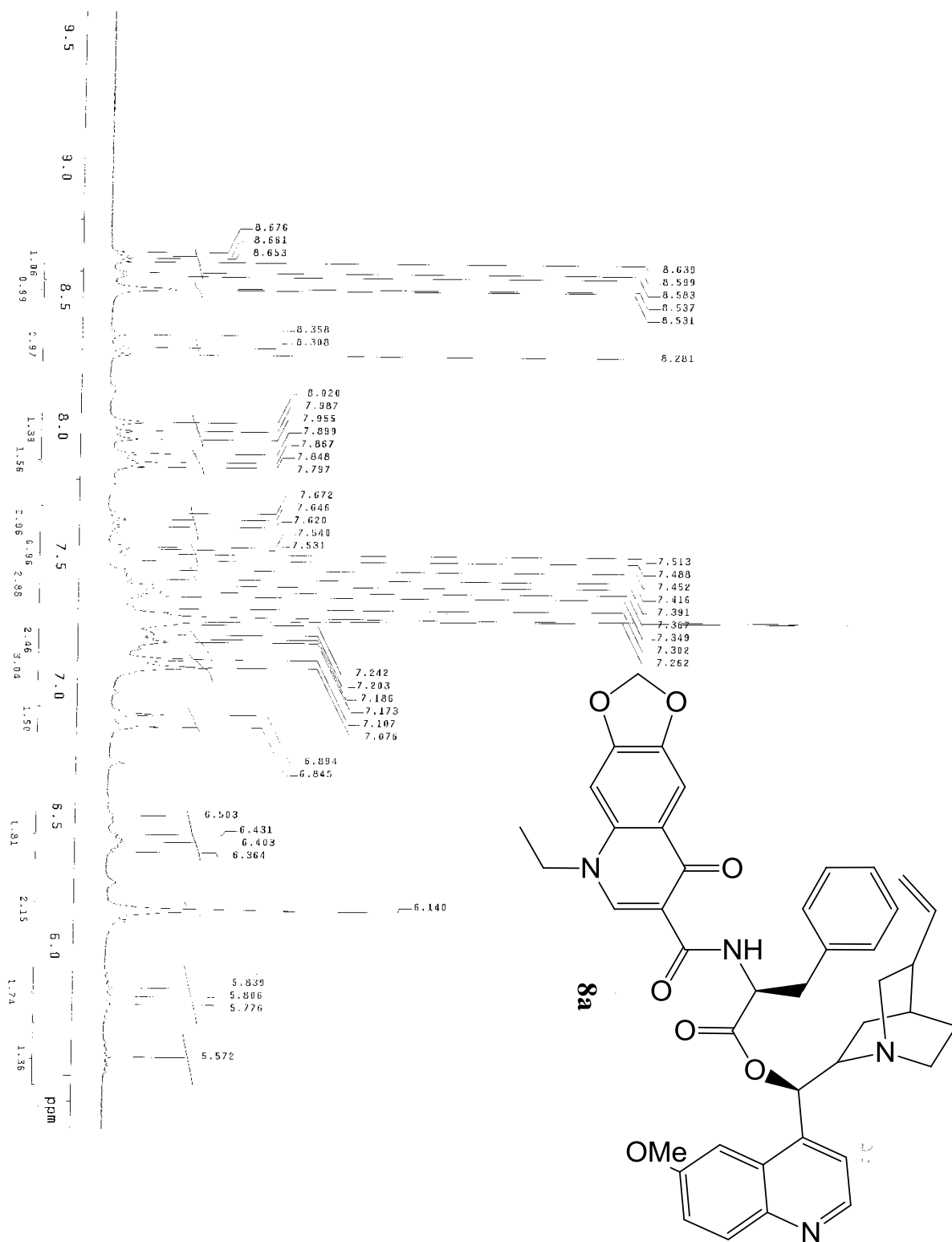
EAGER 200 Unk Report

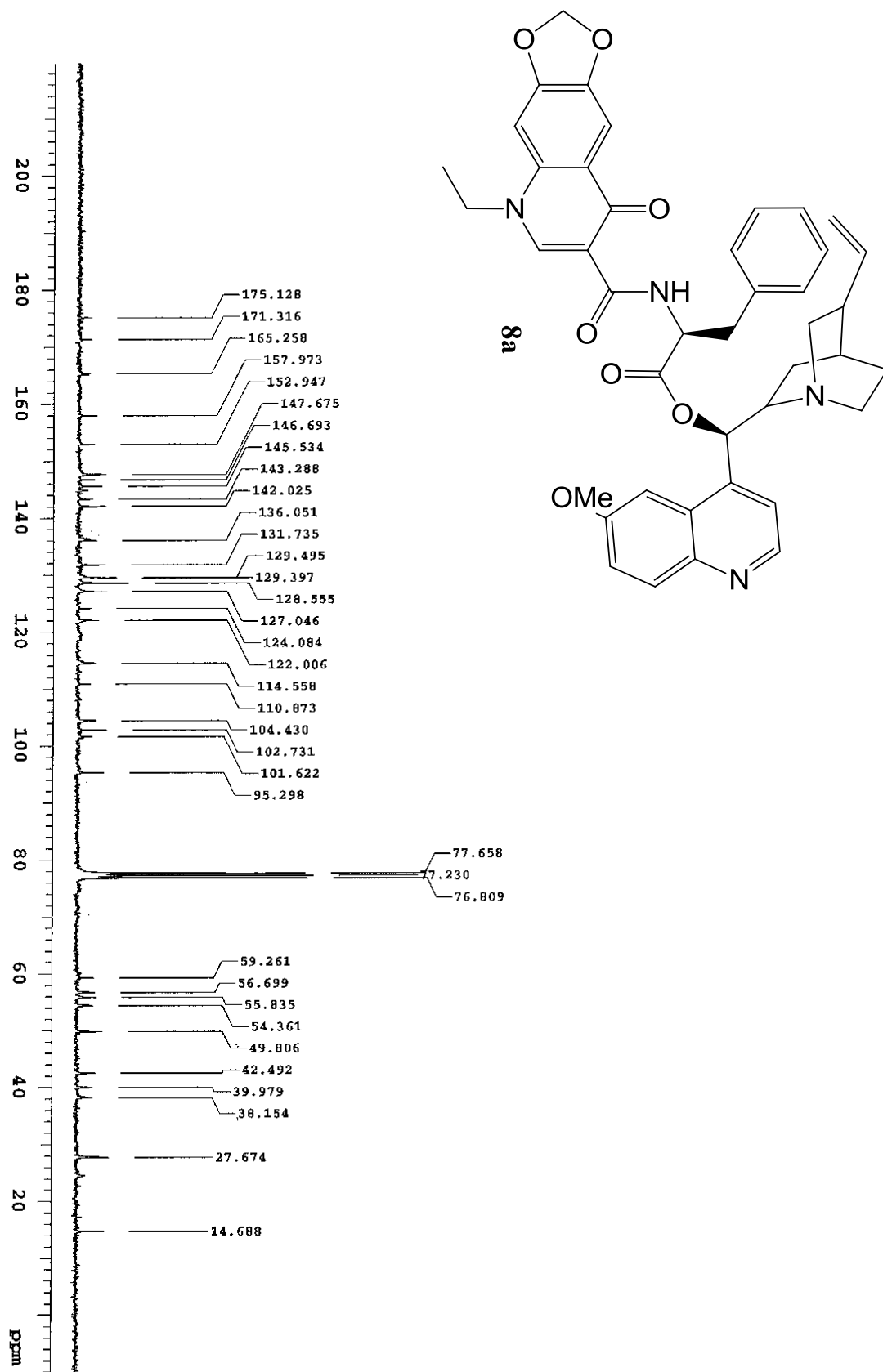
Instrument name : Instrument #1      Bline drift (fV): 3.7  
 Company Name : U of Florida      Operator Ident. : KOU  
 Analysed : 12-02-11 09:24:28      Printed : 12-02-2011 11:45:16  
 Sample Ident. : 27 Nal-AB-1      Filename : 265327  
 Sample Weight : 2.174      Calc.method: using 'K. Factors'

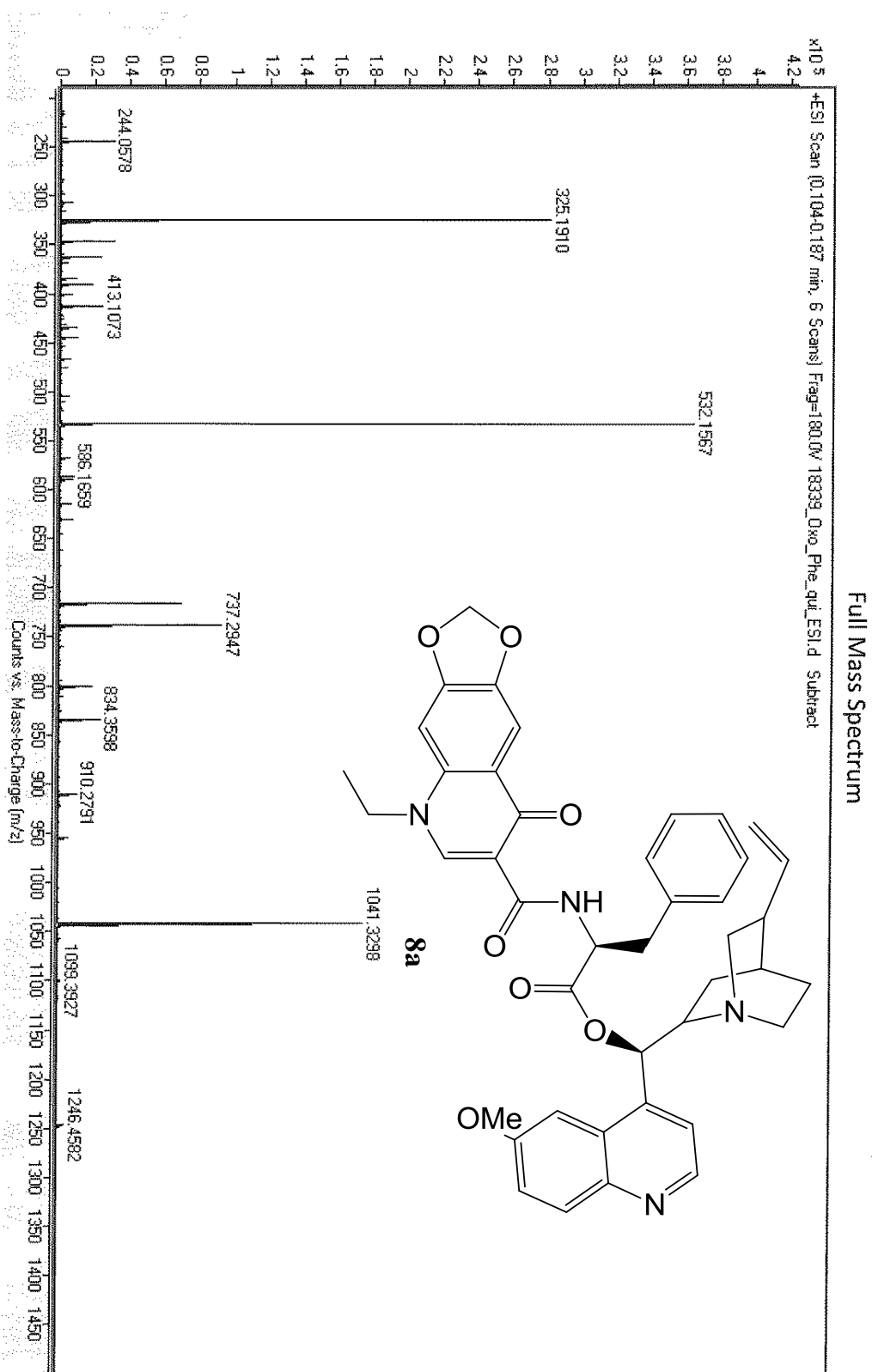
Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	91	25041	20.667	.022171E+01	Nitrogen
2	112	701397	62.029	.100000E+01	Carbon
3	200	172000	5.015	.454221E+01	Hydrogen

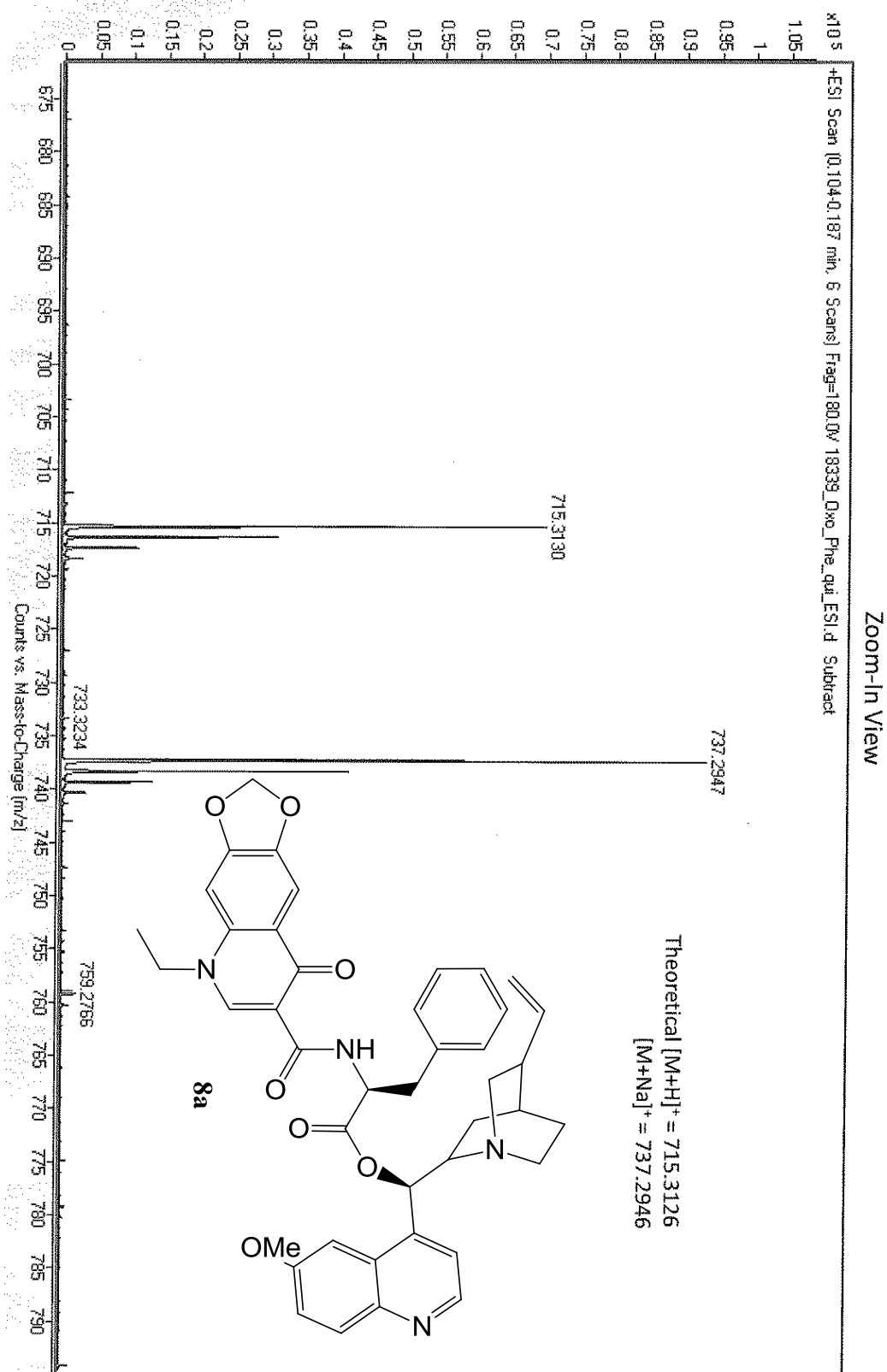


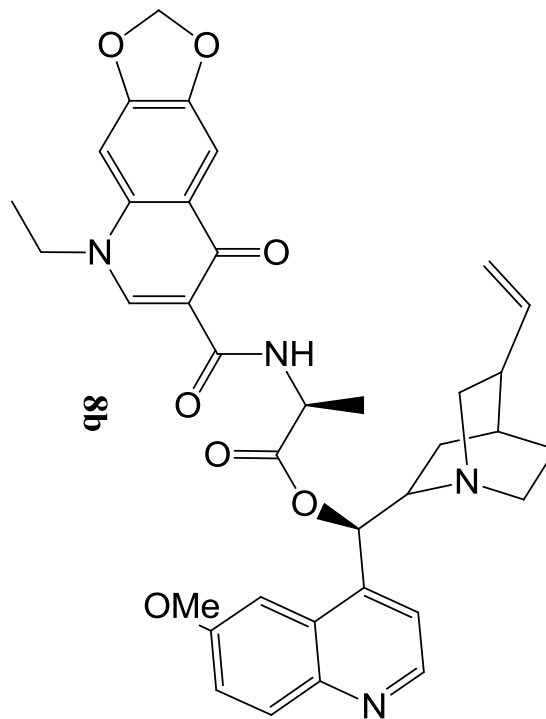
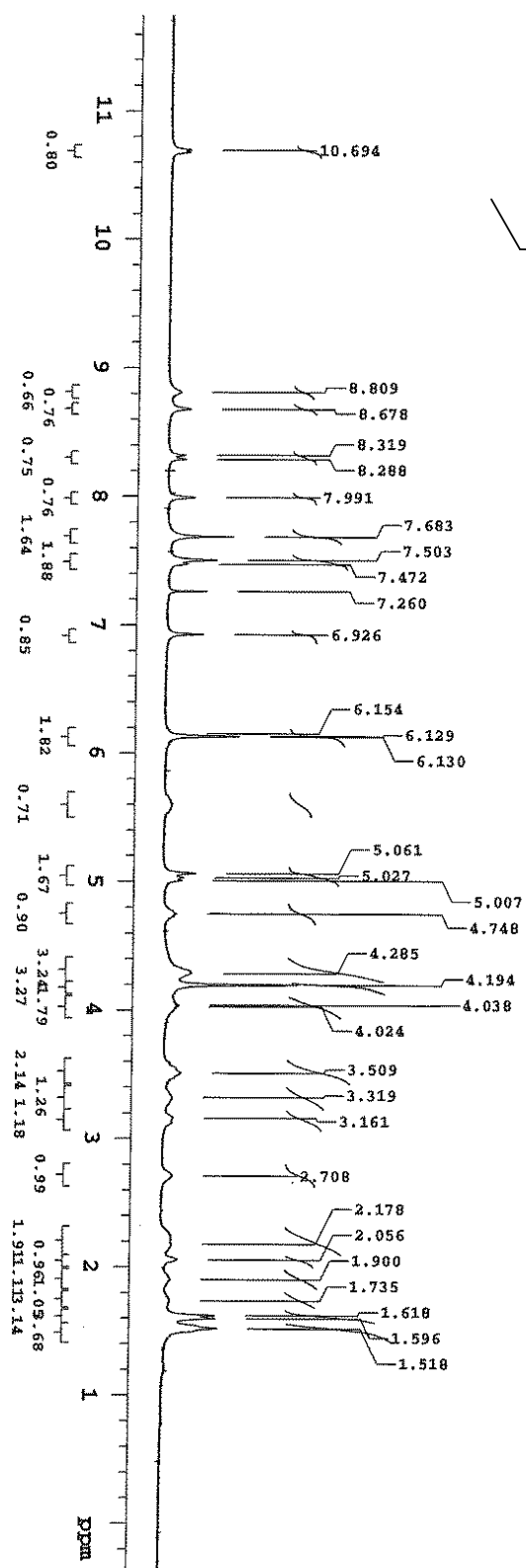


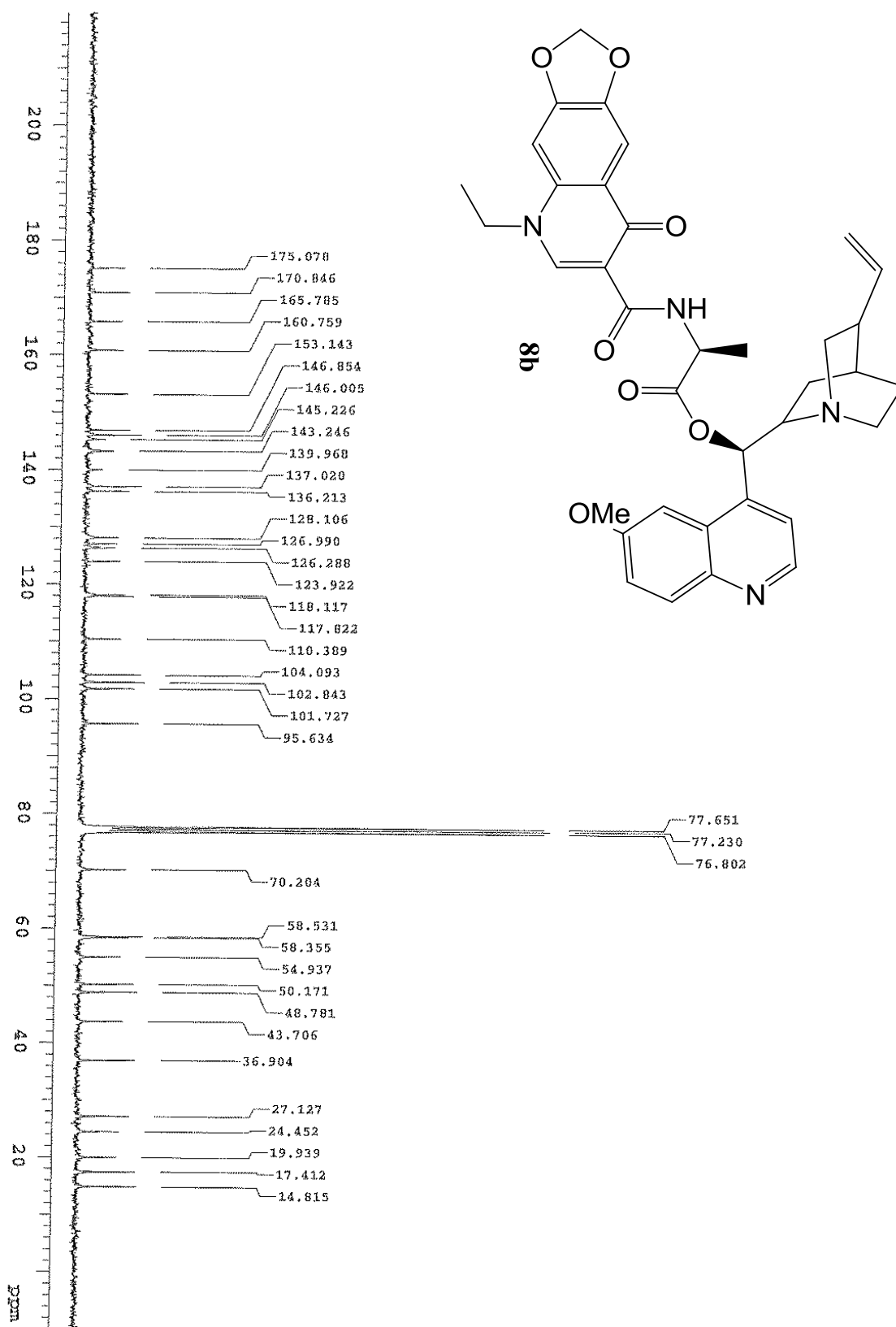


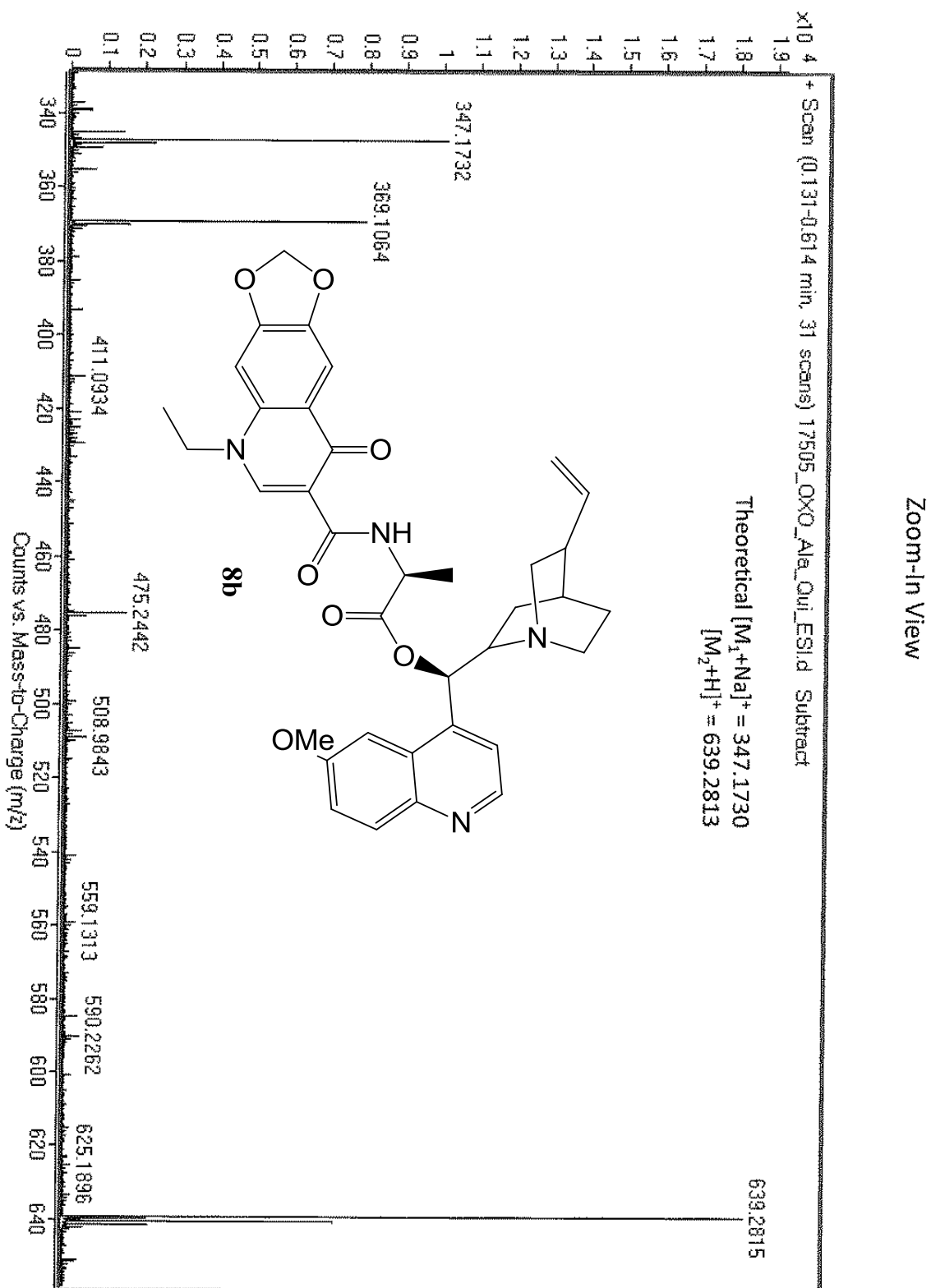


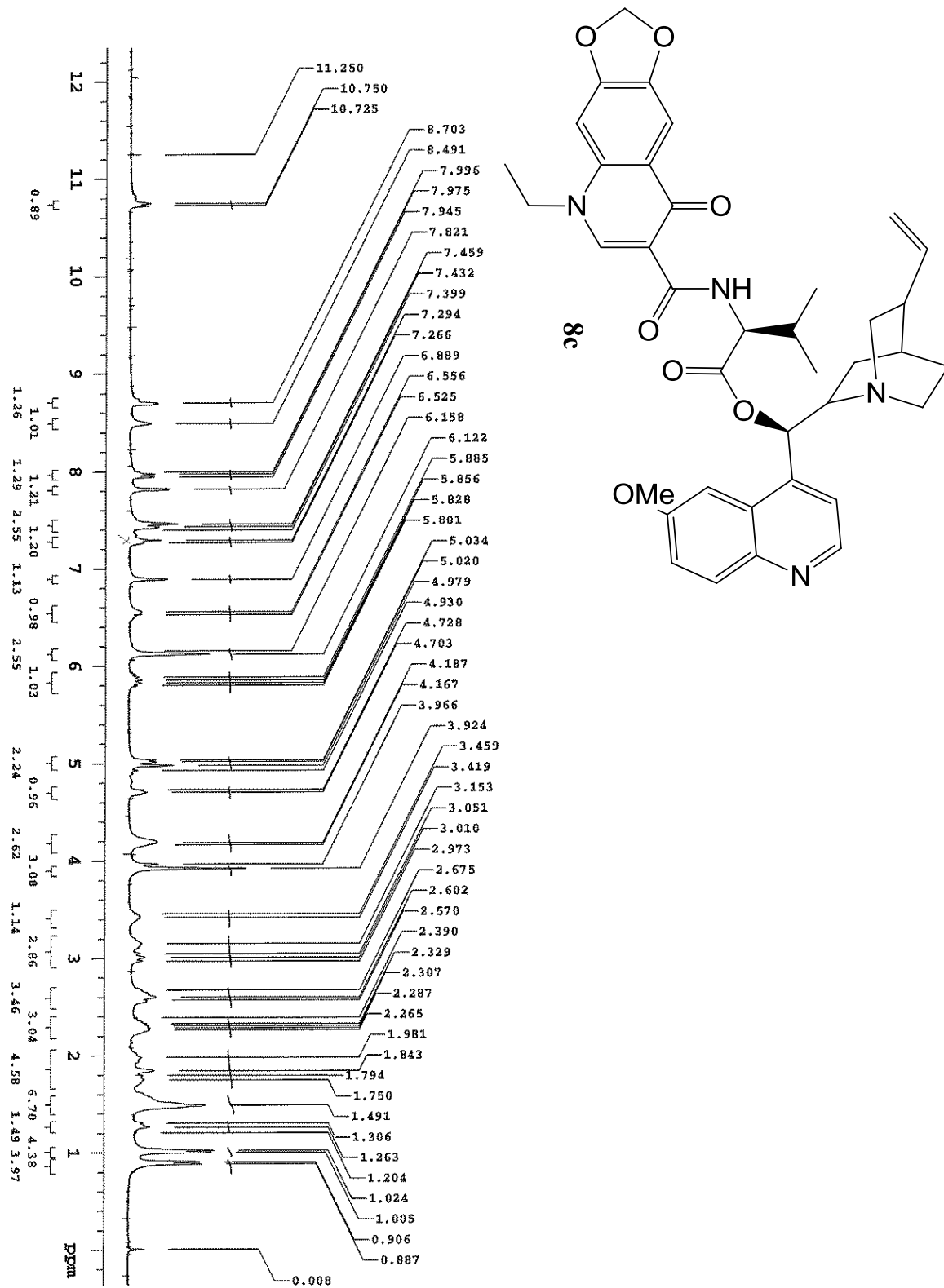




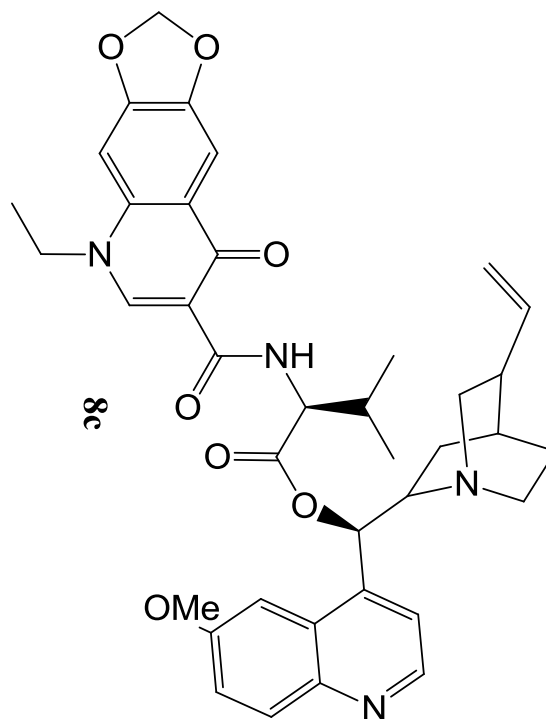
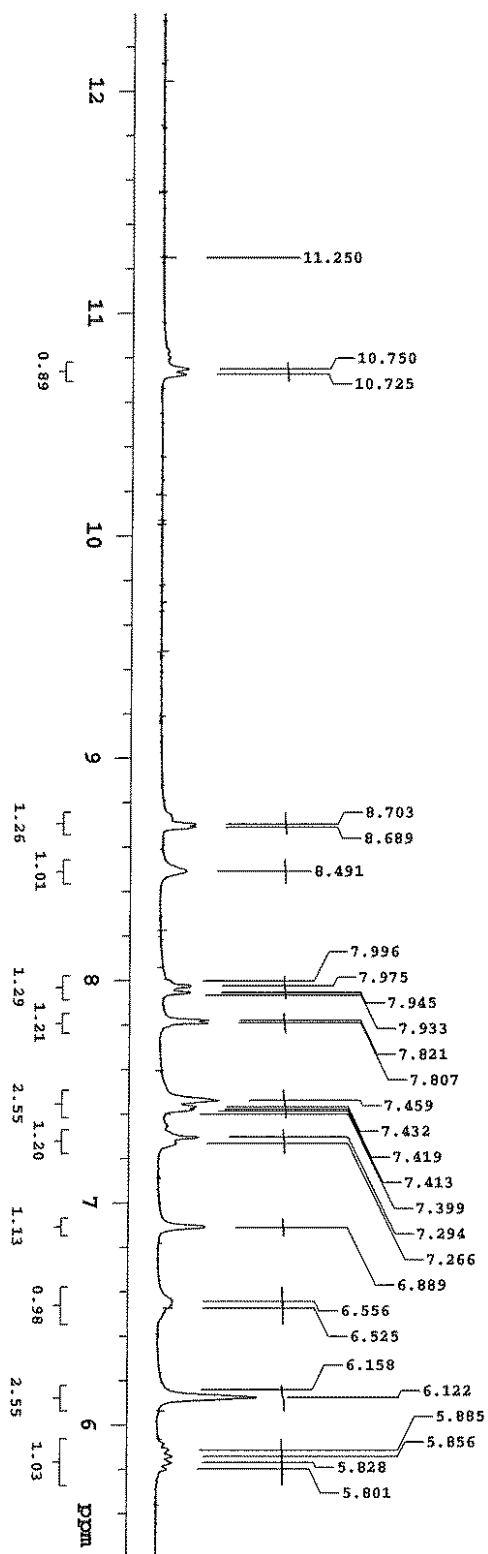


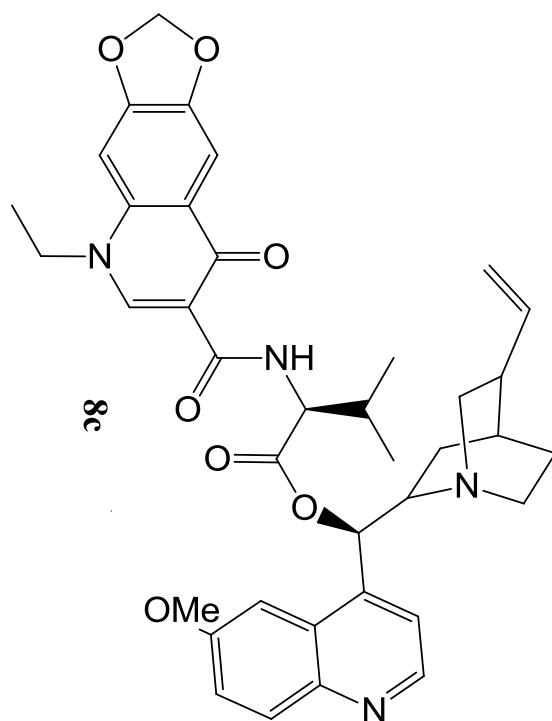
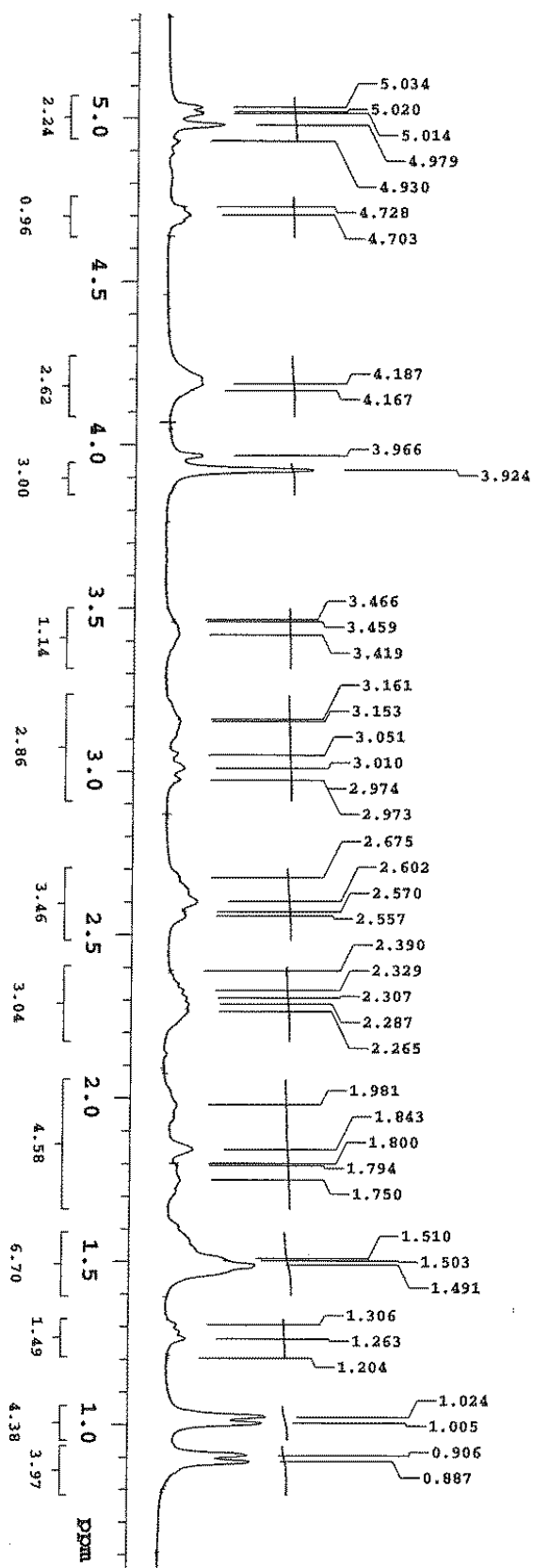


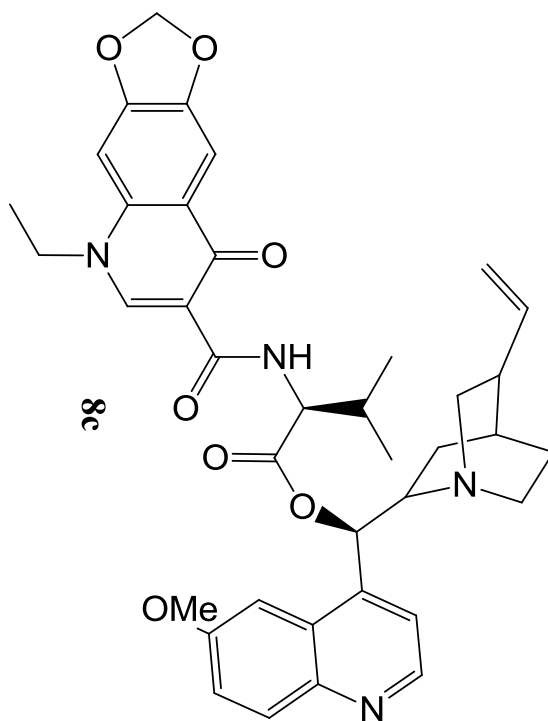
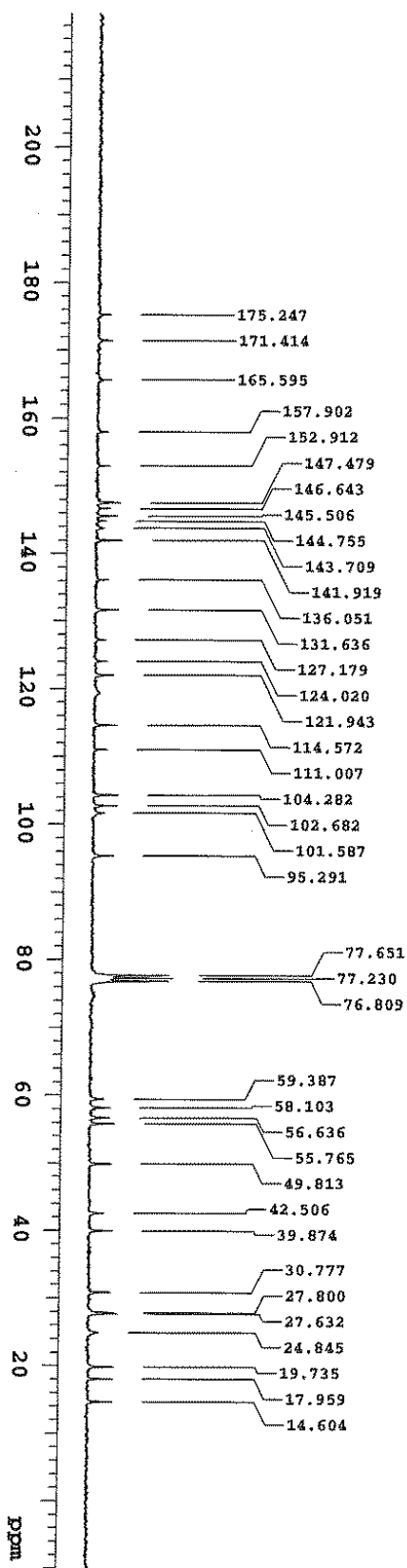






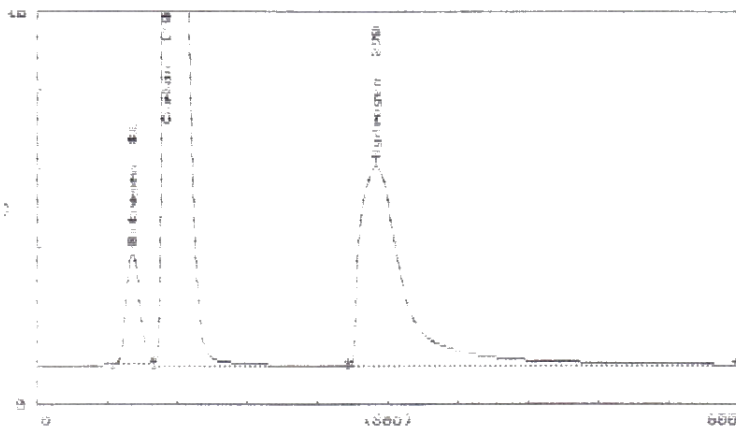
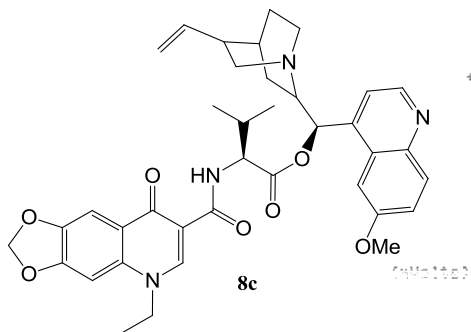






EAGER 200 Stripchart

Sample Ident. : 01 OXO-Val Qui (B) Filename : 265331  
 Analysed : 12-02-11 10:04:39 Printed : 12-02-2011 11:45:28



EAGER 200 Peak Integration Report

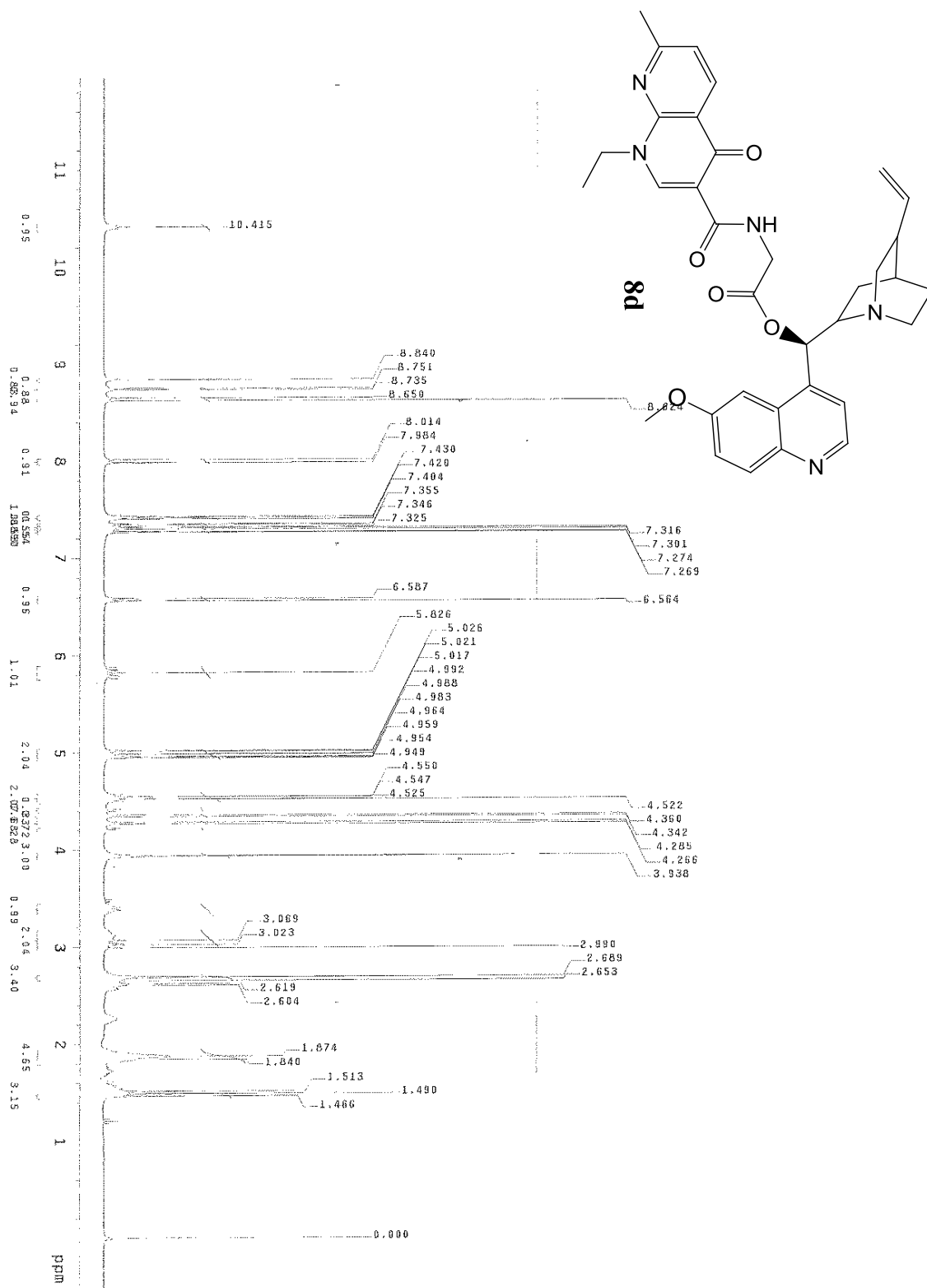
Instrument name : Instrument #1 Bline drift (fV):-2.6  
 Company Name : U of Florida Operator Ident. : KOU  
 Analysed : 12-02-11 10:04:39 Printed : 12-02-2011 11:45:28  
 Sample Ident. : 01 OXO-Val-Qui (B) Filename : 265331  
 Sample Weight : 2.104 Calc.method: using 'K. Factors'

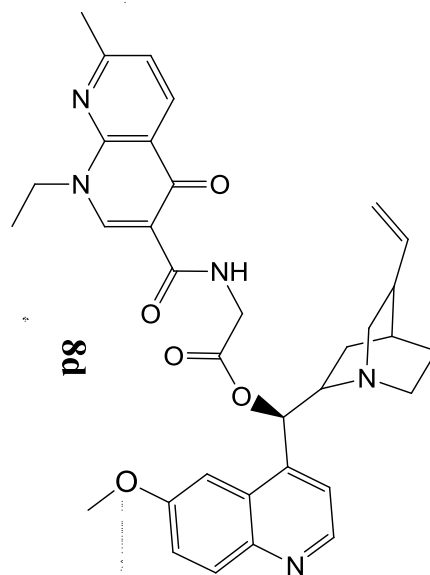
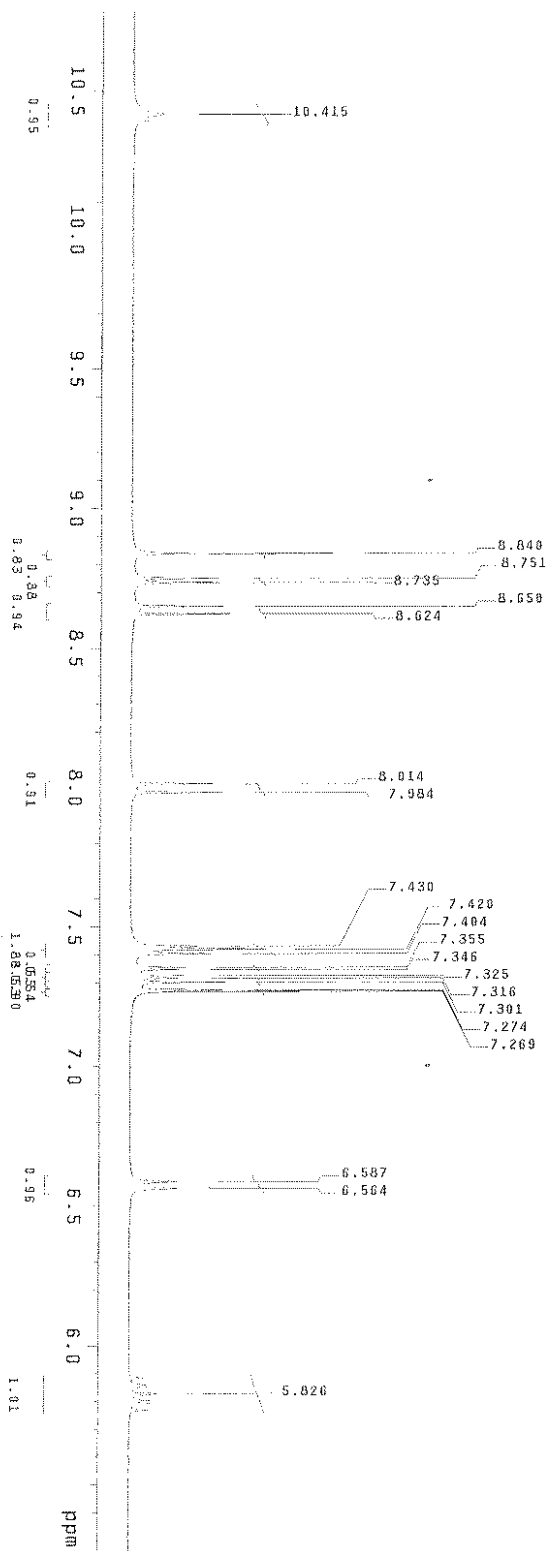
No. (#)	Type (#)	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name
1	CM	105	109	81	2826.9	36768	3.38	Nitrogen
2	CM	105	200	110	50245.8	829825	76.26	Carbon
3	CM	200	307	290	5050.4	221446	20.36	Hydrogen
						1087839	100.00	

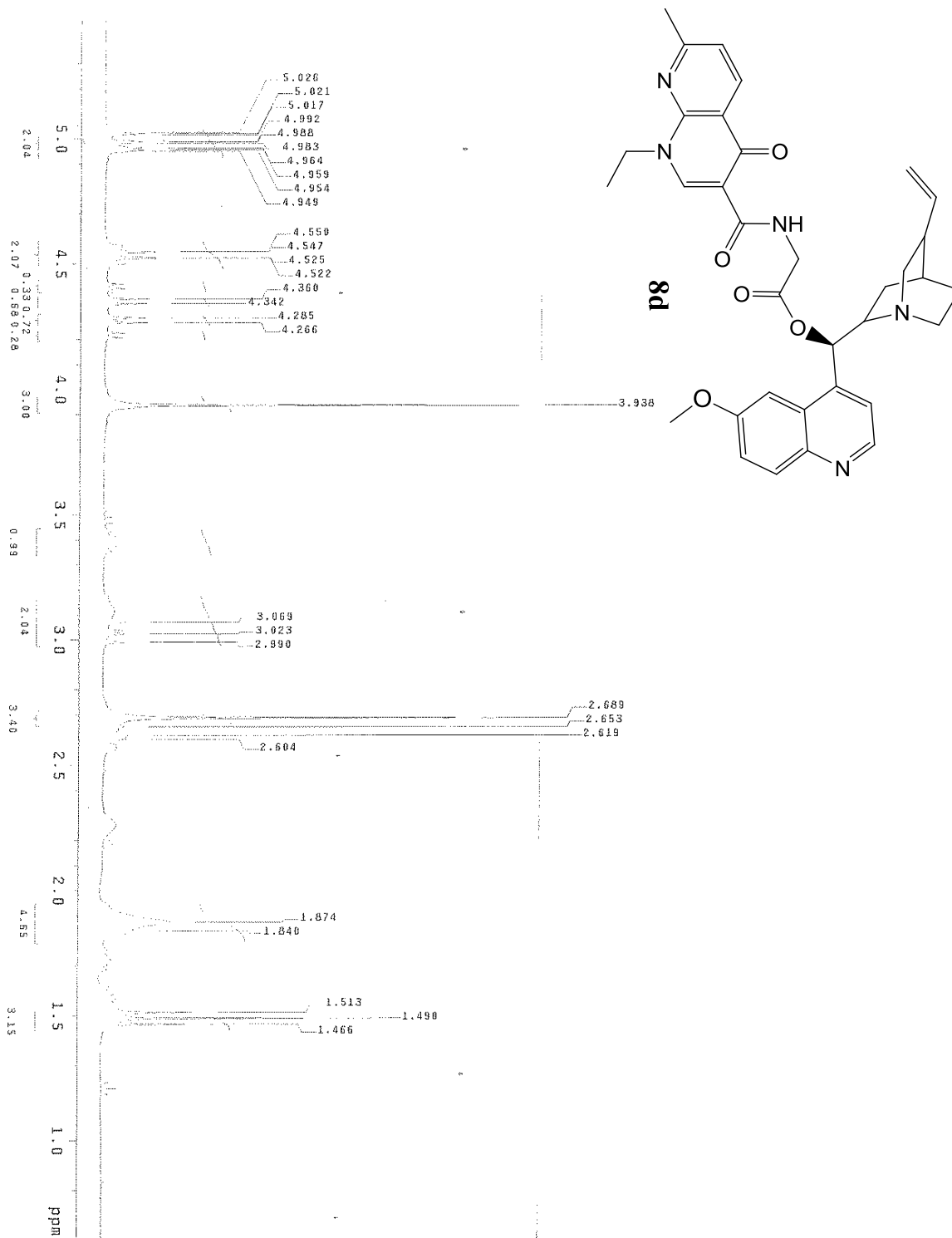
EAGER 200 Unk Report

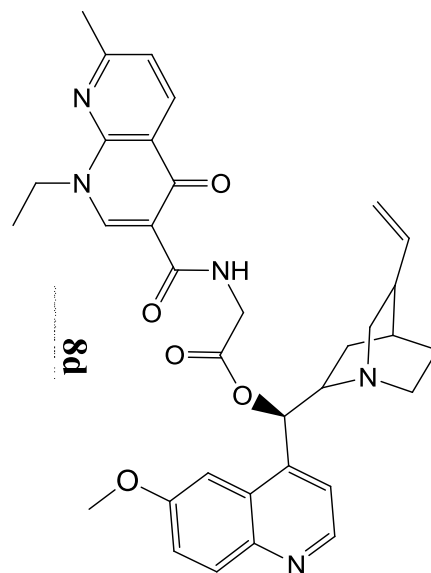
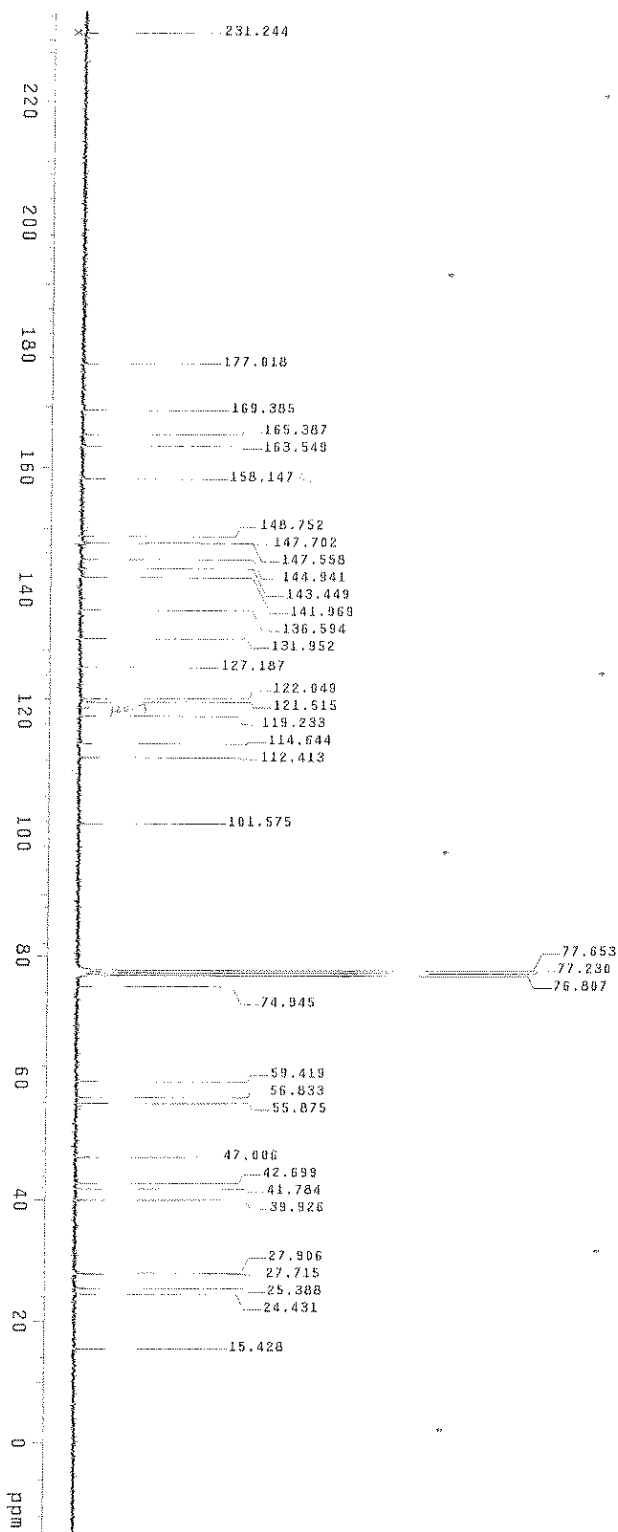
Instrument name : Instrument #1 Bline drift (fV):-2.6  
 Company Name : U of Florida Operator Ident. : KOU  
 Analysed : 12-02-11 10:04:39 Printed : 12-02-2011 11:45:28  
 Sample Ident. : 01 OXO-Val-Qui (B) Filename : 265331  
 Sample Weight : 2.104 Calc.method: using 'K. Factors'

PK. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	81	36768	3.38	.226039E+02	Nitrogen
2	110	829825	80.050	.100000E+01	Carbon
3	290	221446	21.570	.071641E+01	Hydrogen

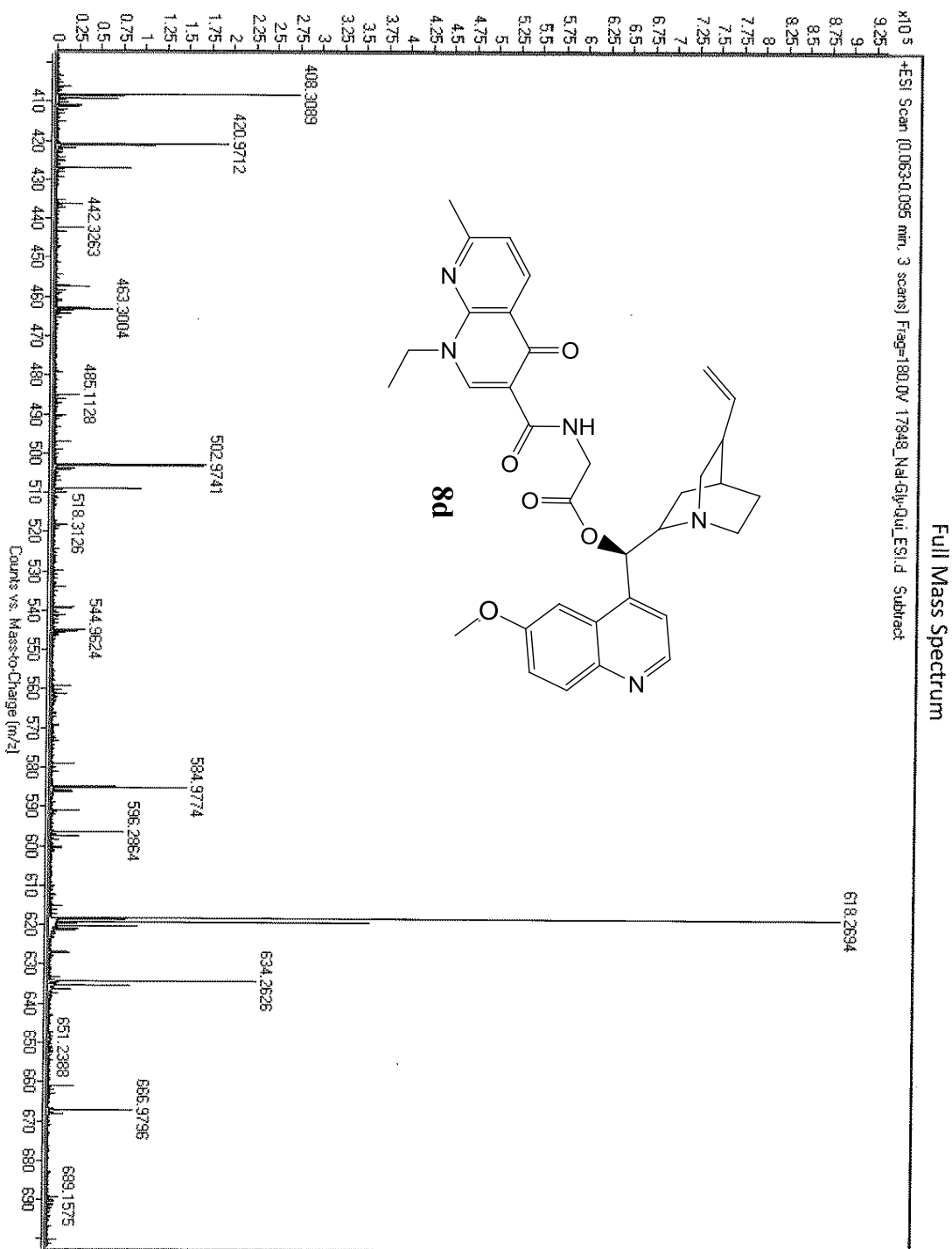


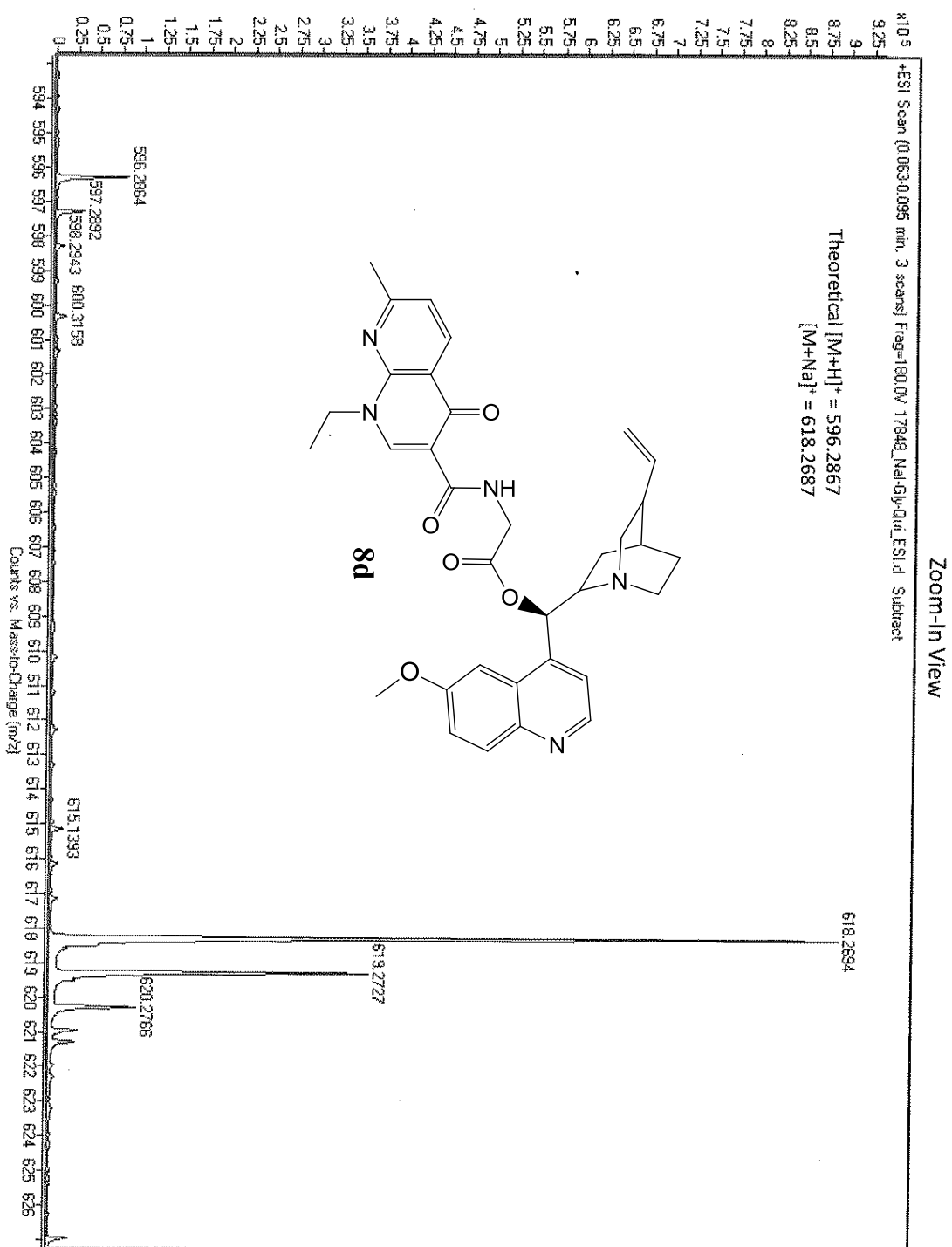


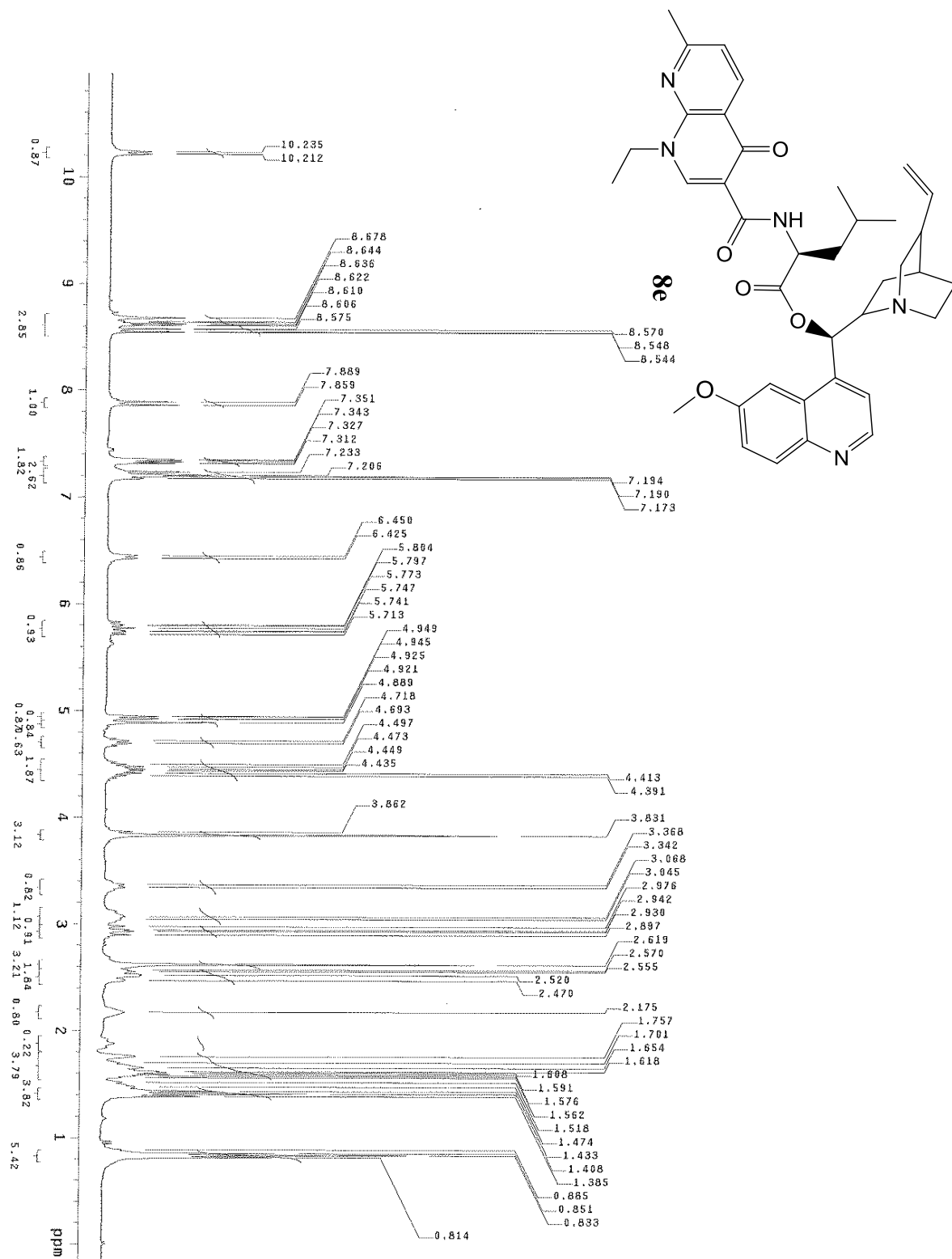


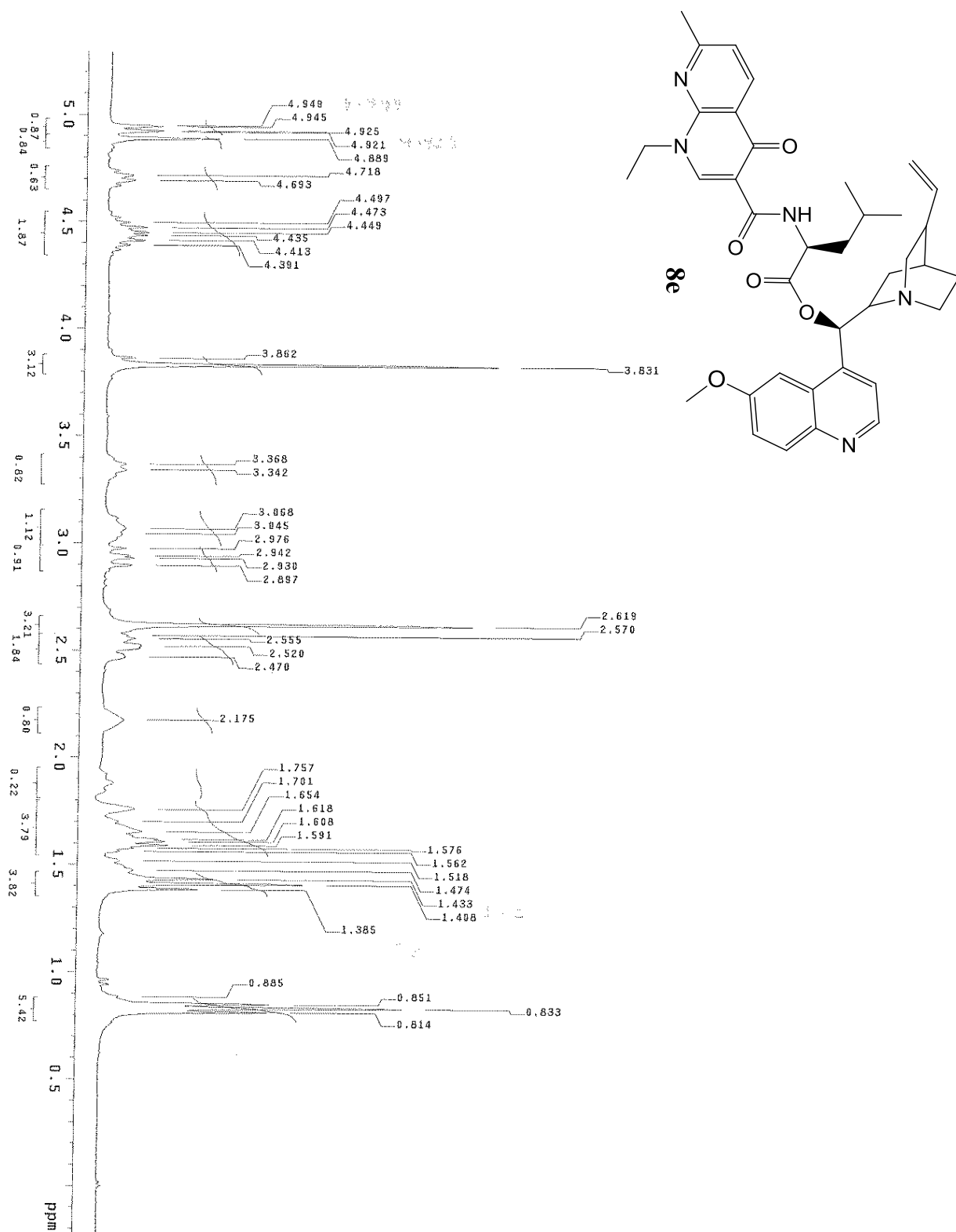


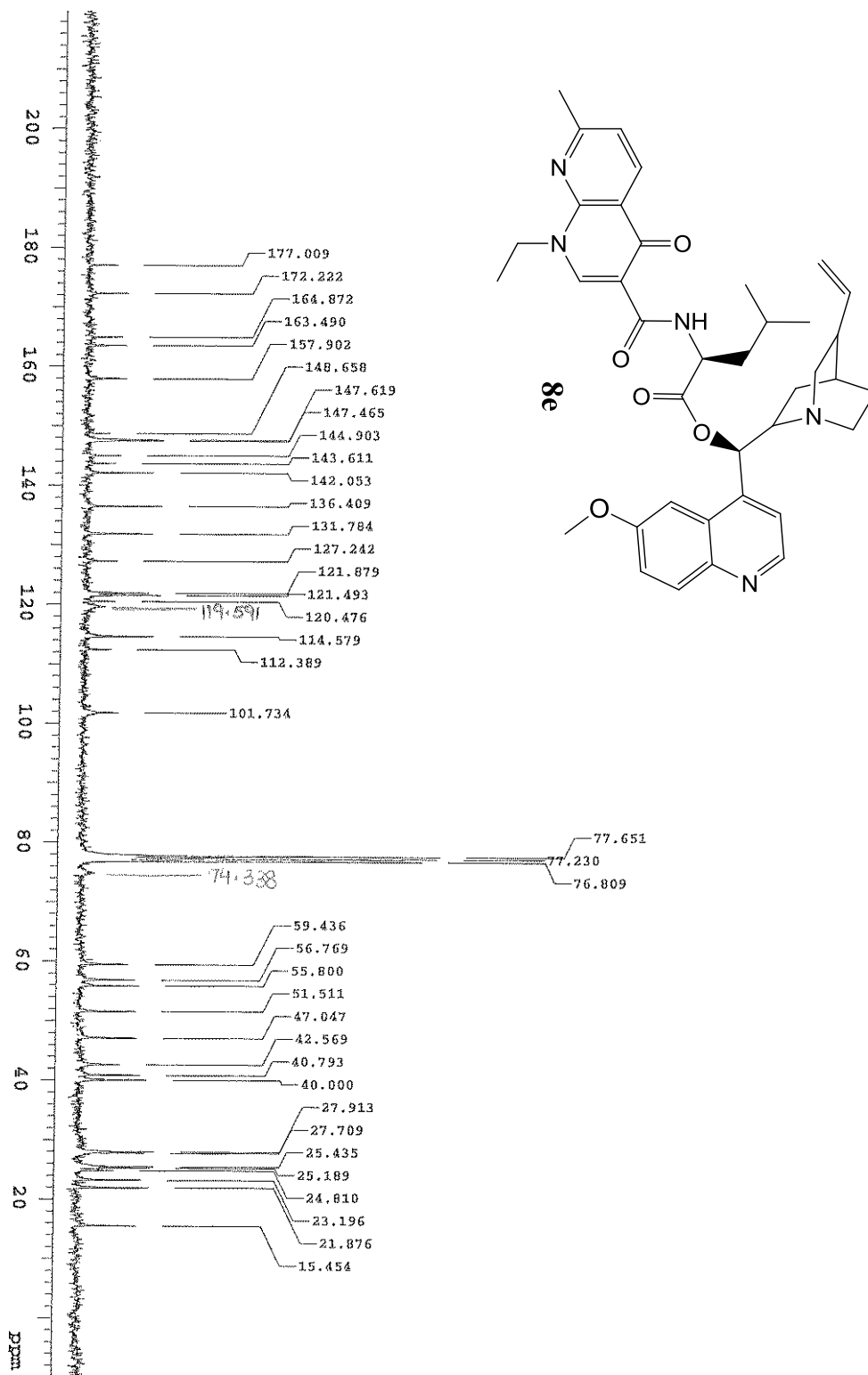






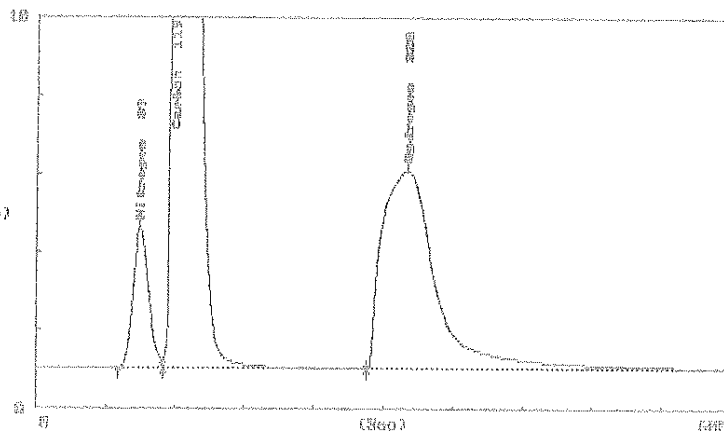
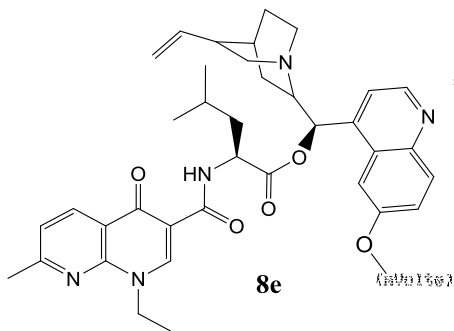






EAGER 200 Stripchart

Sample Ident. : 24 NallQ      Filename : 261124  
 Analysed : 08-05-11 08:35:19      Printed : 08-05-2011 11:26:45



EAGER 200 Peak Integration Report

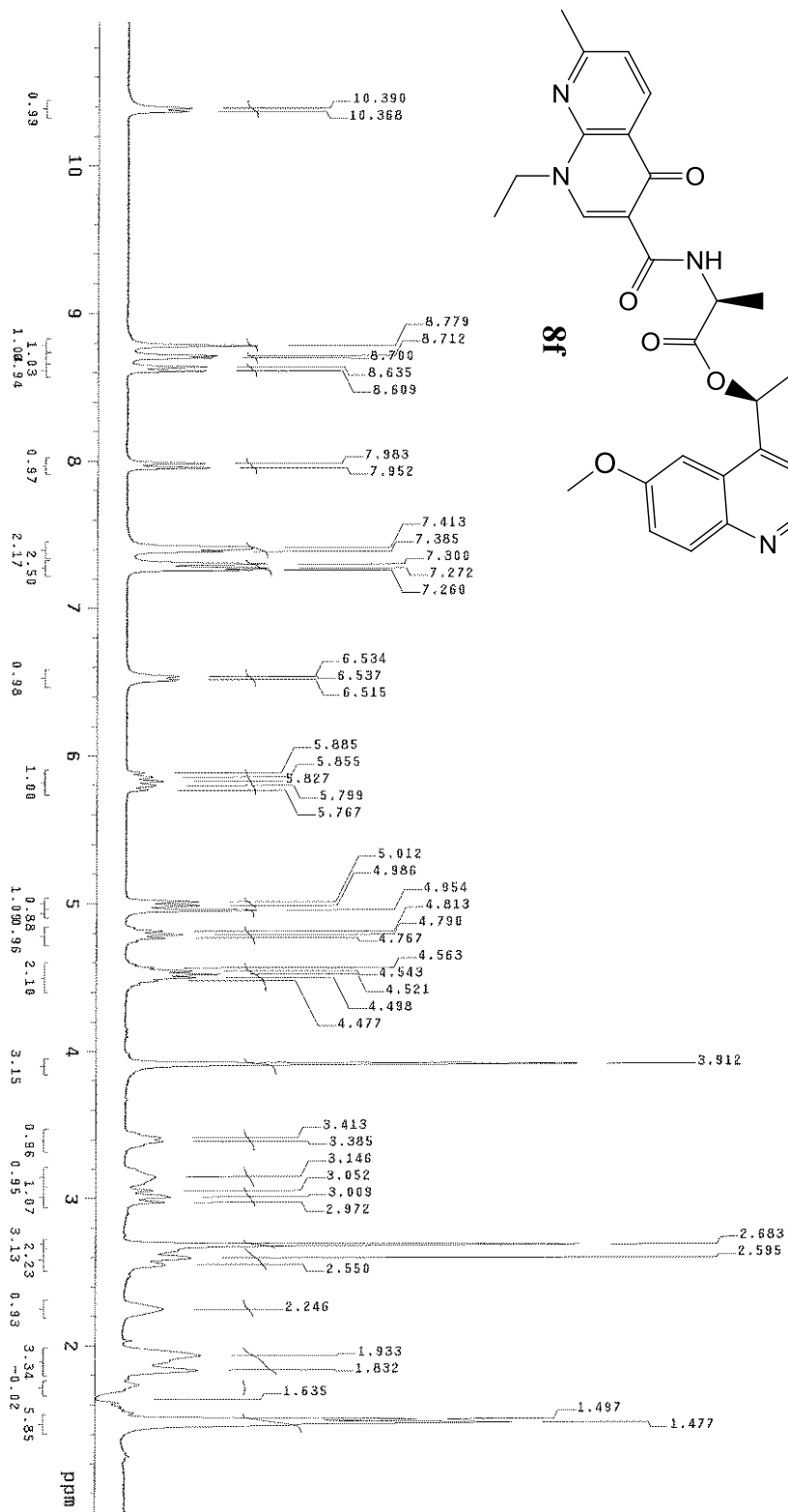
Instrument name : Instrument #1      Bline drift (fV): 7.4  
 Company Name : U of Florida      Operator Ident. : KOU  
 Analysed : 08-05-11 08:35:19      Printed : 08-05-2011 11:26:45  
 Sample Ident. : 24 NallQ      Filename : 261124  
 Sample Weight : 2.141      Calc.method: using 'K. Factors'

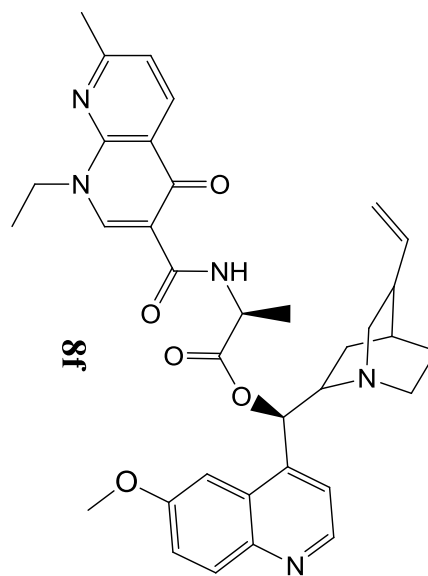
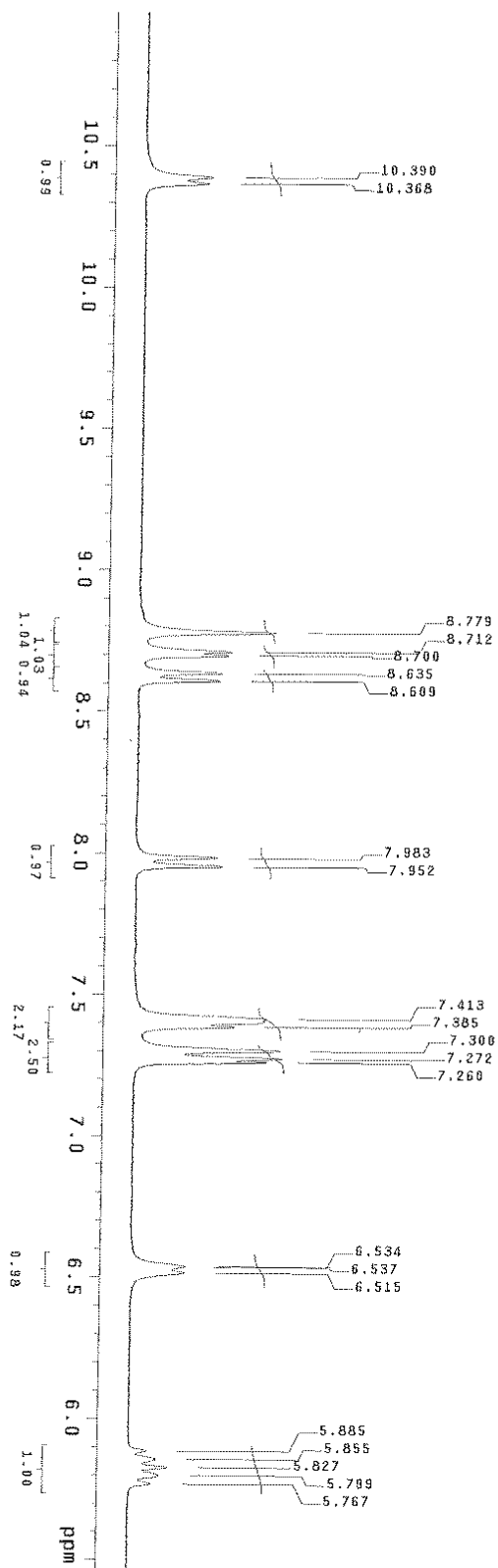
No. (#)	Type (#)	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name
1	FU	70	109	89	3549.7	52508	4.10	Nitrogen
2	FU	109	285	119	57494.4	954752	74.48	Carbon
3	RS	285	598	320	5027.2	274600	21.42	Hydrogen
						1281860	100.00	

EAGER 200 Unk Report

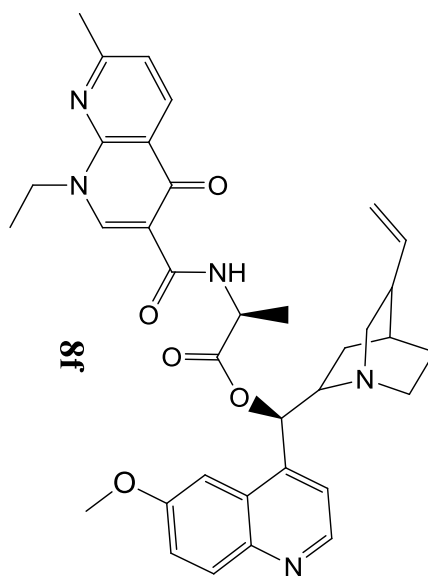
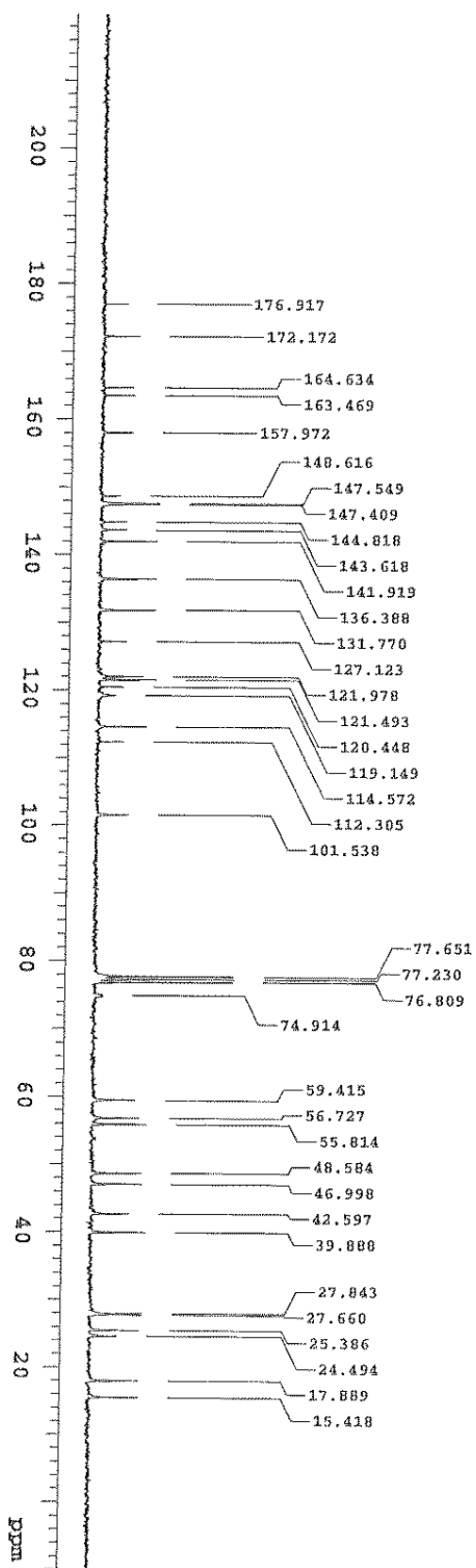
Instrument name : Instrument #1      Bline drift (fV): 7.4  
 Company Name : U of Florida      Operator Ident. : KOU  
 Analysed : 08-05-11 08:35:19      Printed : 08-05-2011 11:26:45  
 Sample Ident. : 24 NallQ      Filename : 261124  
 Sample Weight : 2.141      Calc.method: using 'K. Factors'

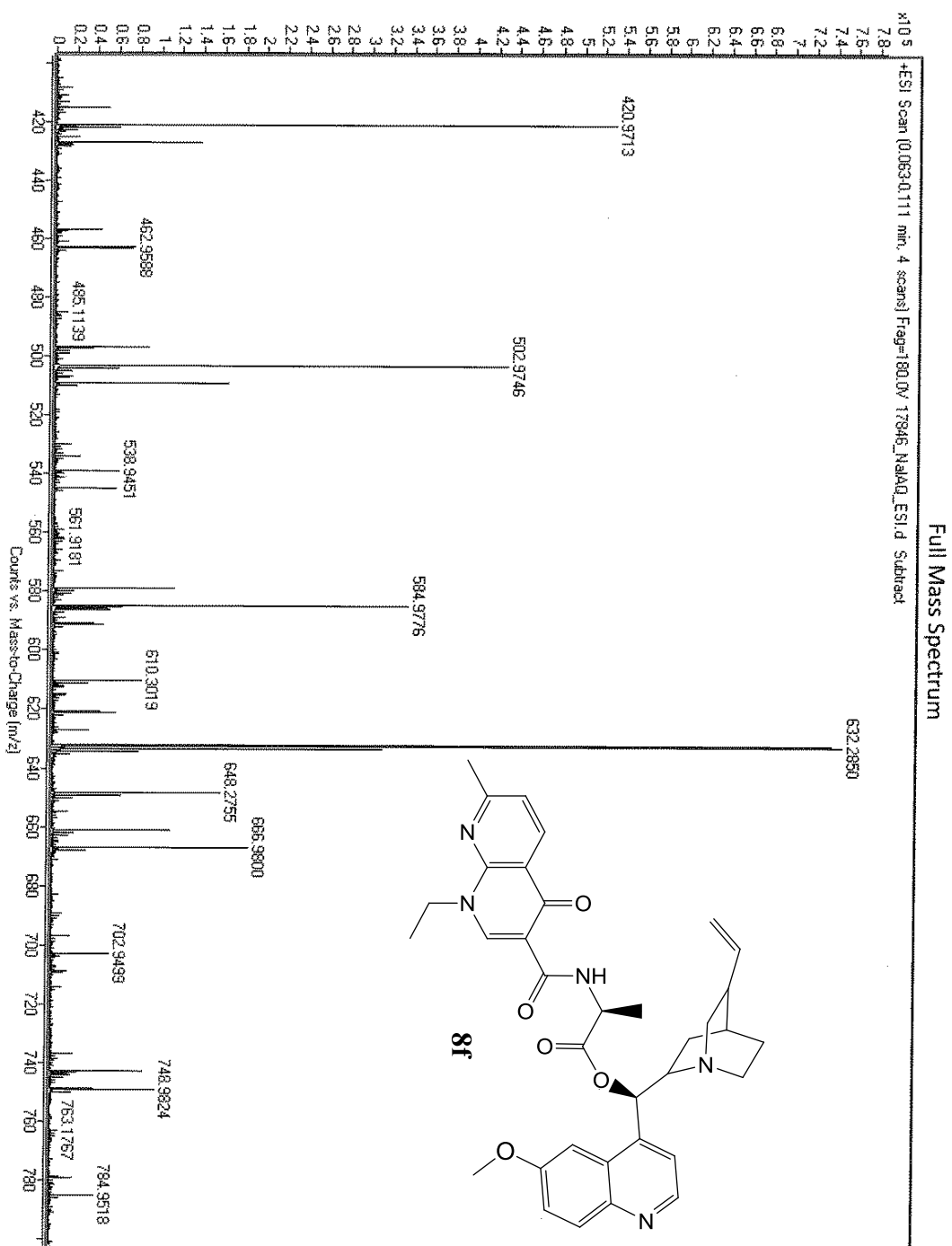
Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	89	52508	10.543	.181829E+02	Nitrogen
2	119	954752	69.724	.100000E+01	Carbon
3	320	274600	7.145	.347688E+01	Hydrogen

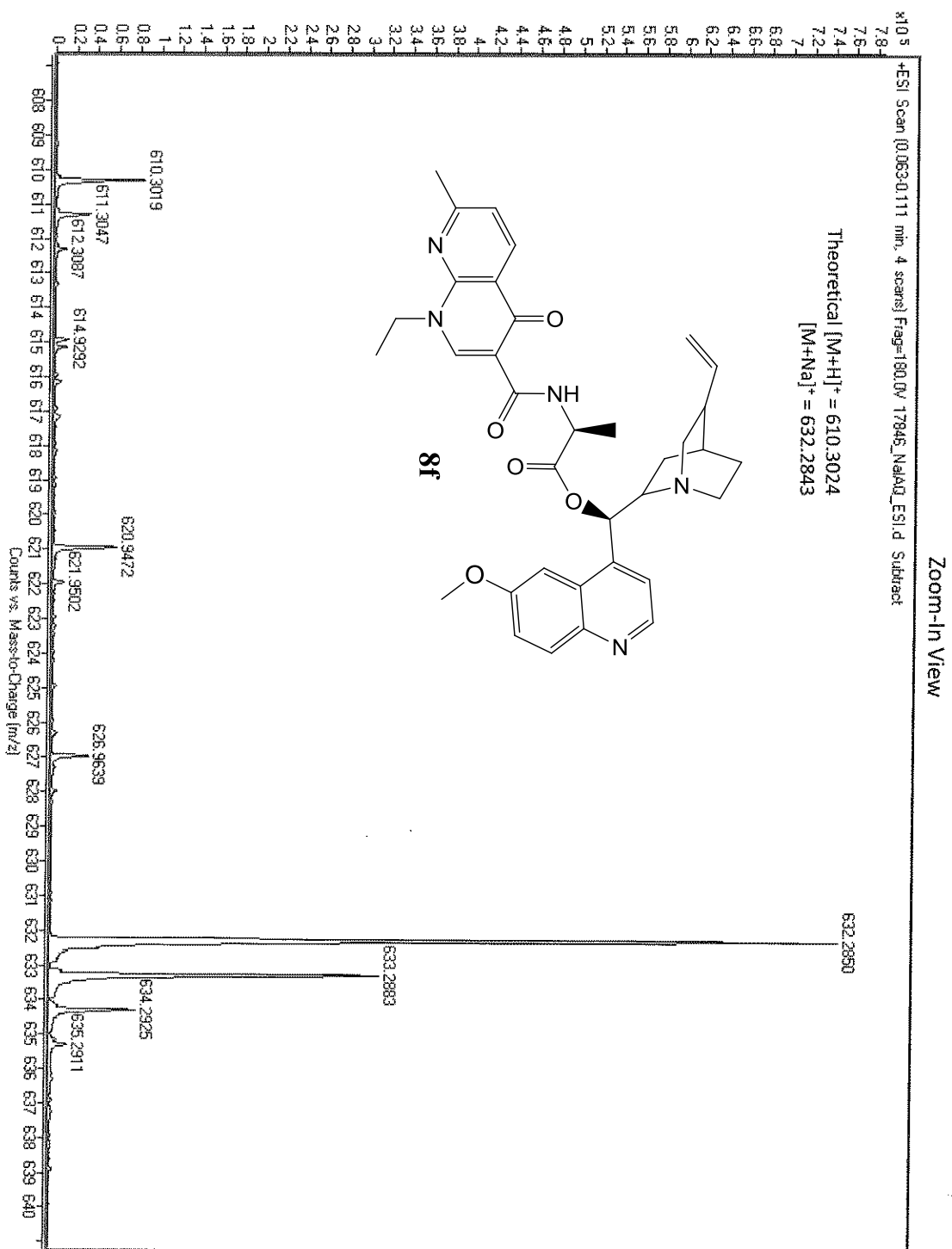


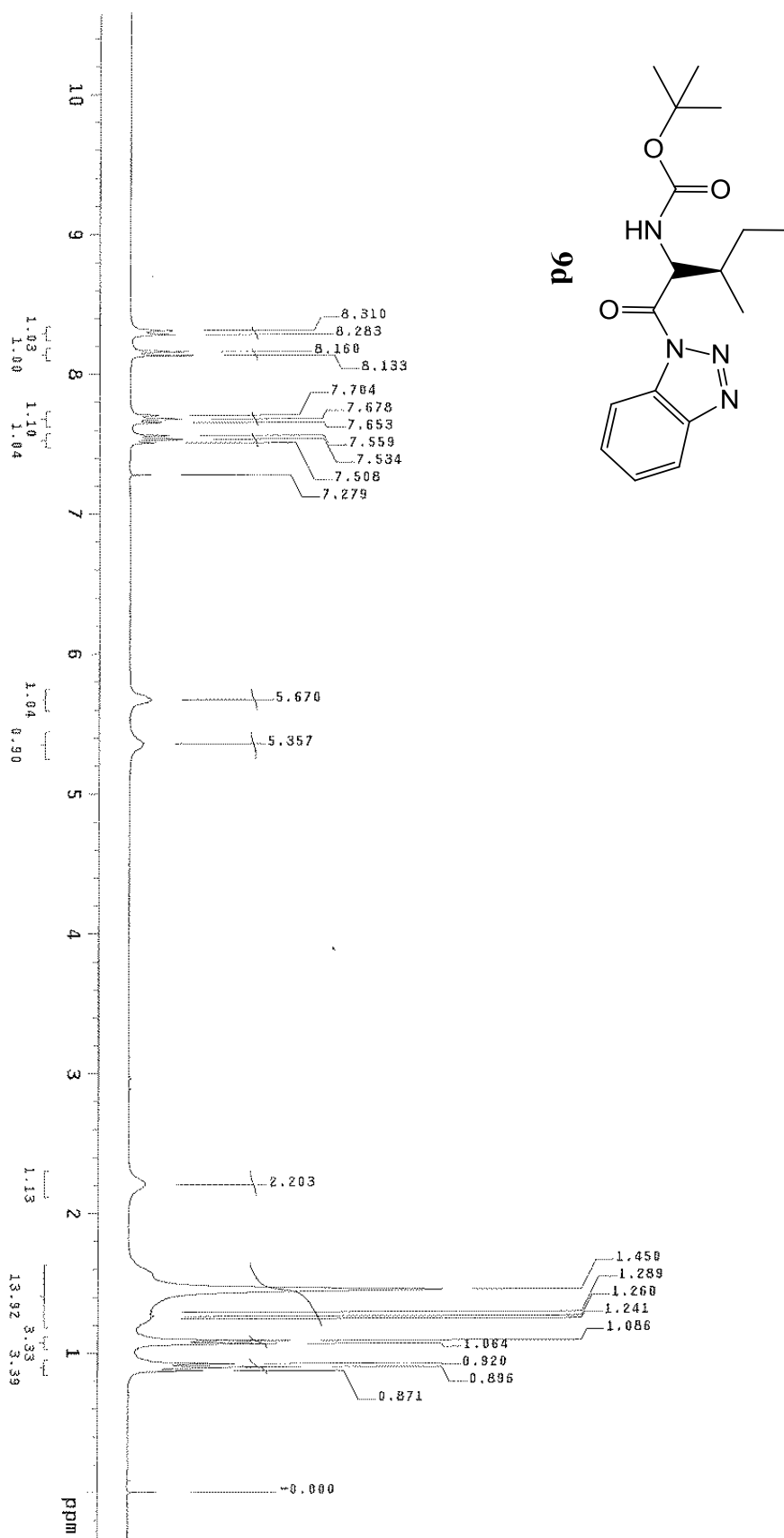


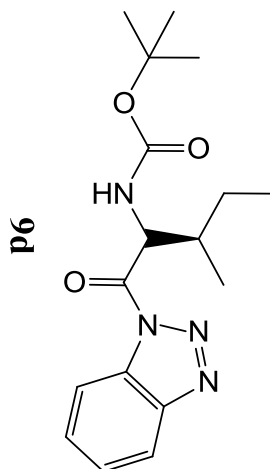
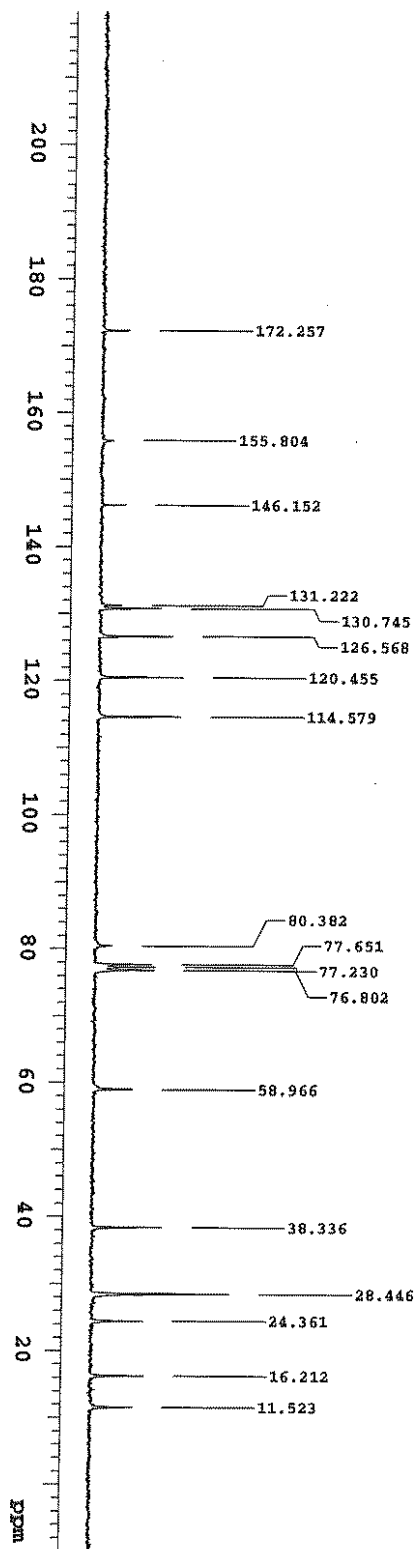


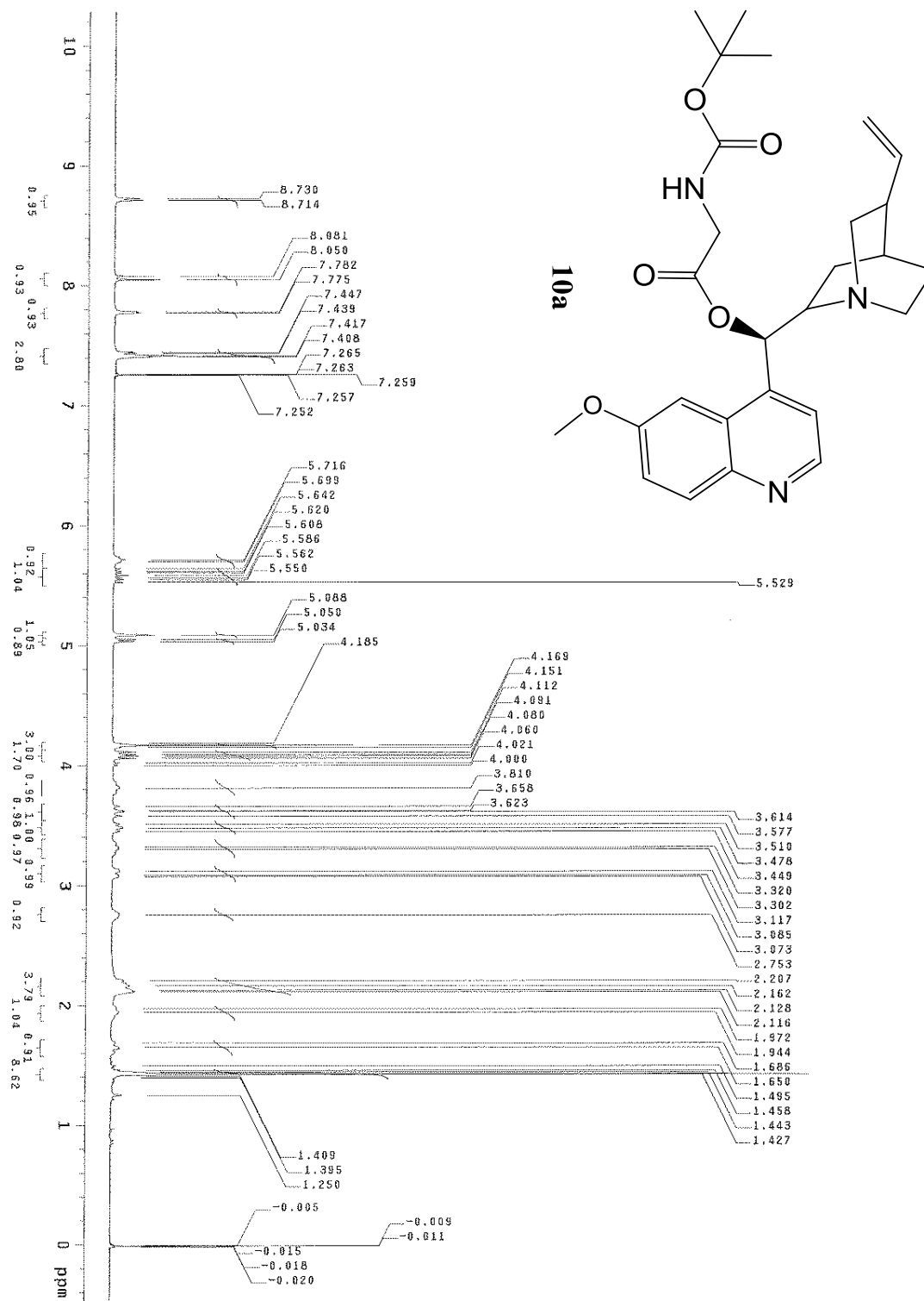


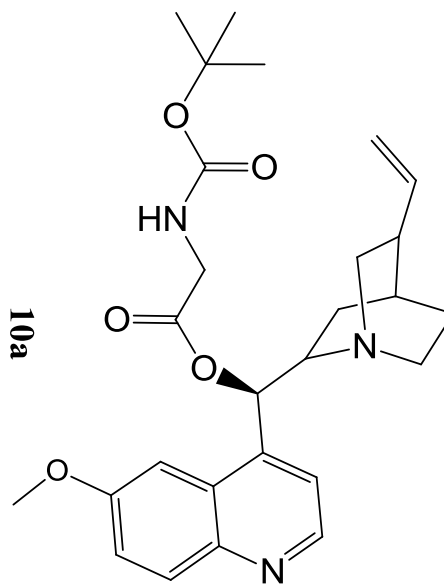
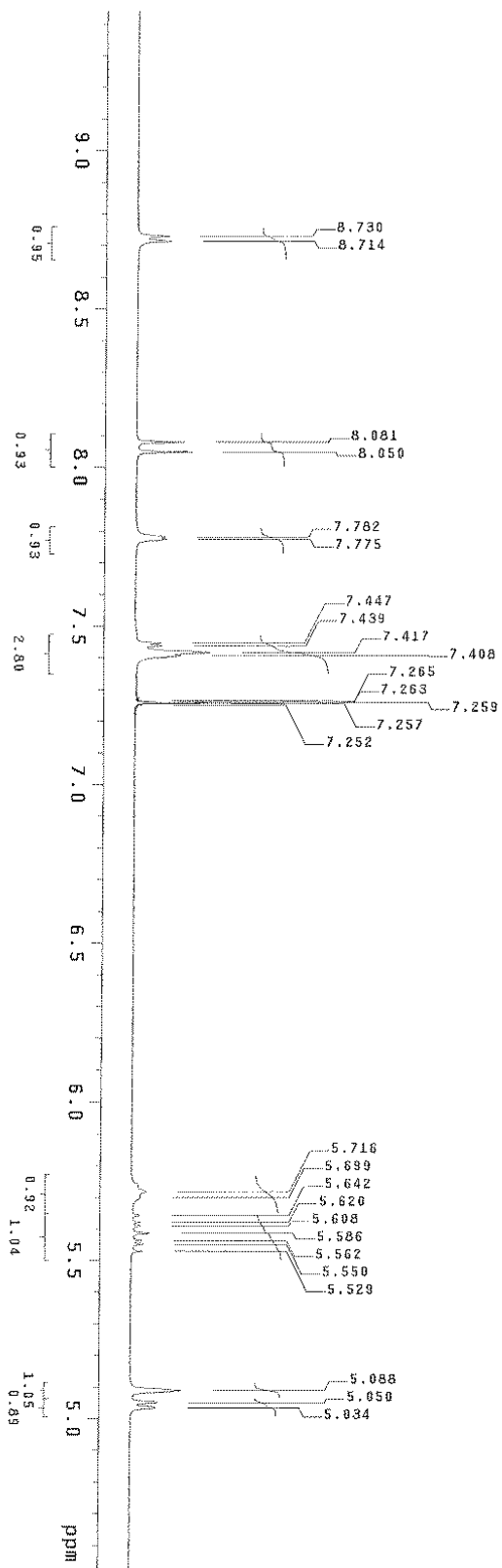


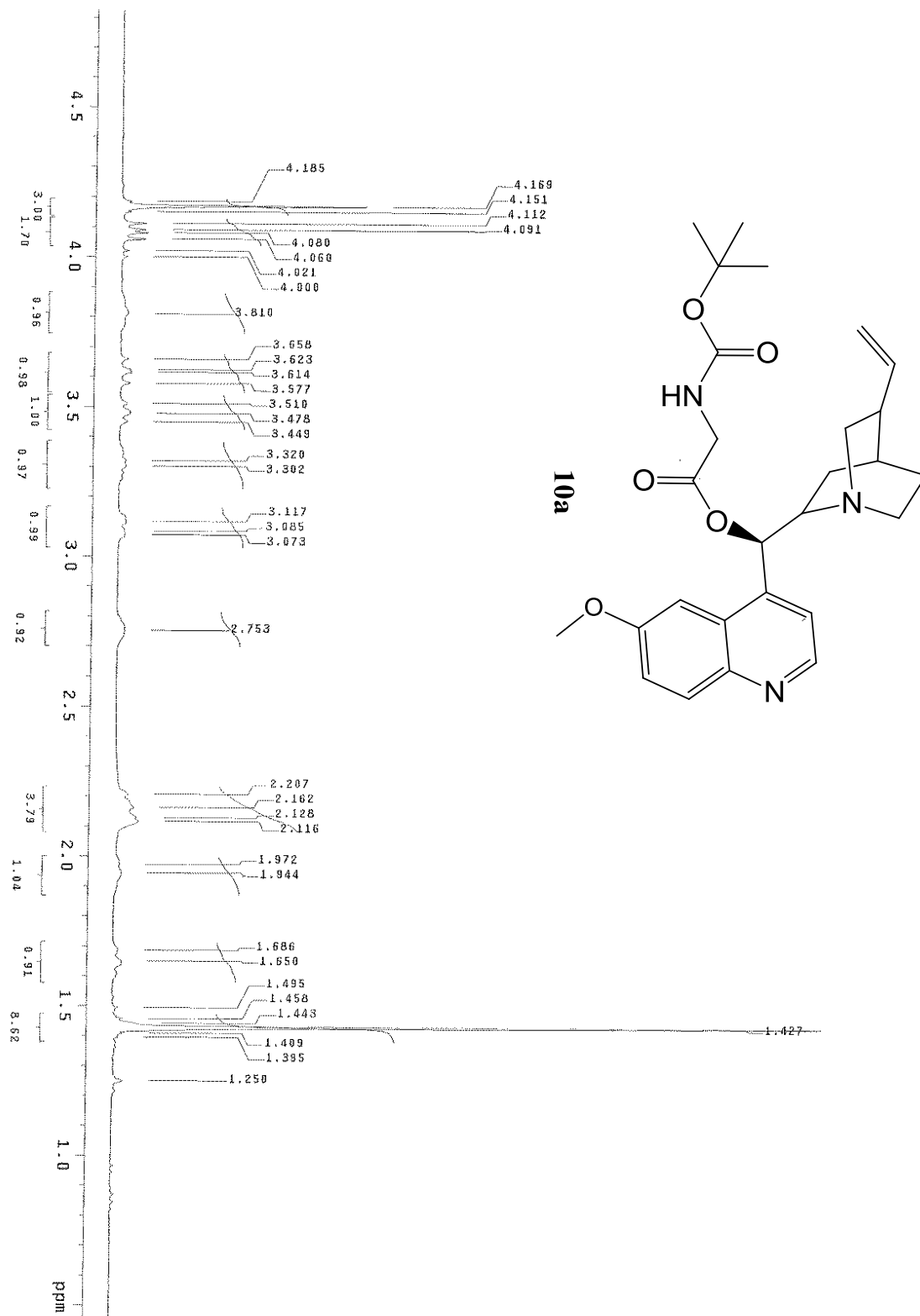




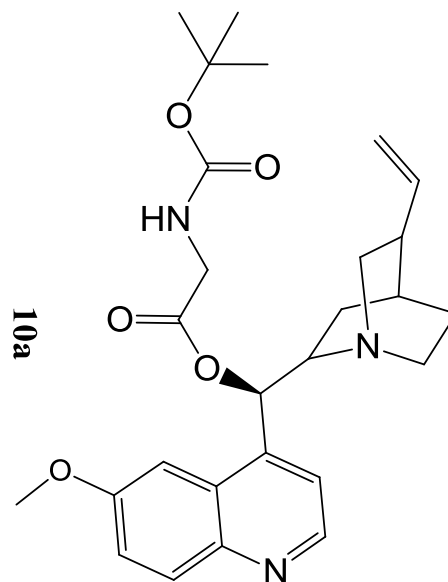
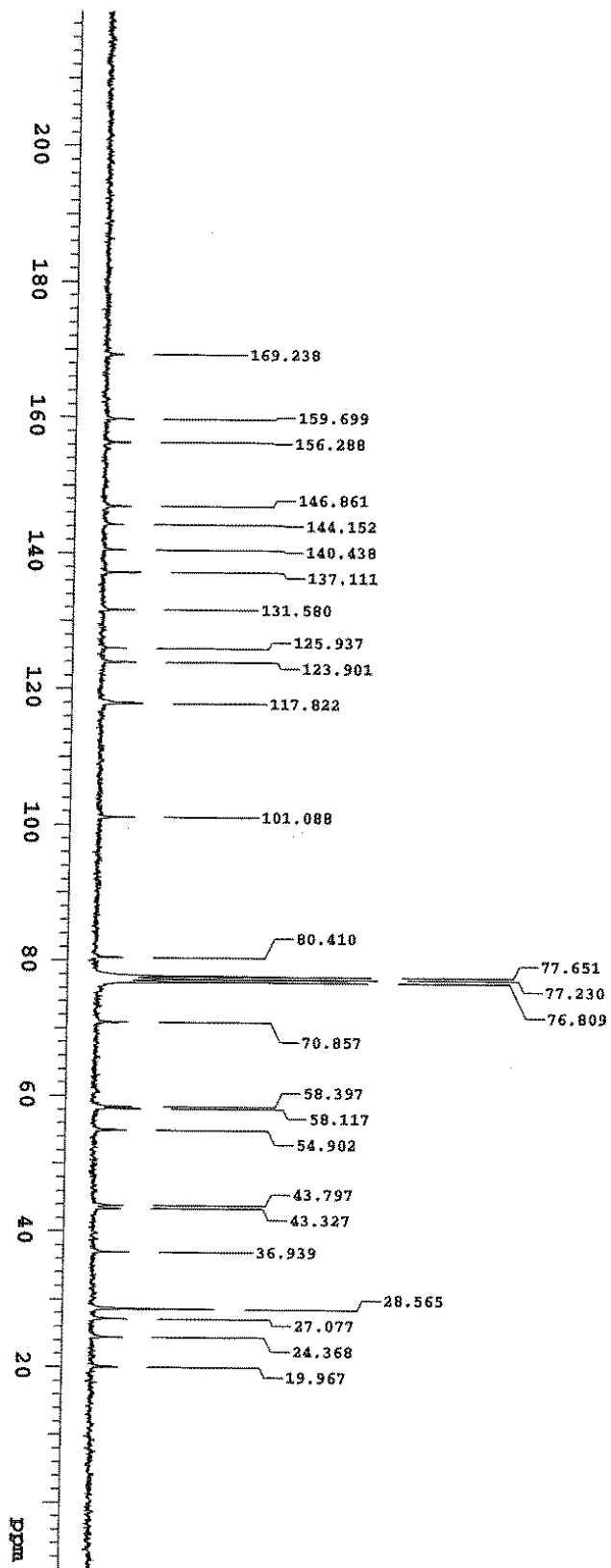




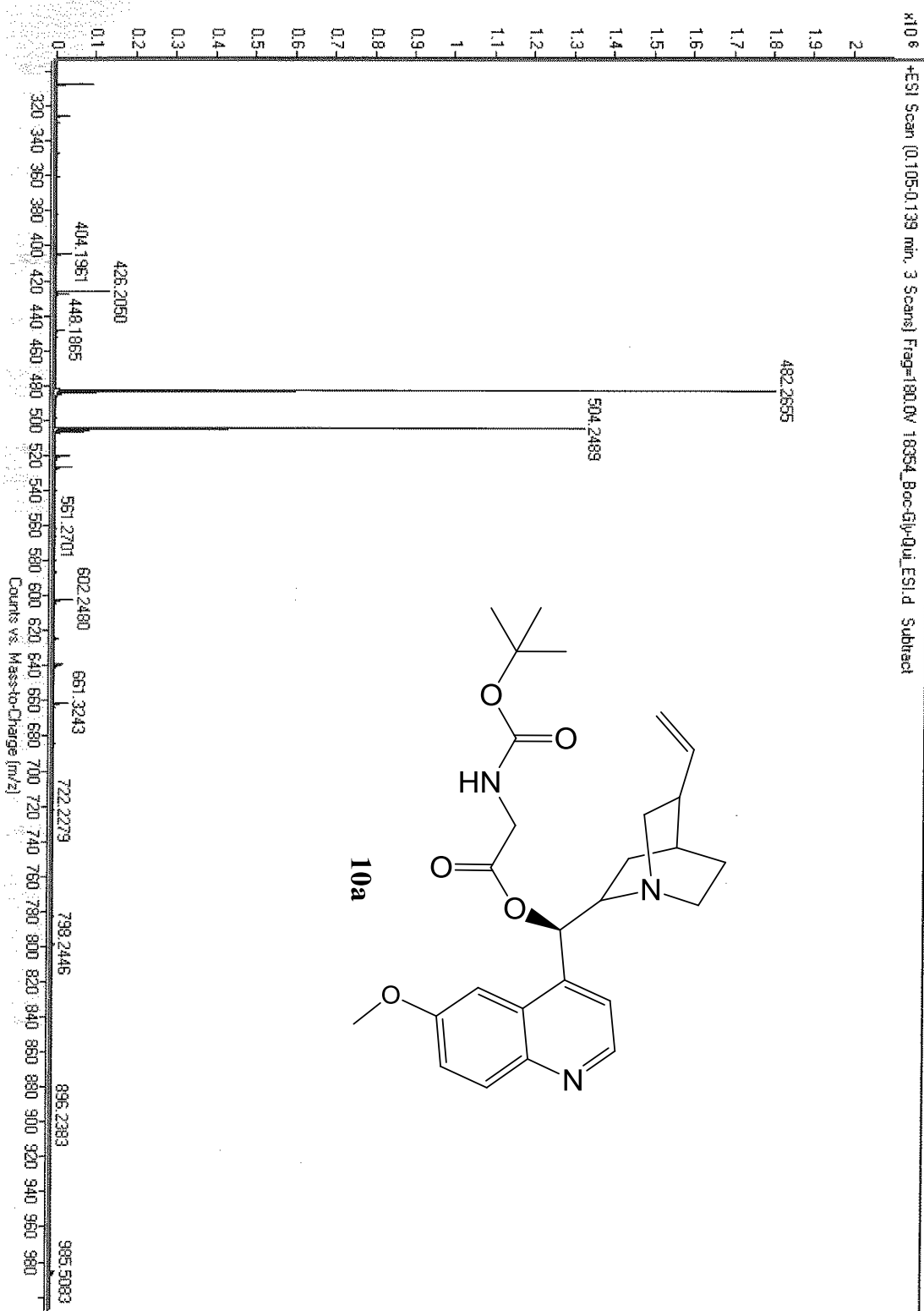






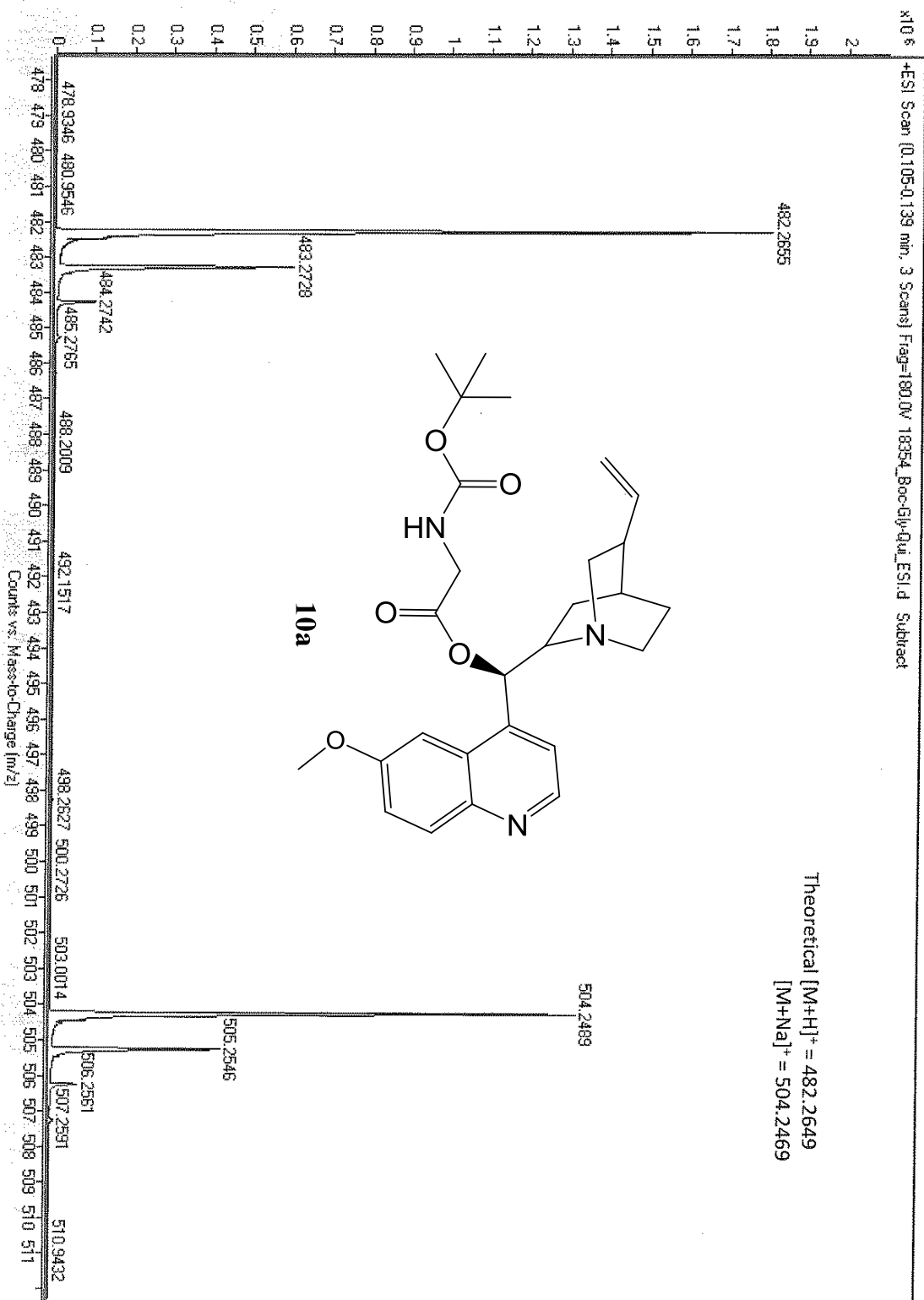


# Full mass spectrum

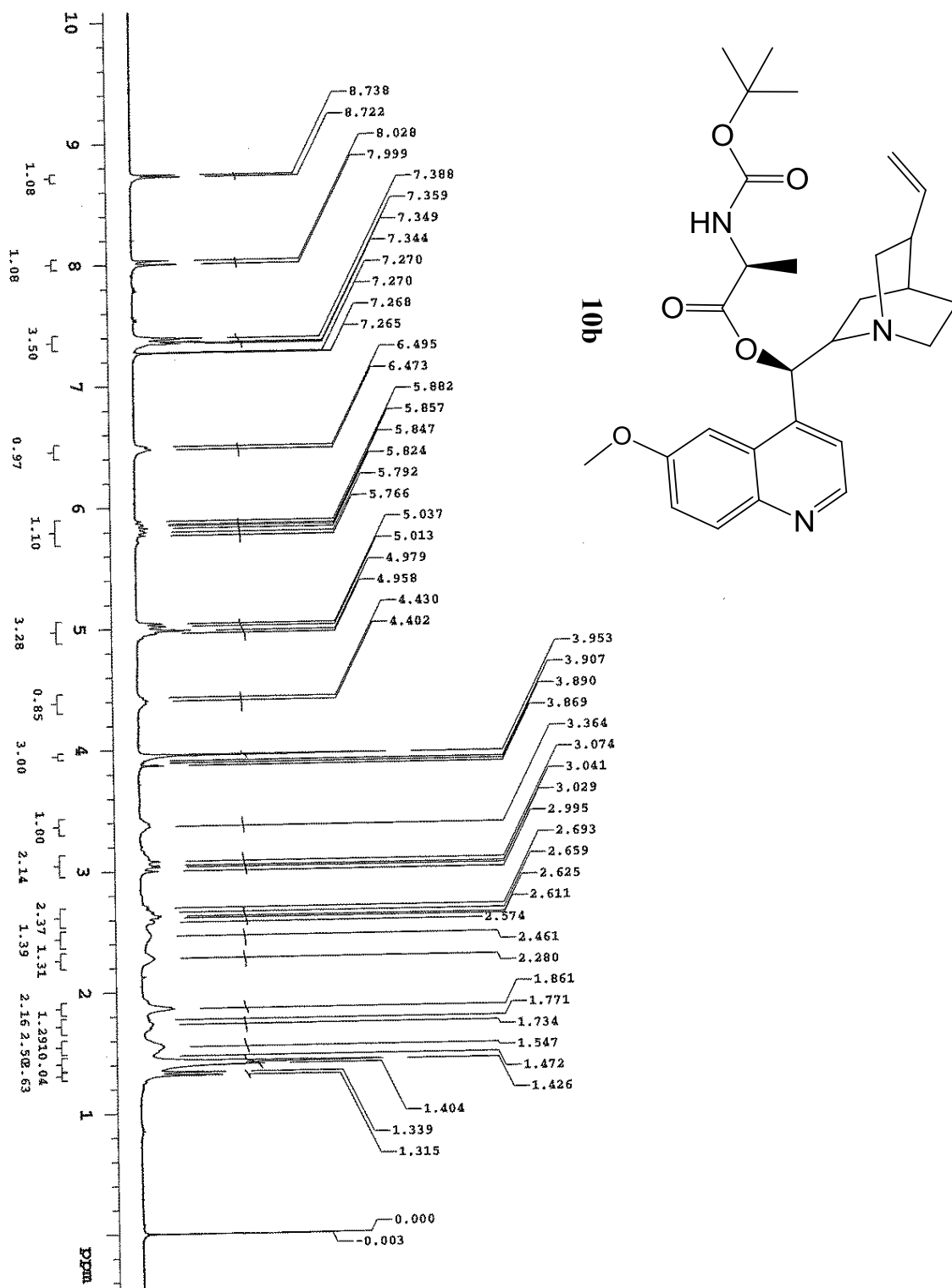


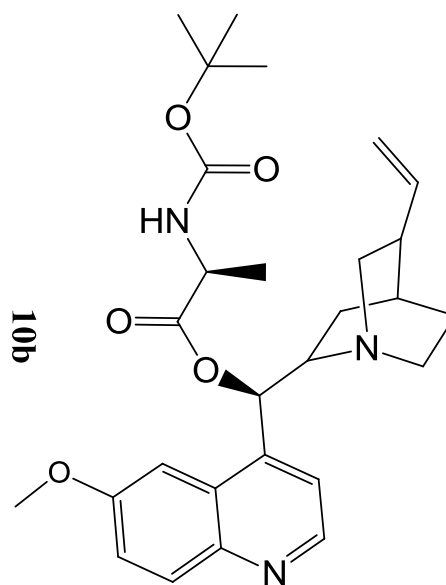
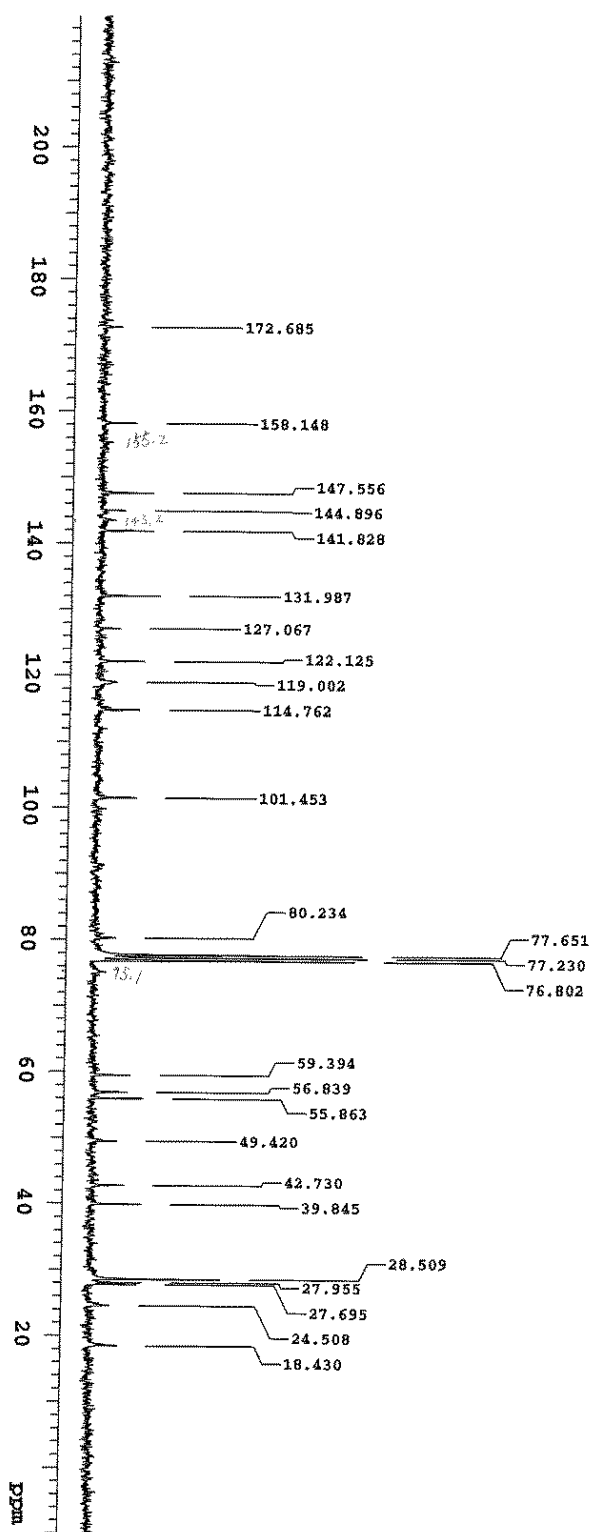
44

### Zoom-In View

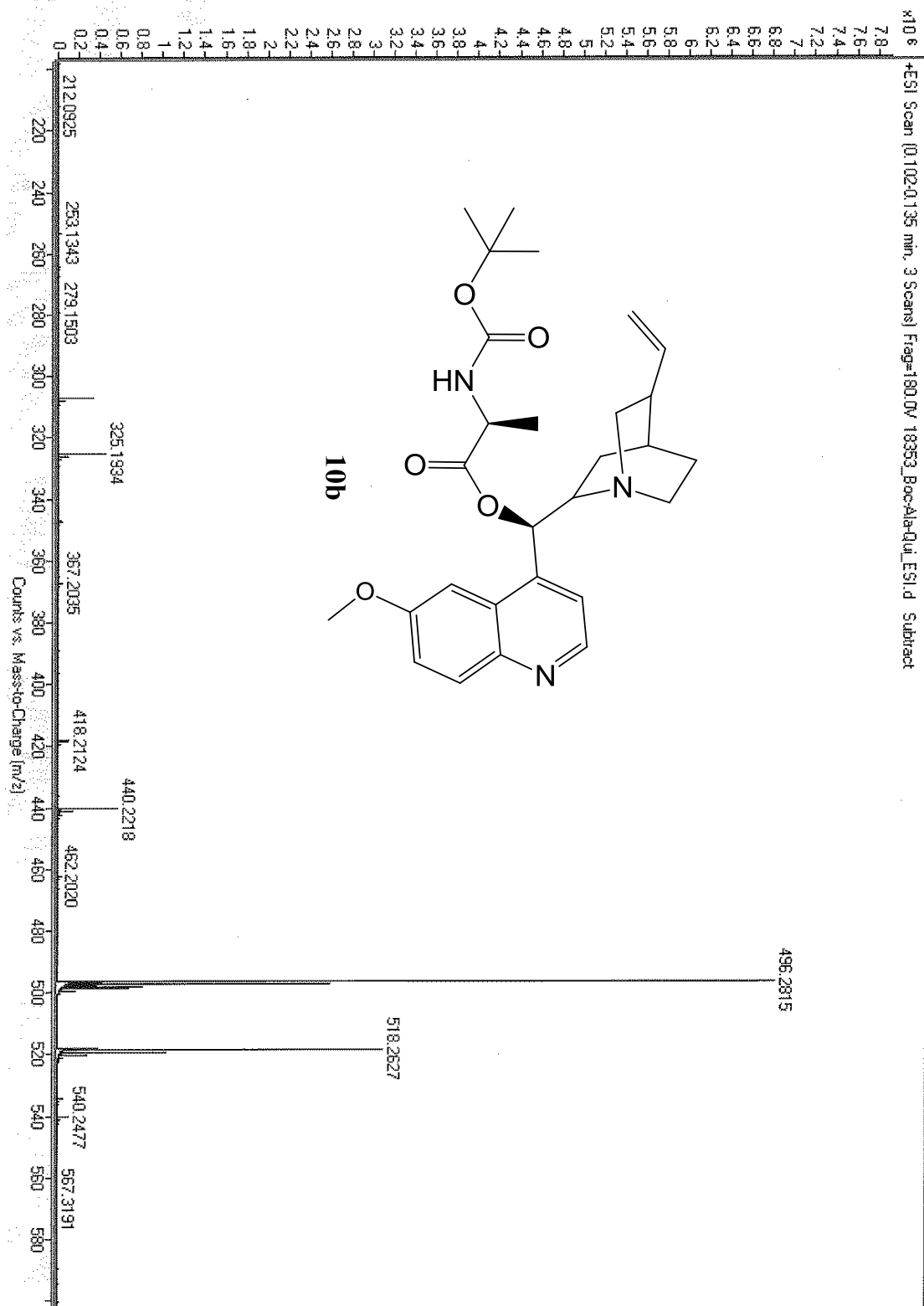


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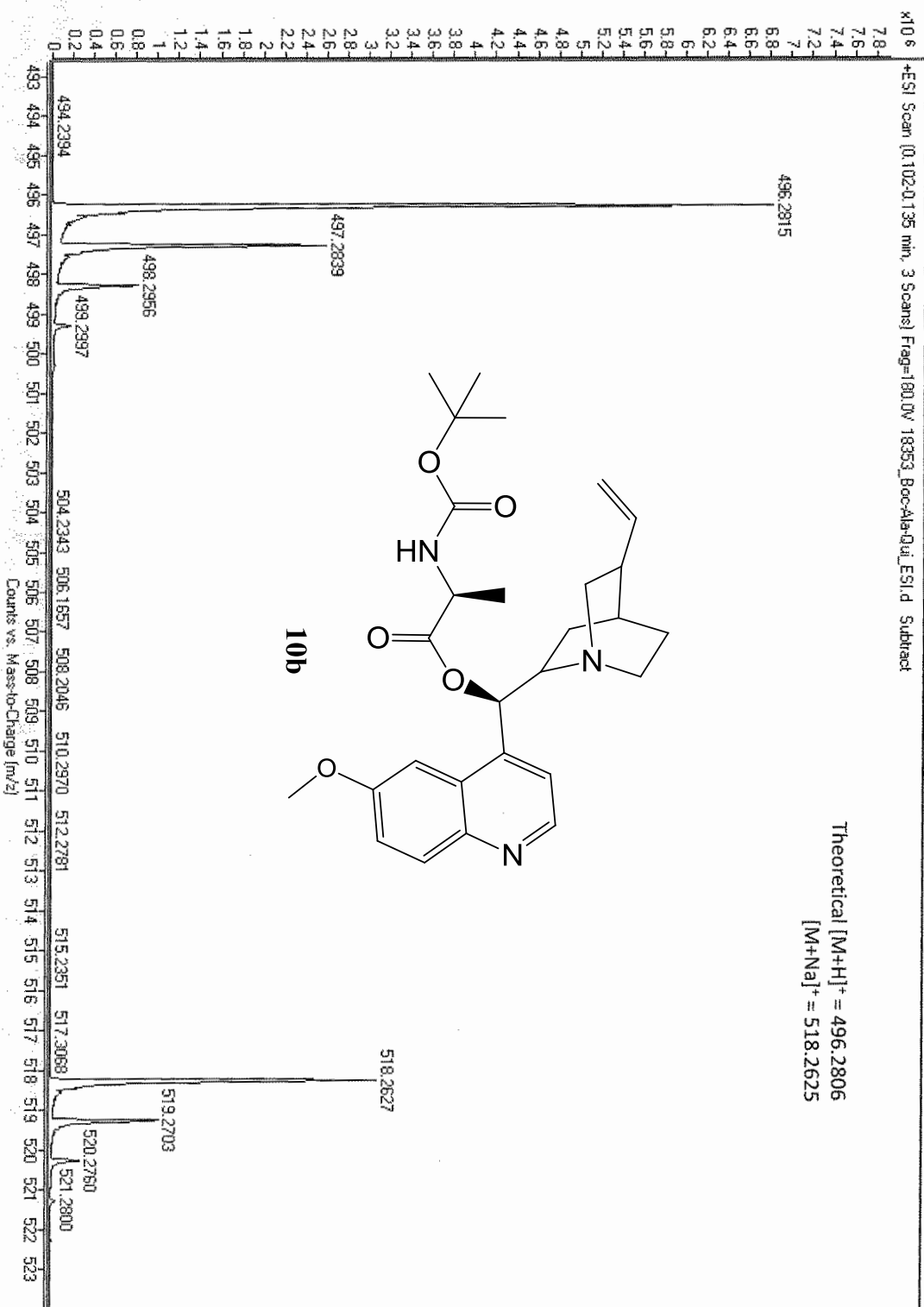


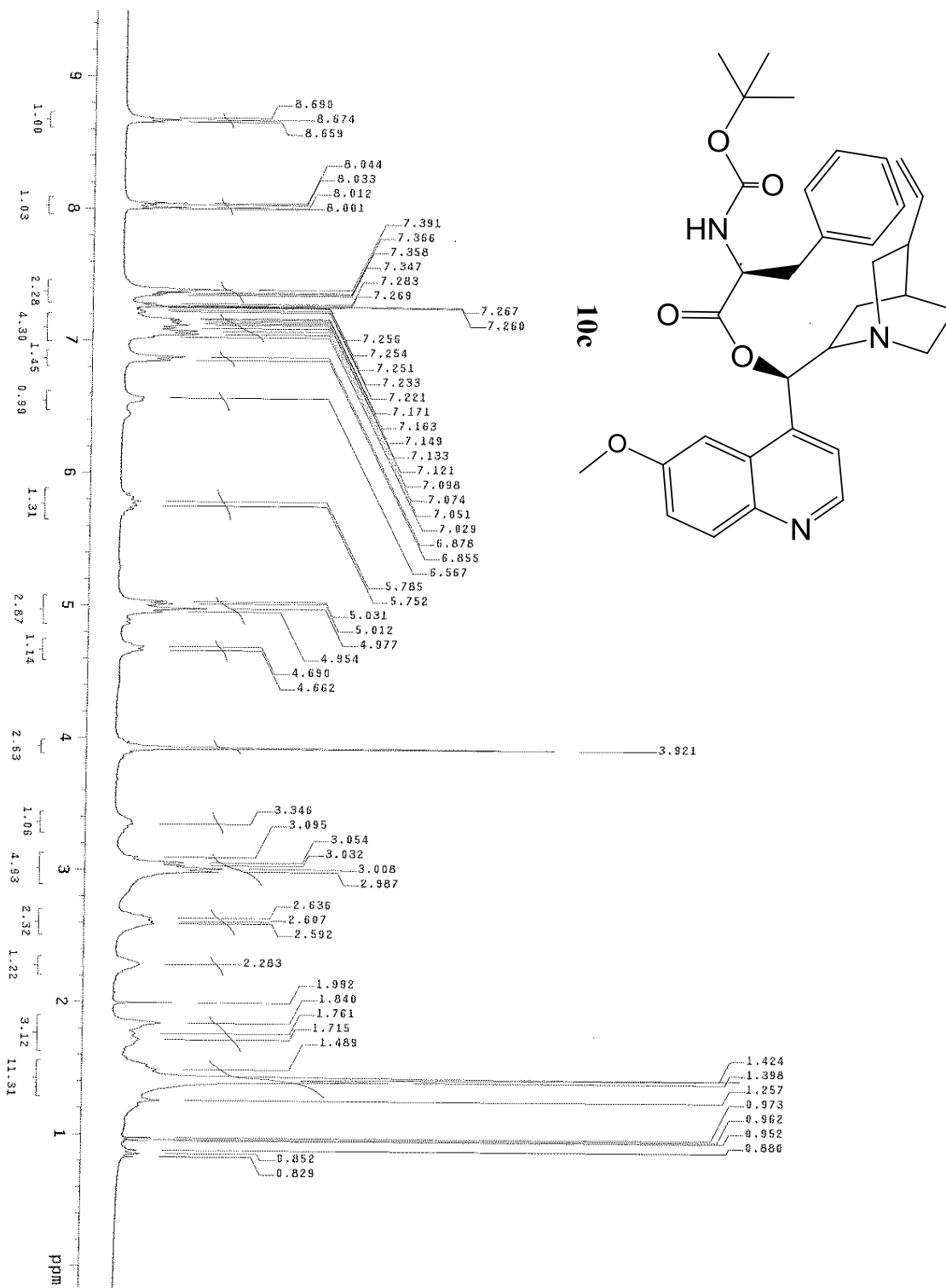


# Full mass spectrum

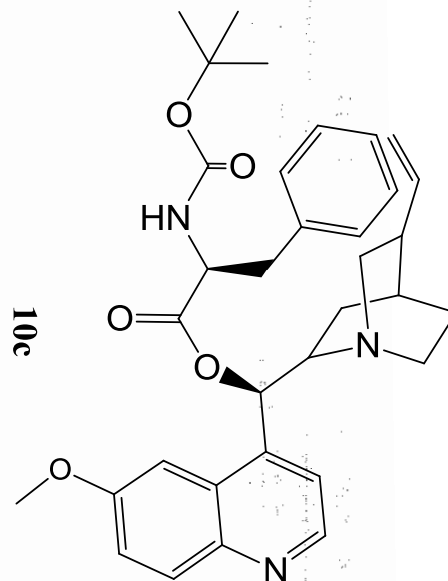
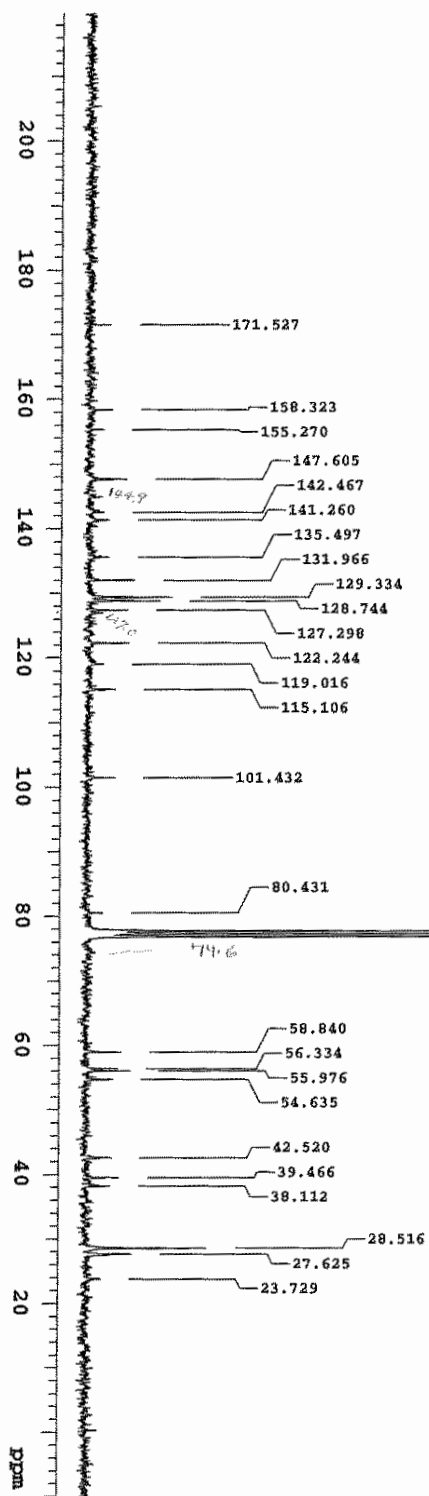


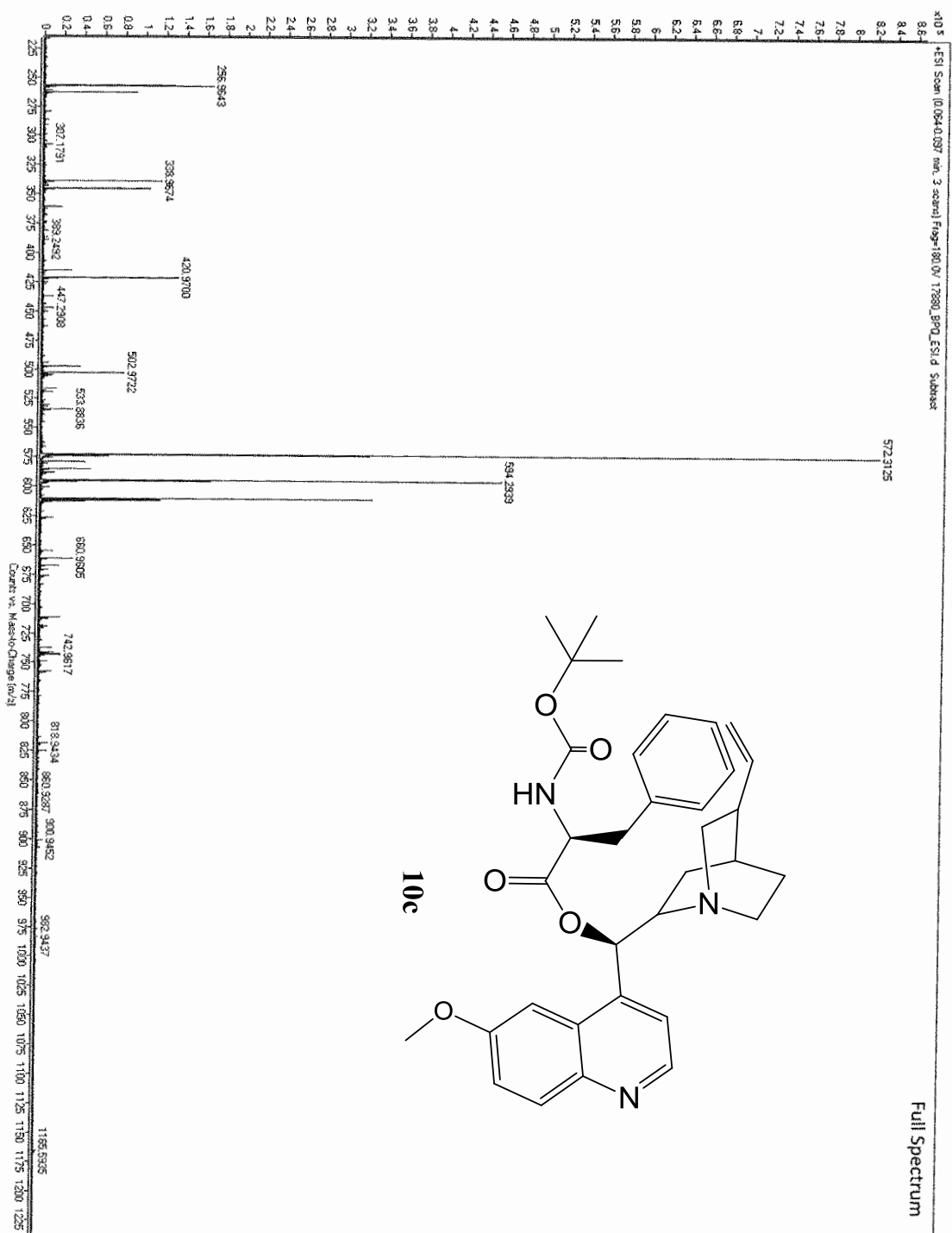
### Zoom-In View



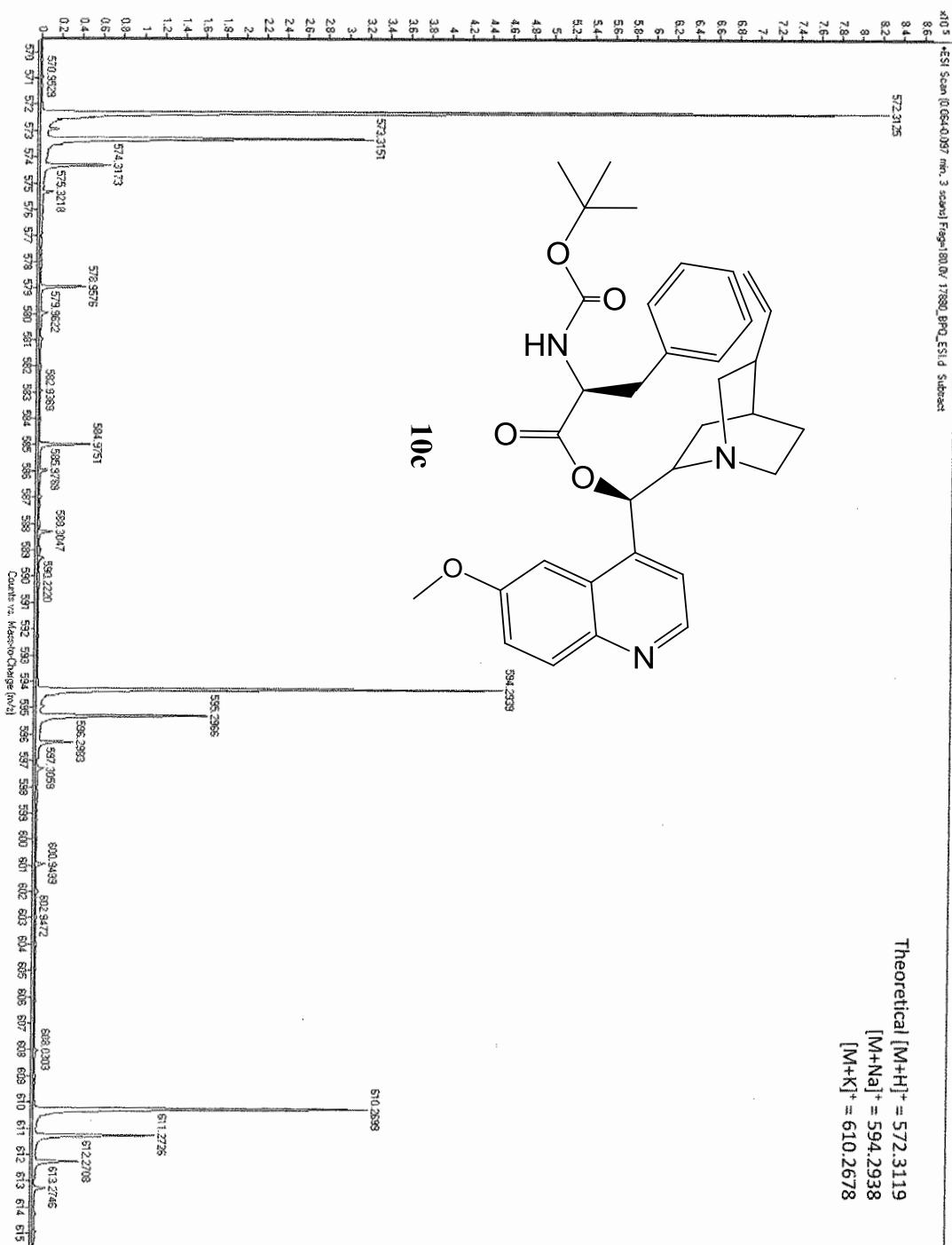


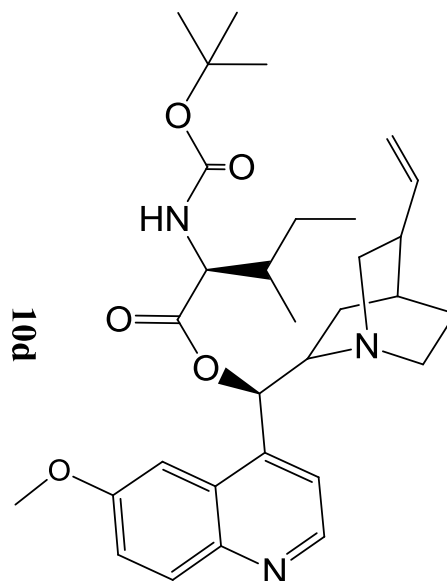
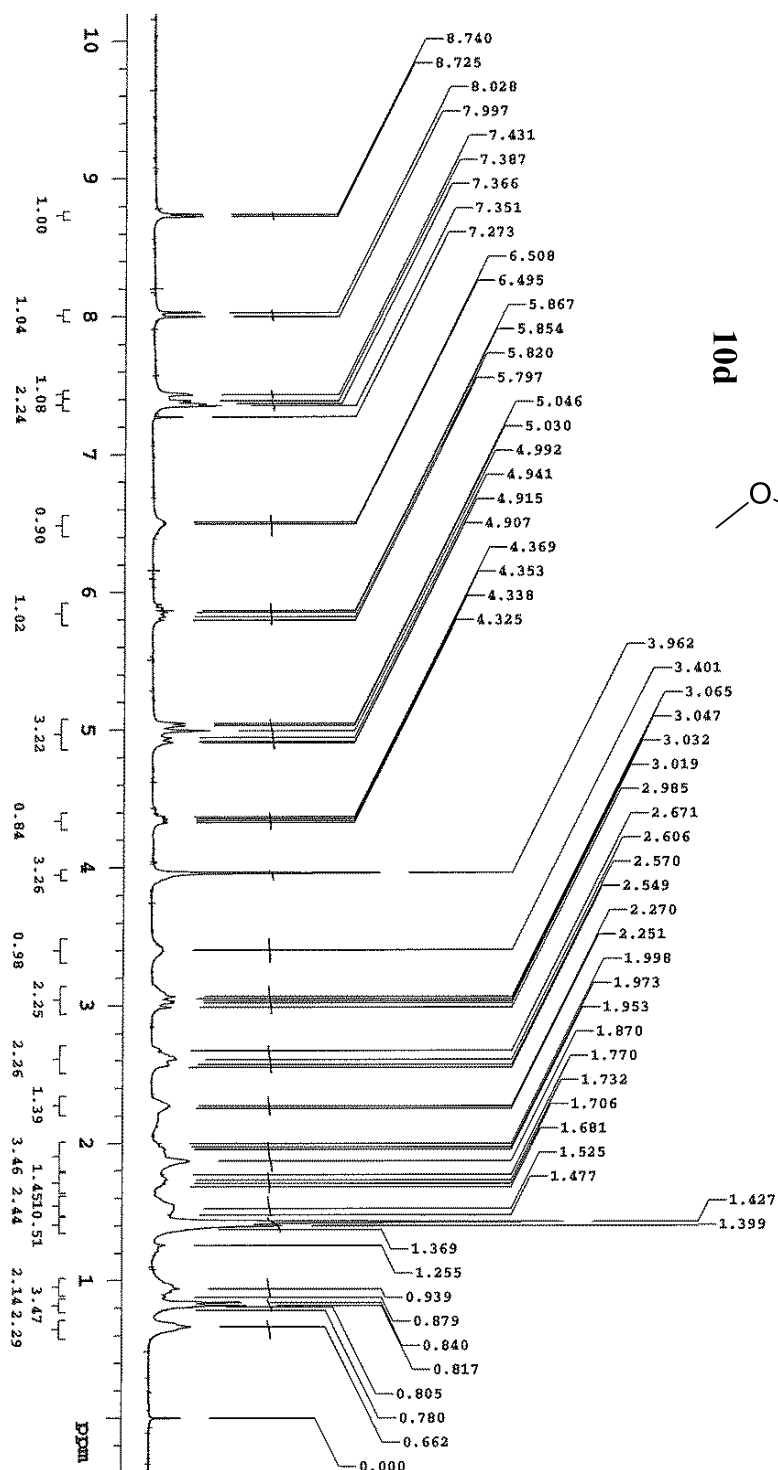


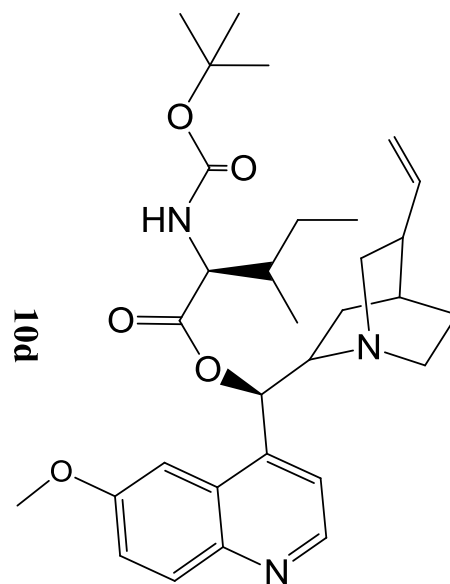
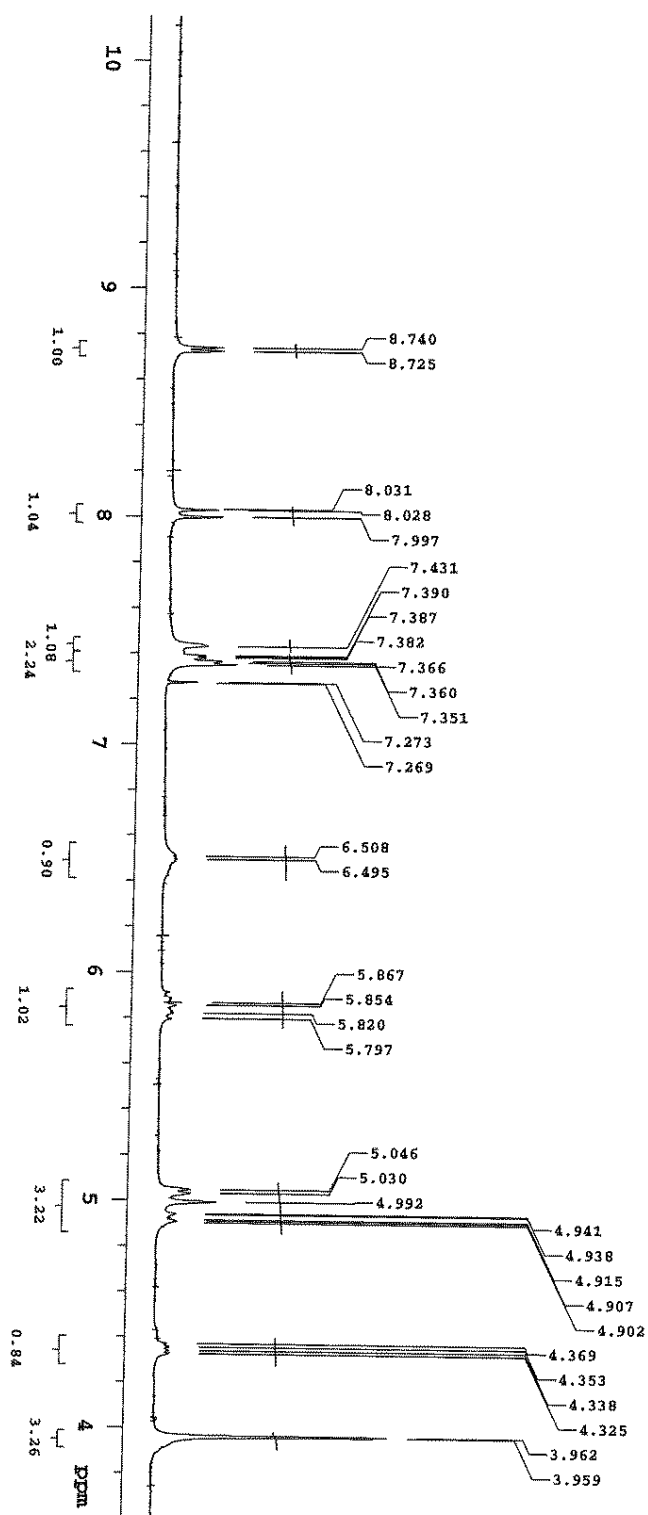


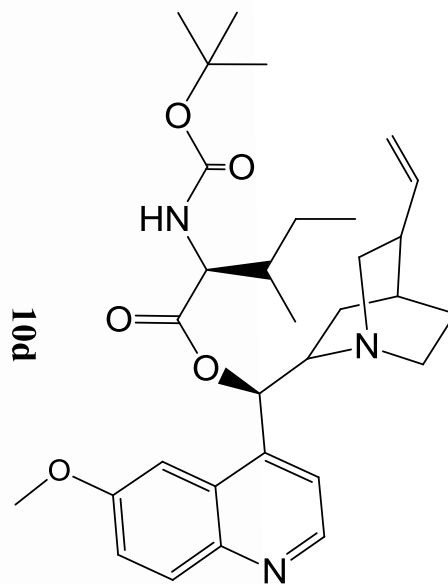
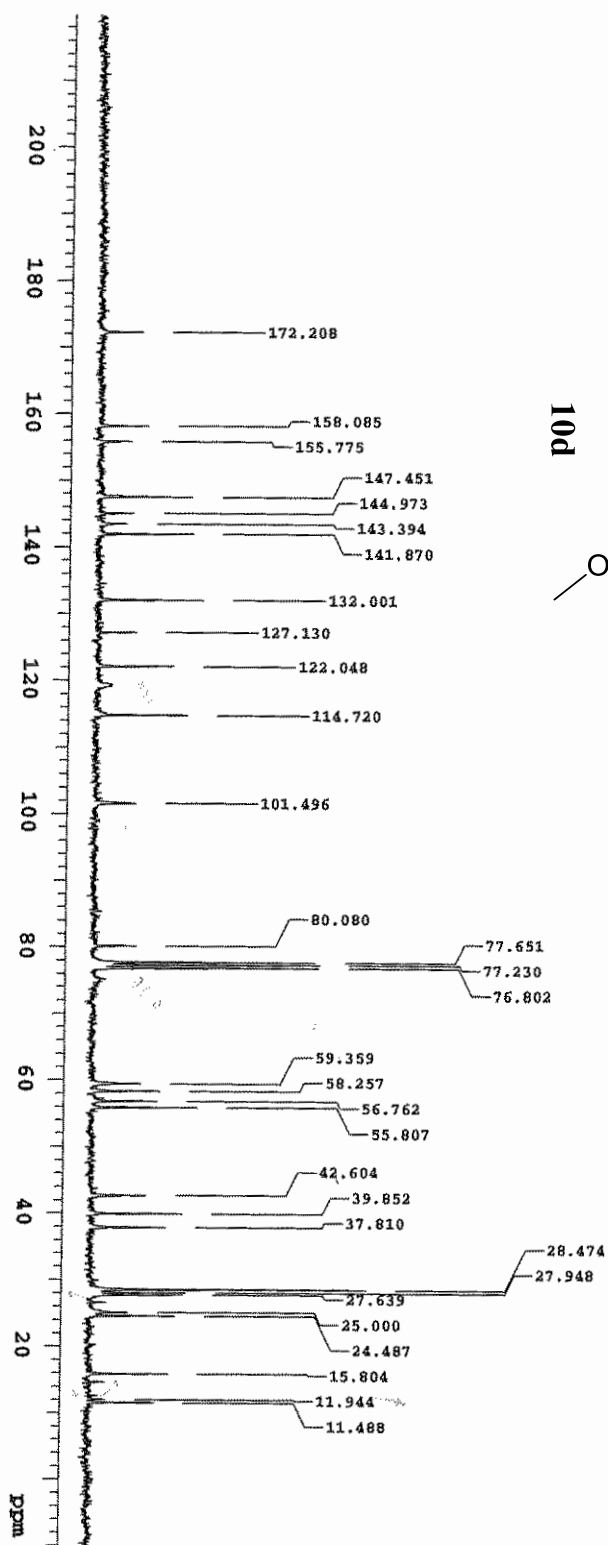


9c

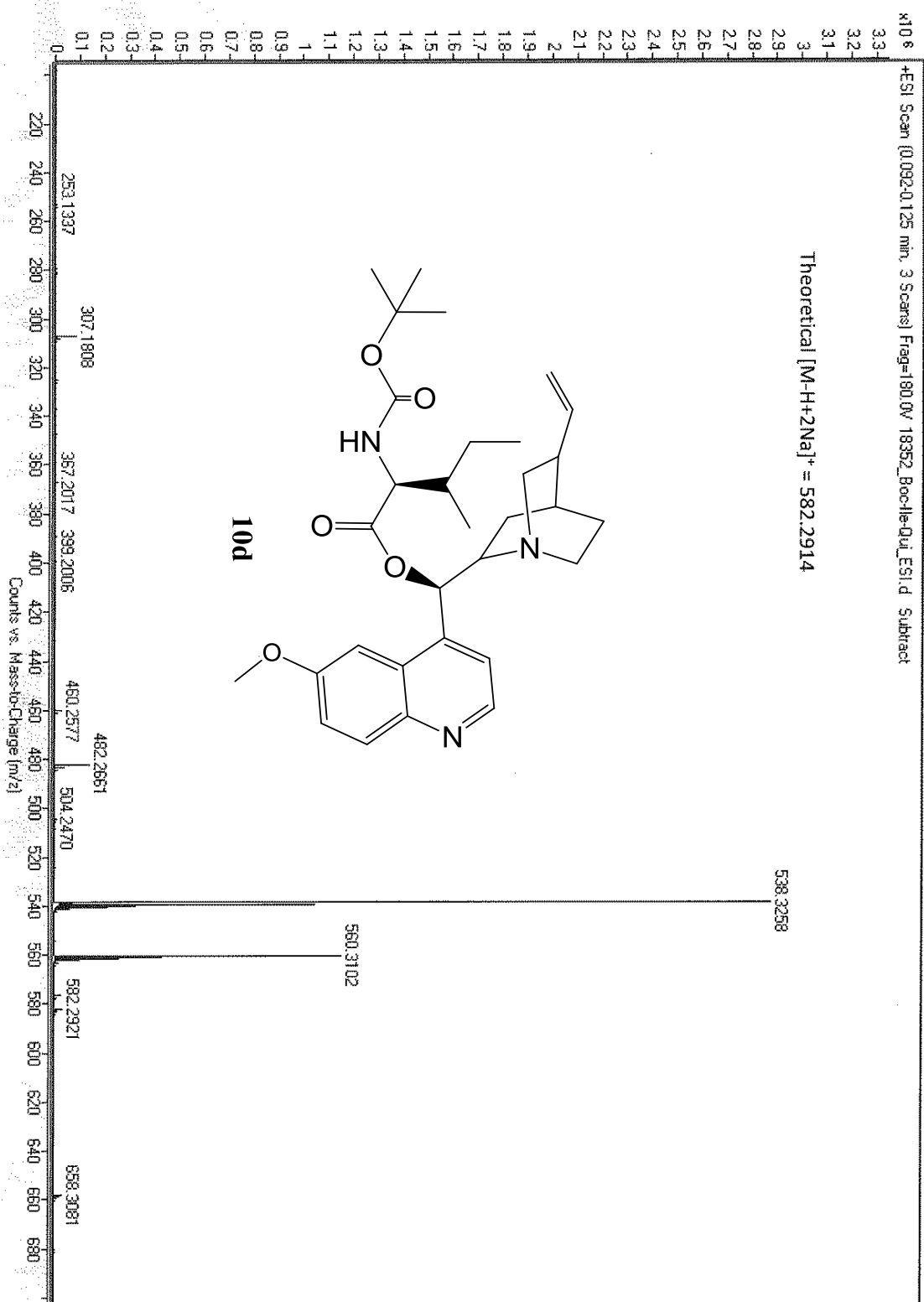








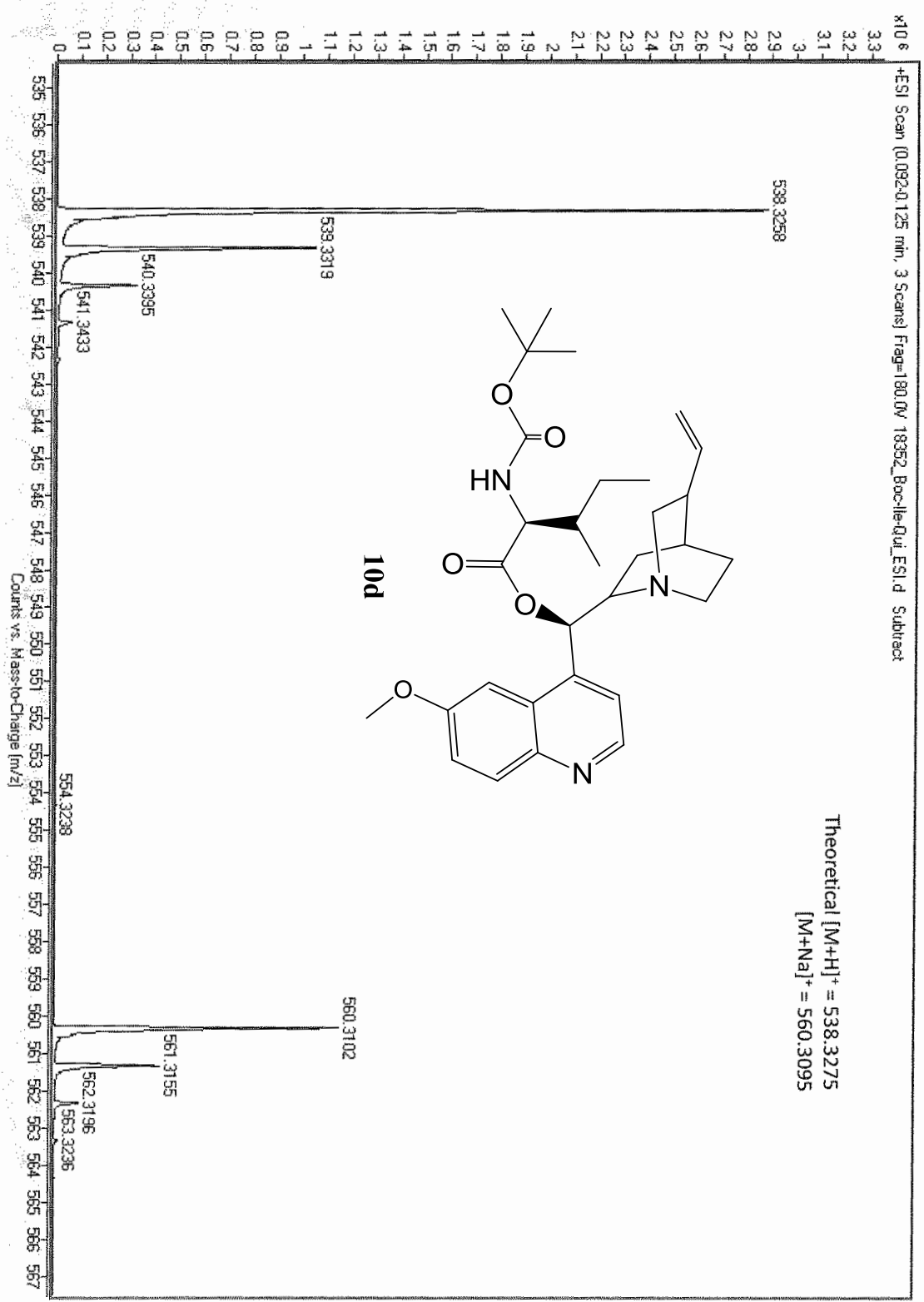
# Full mass spectrum



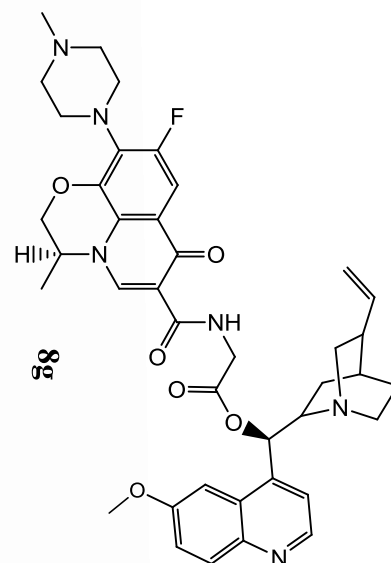
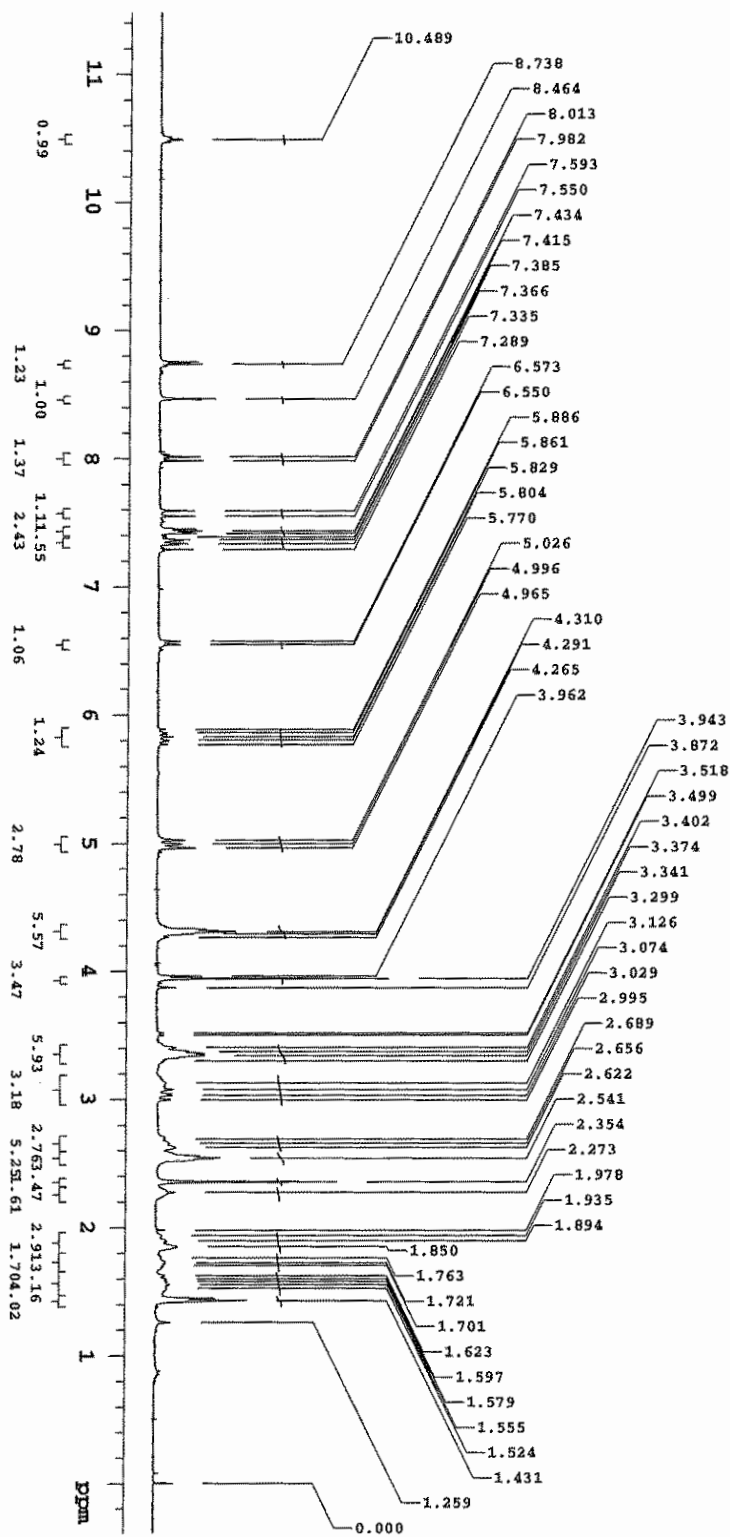
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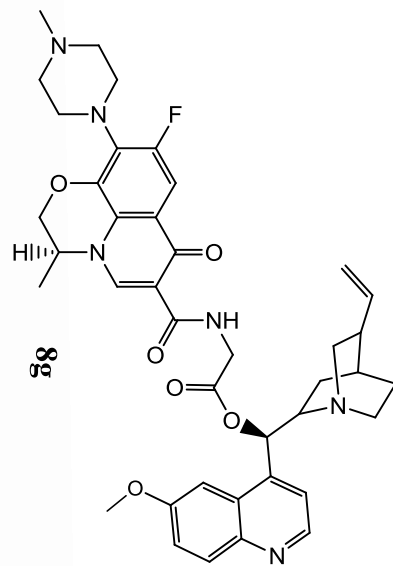
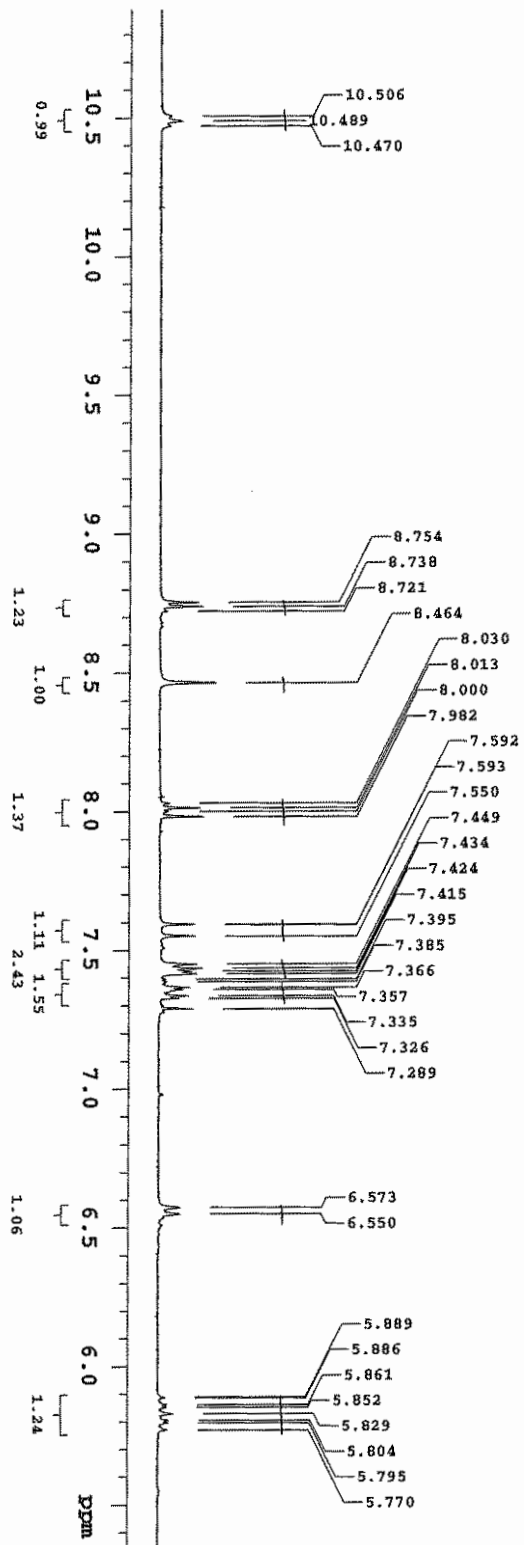
### Zoom-In View

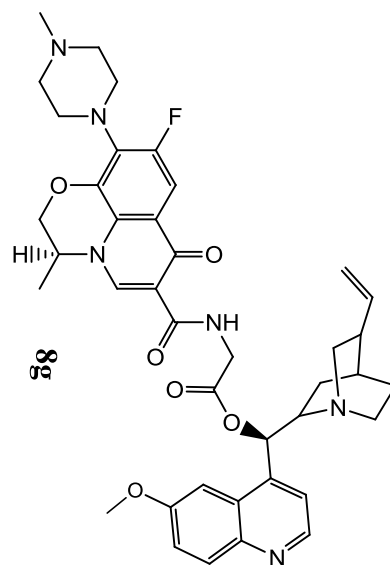
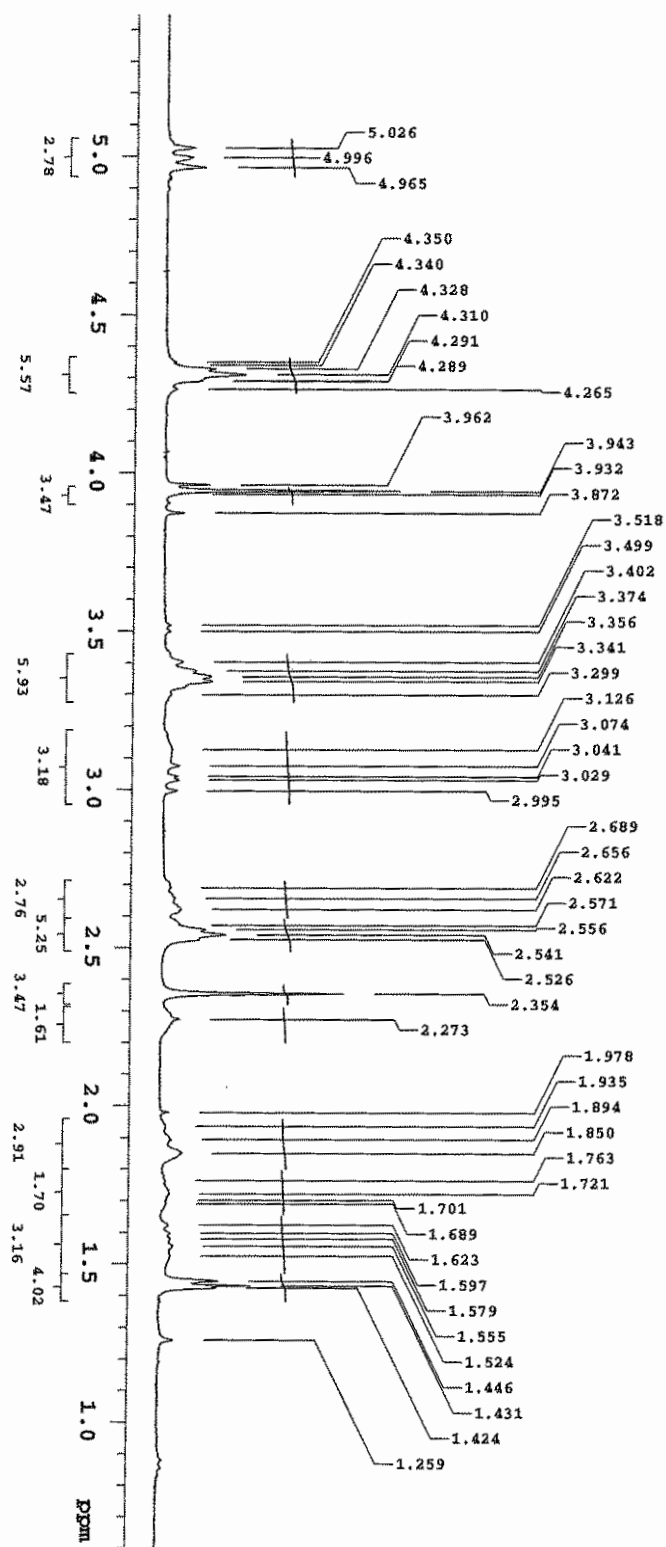
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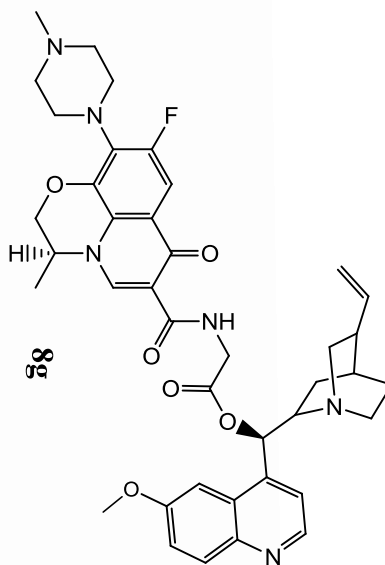
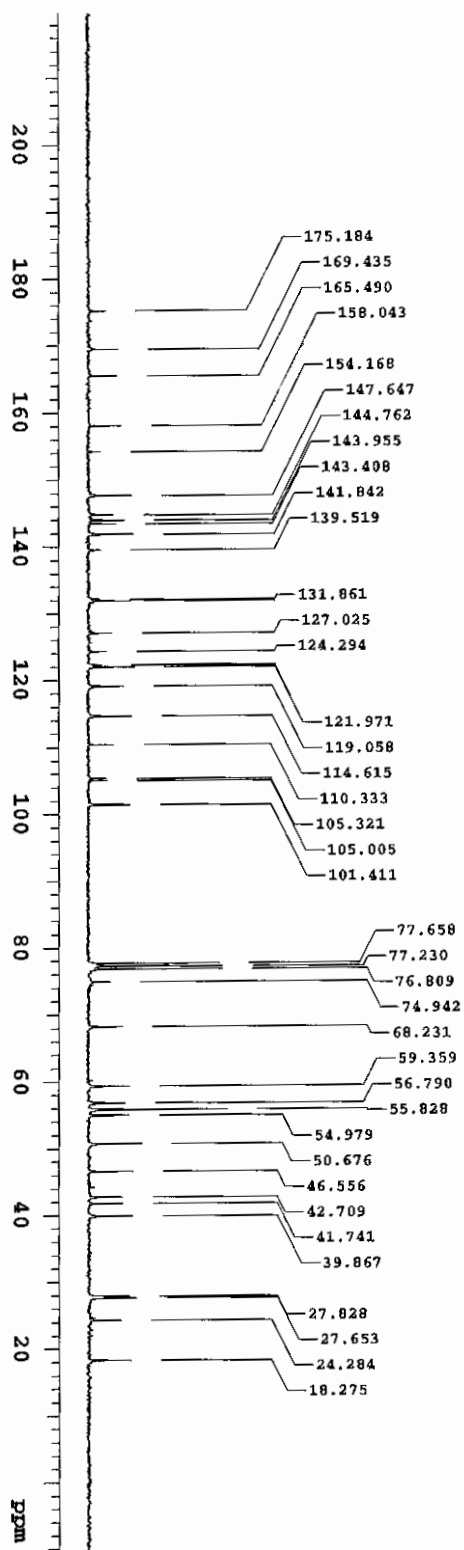


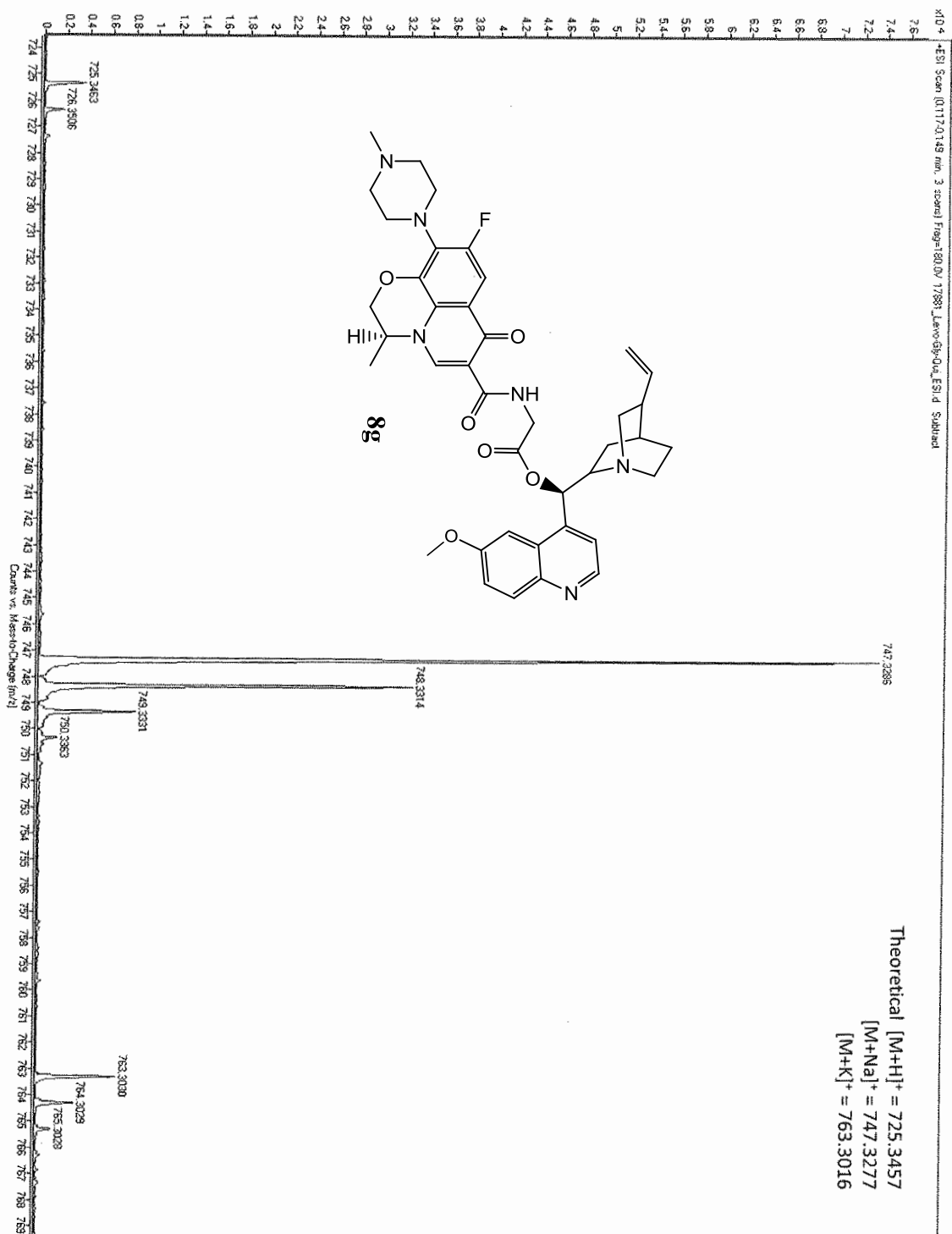


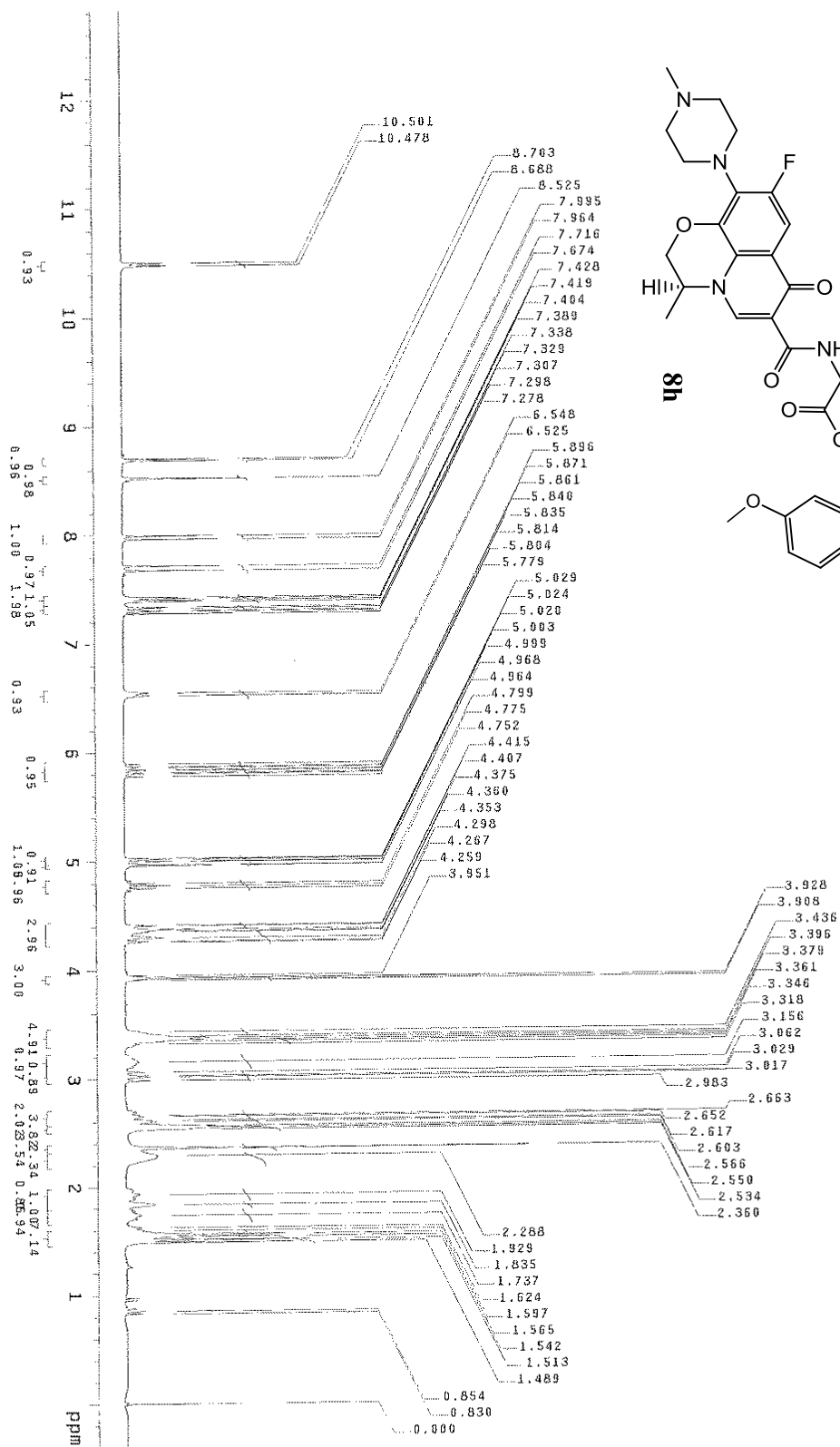


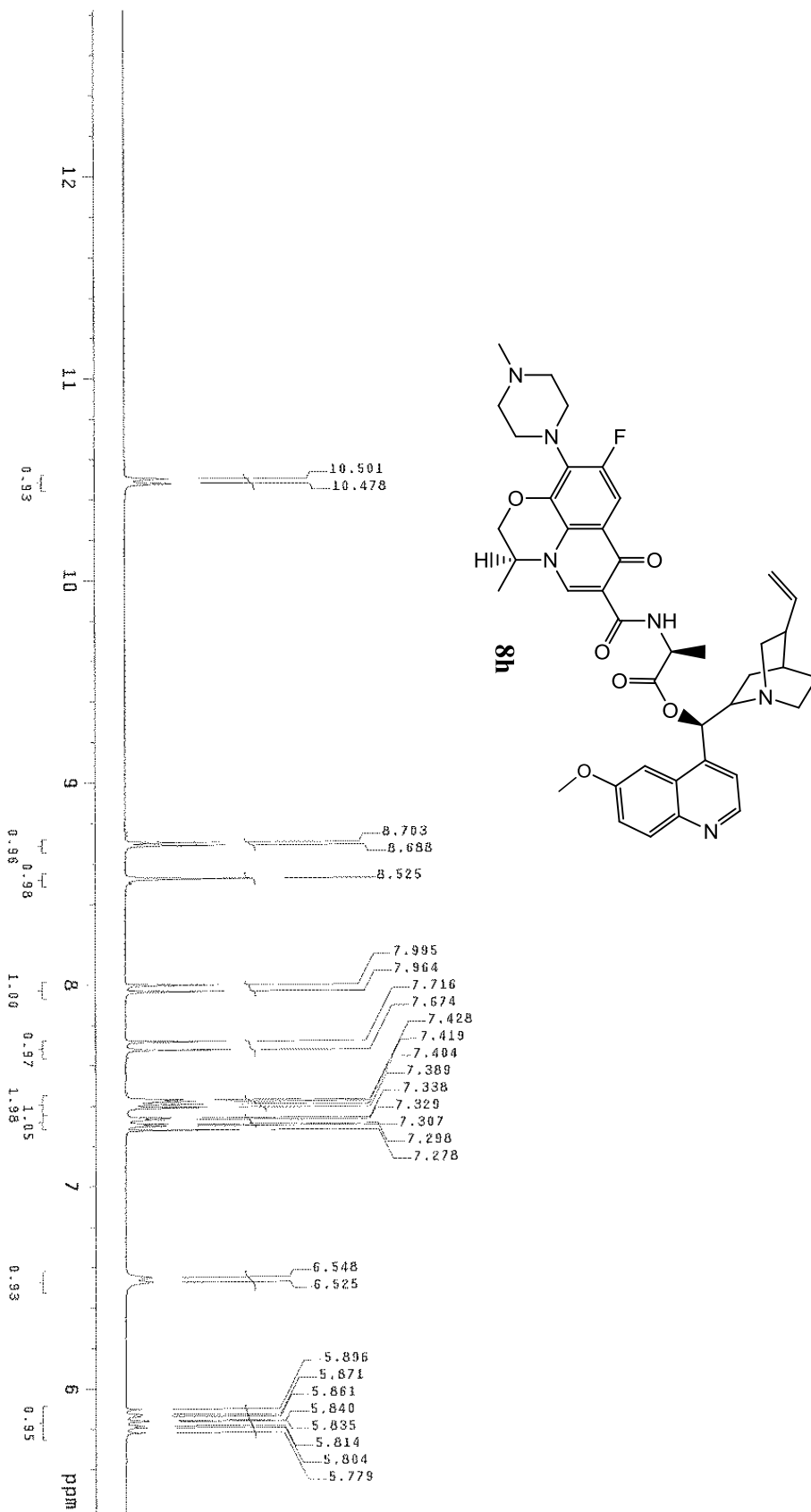


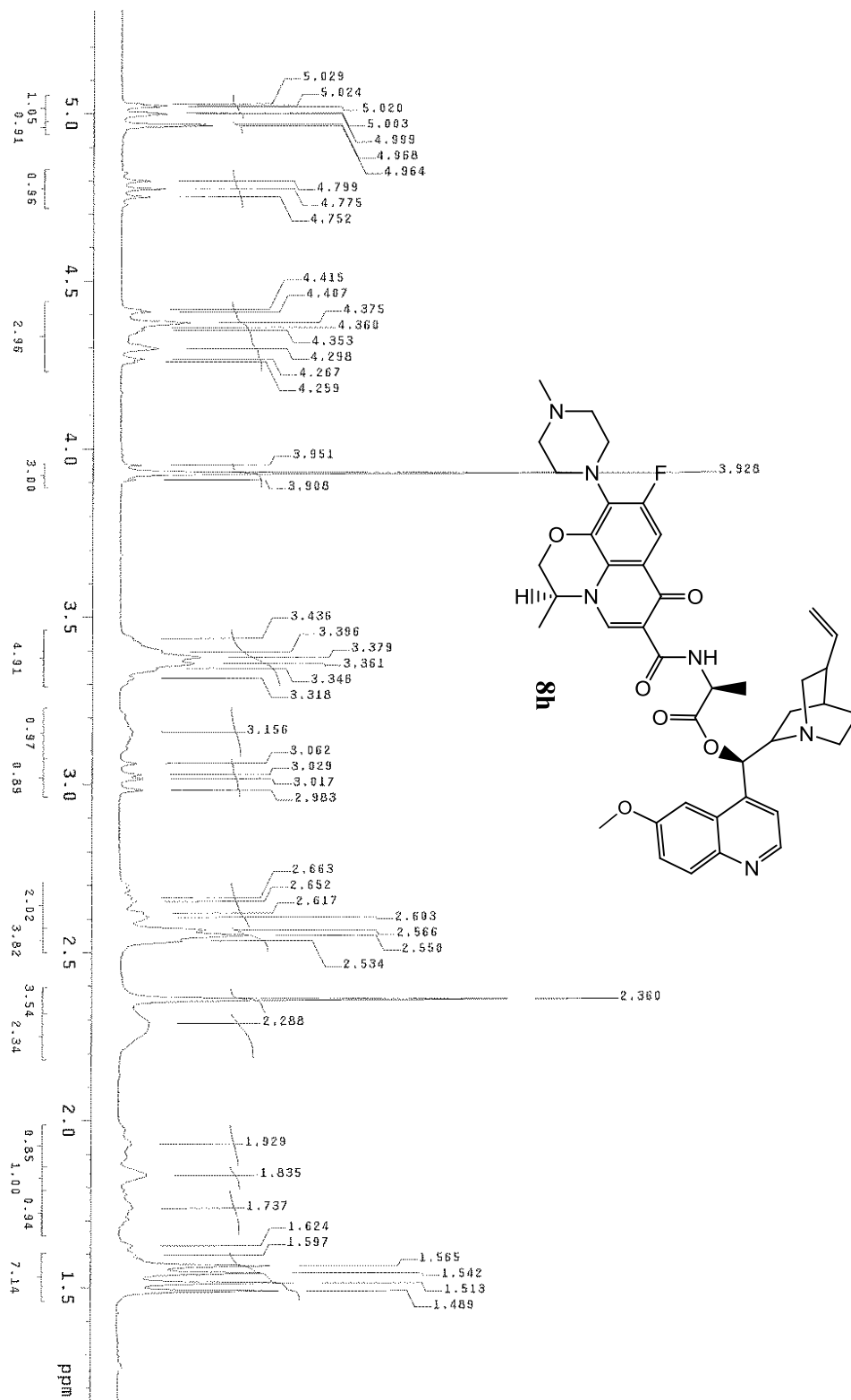




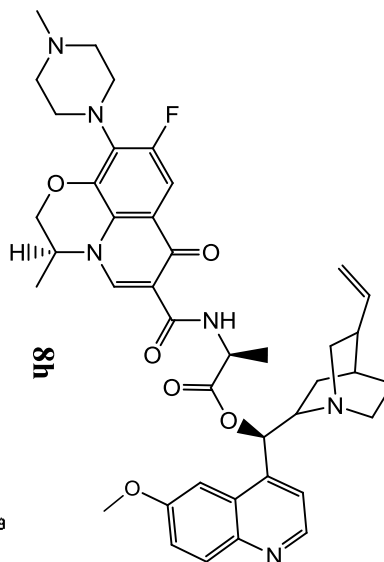
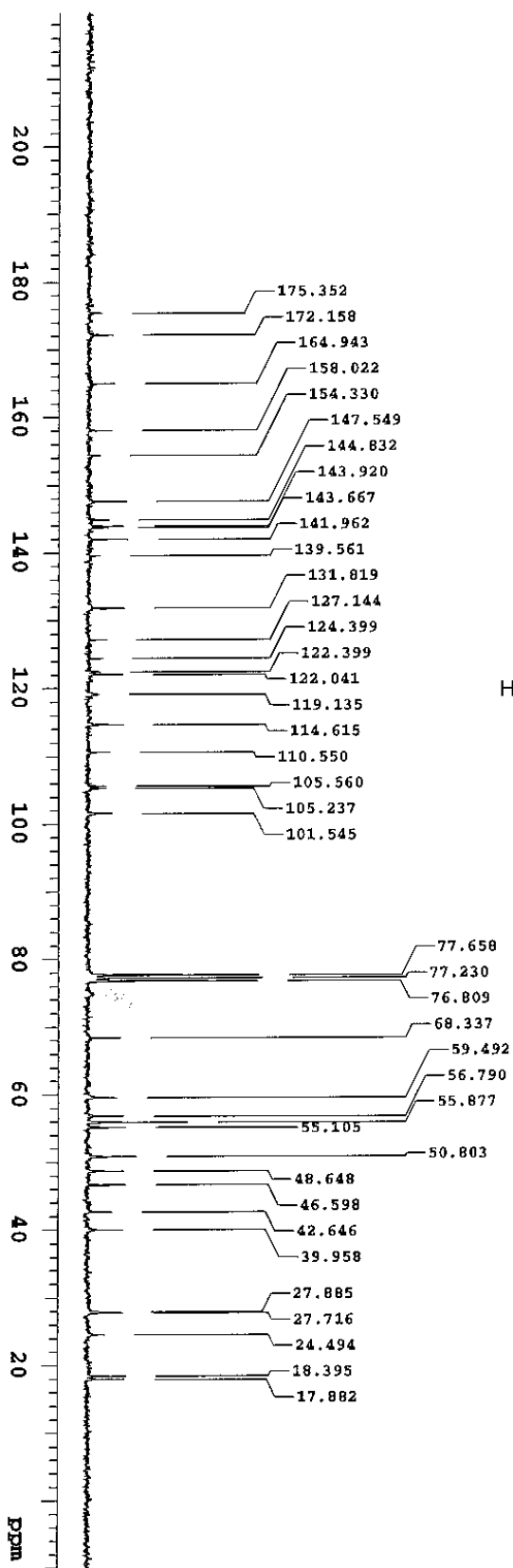


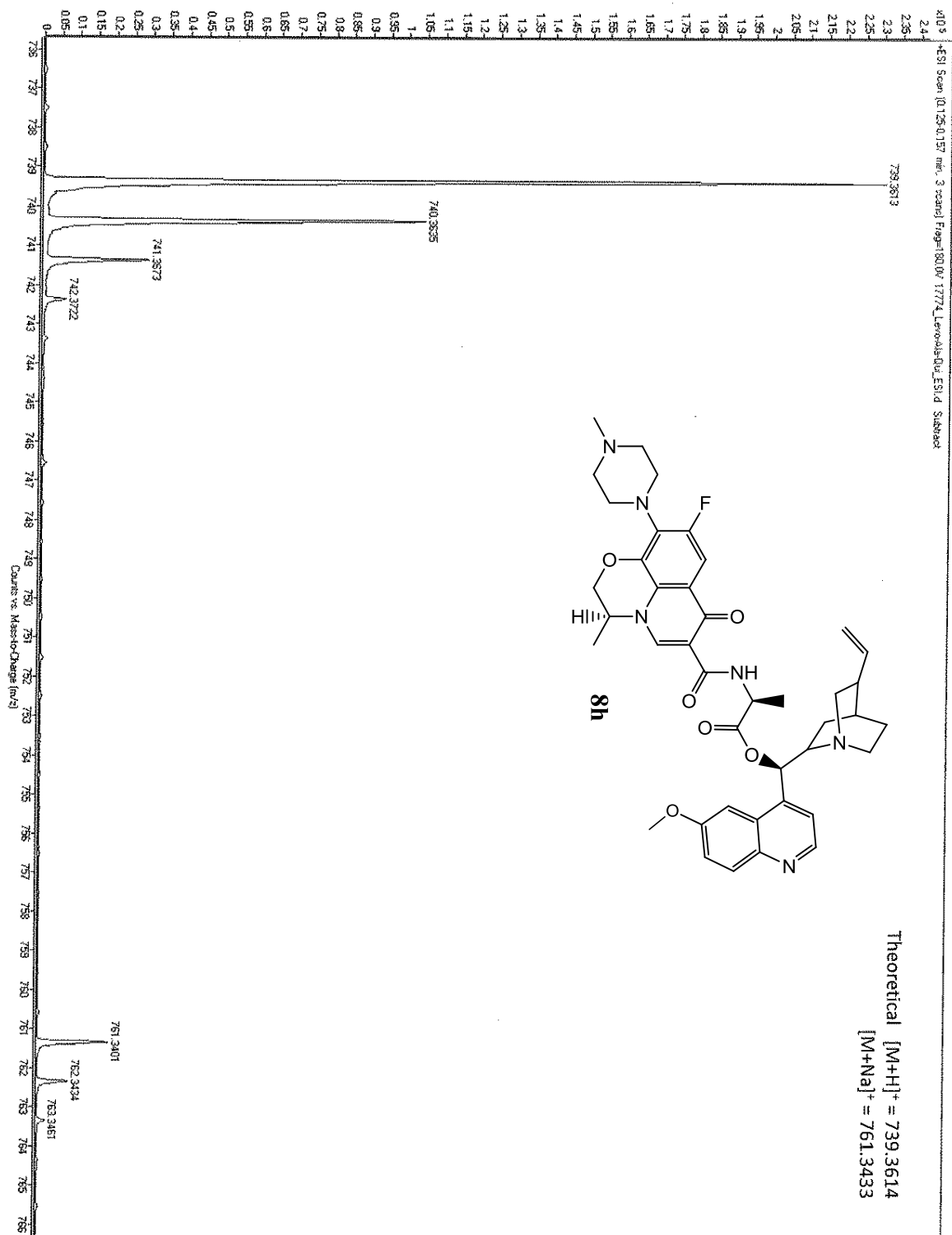


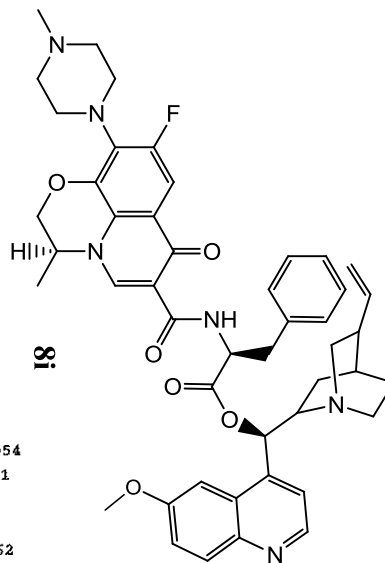
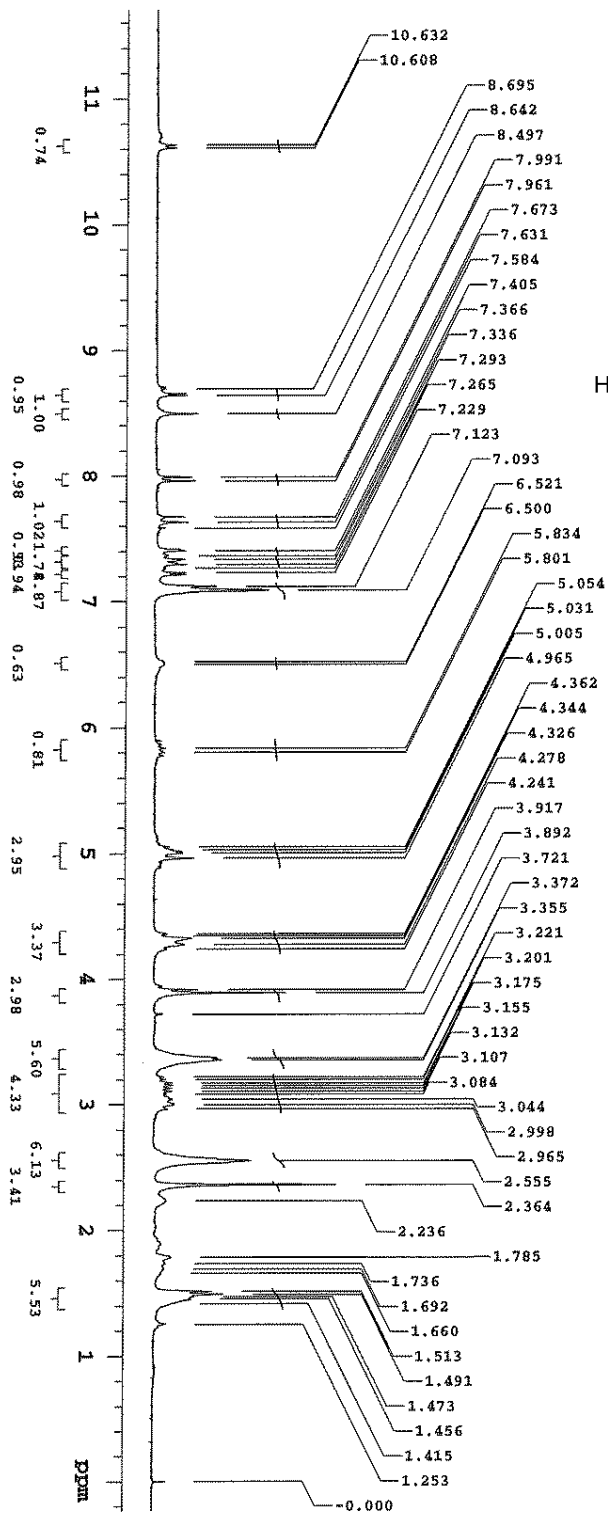


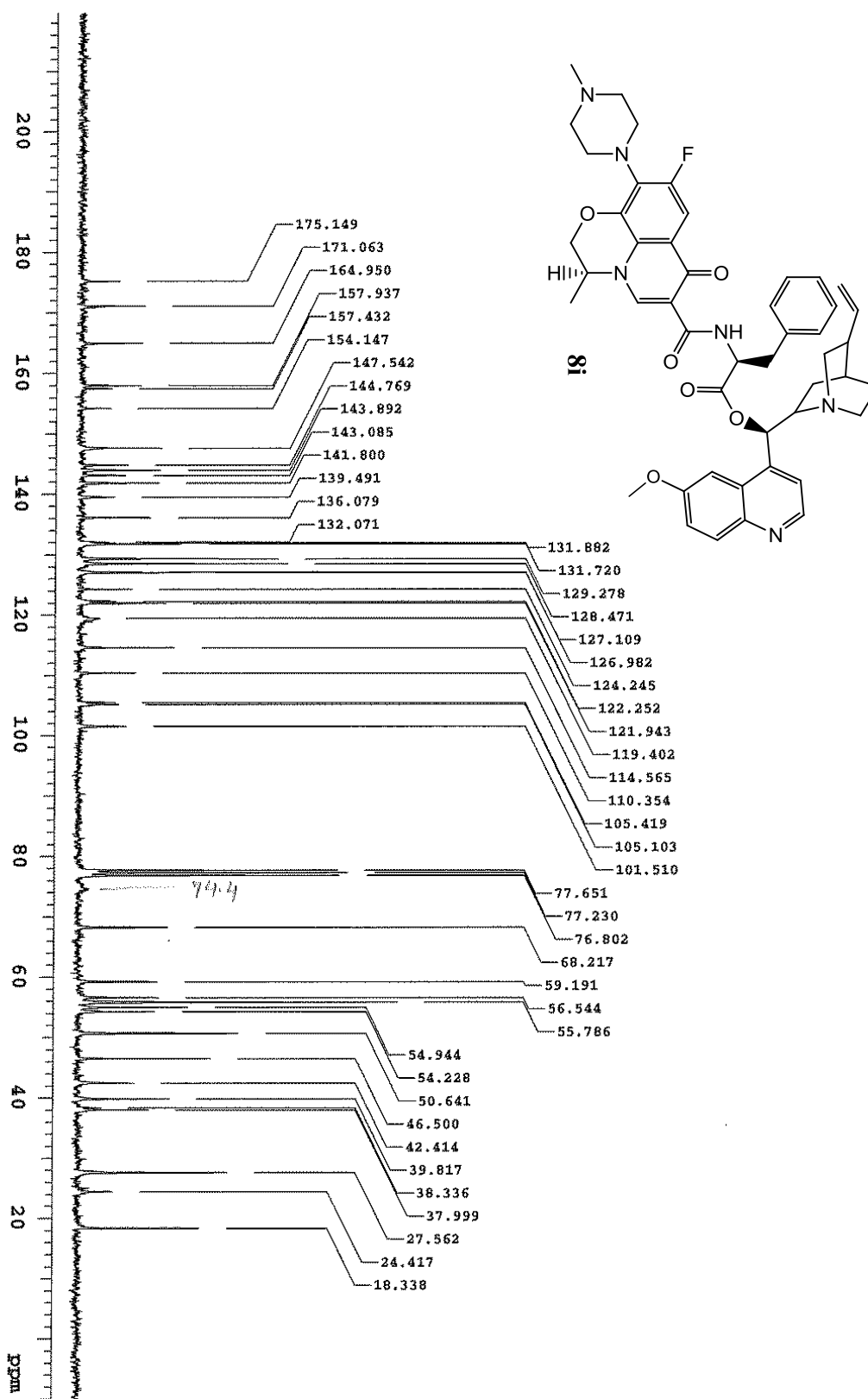


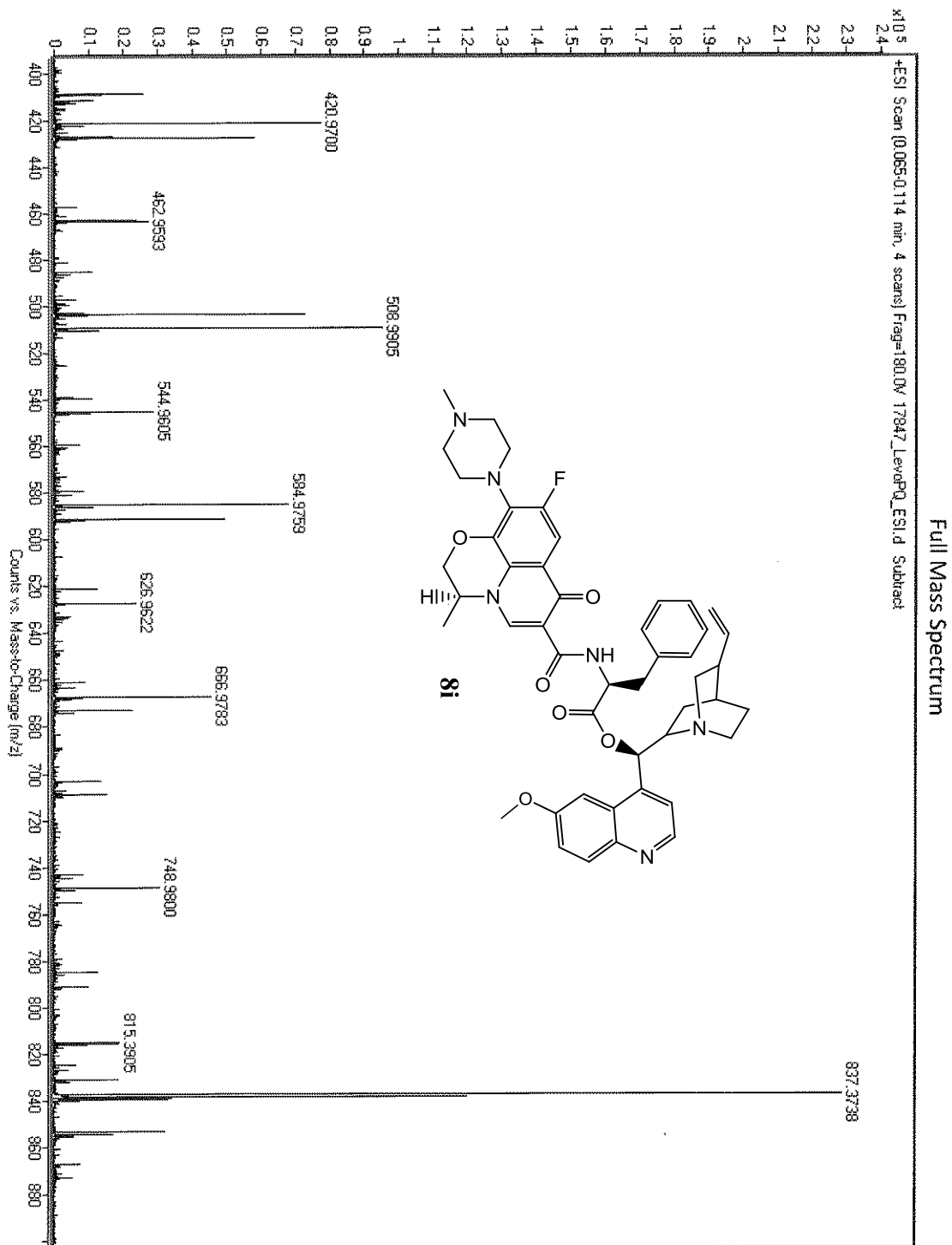


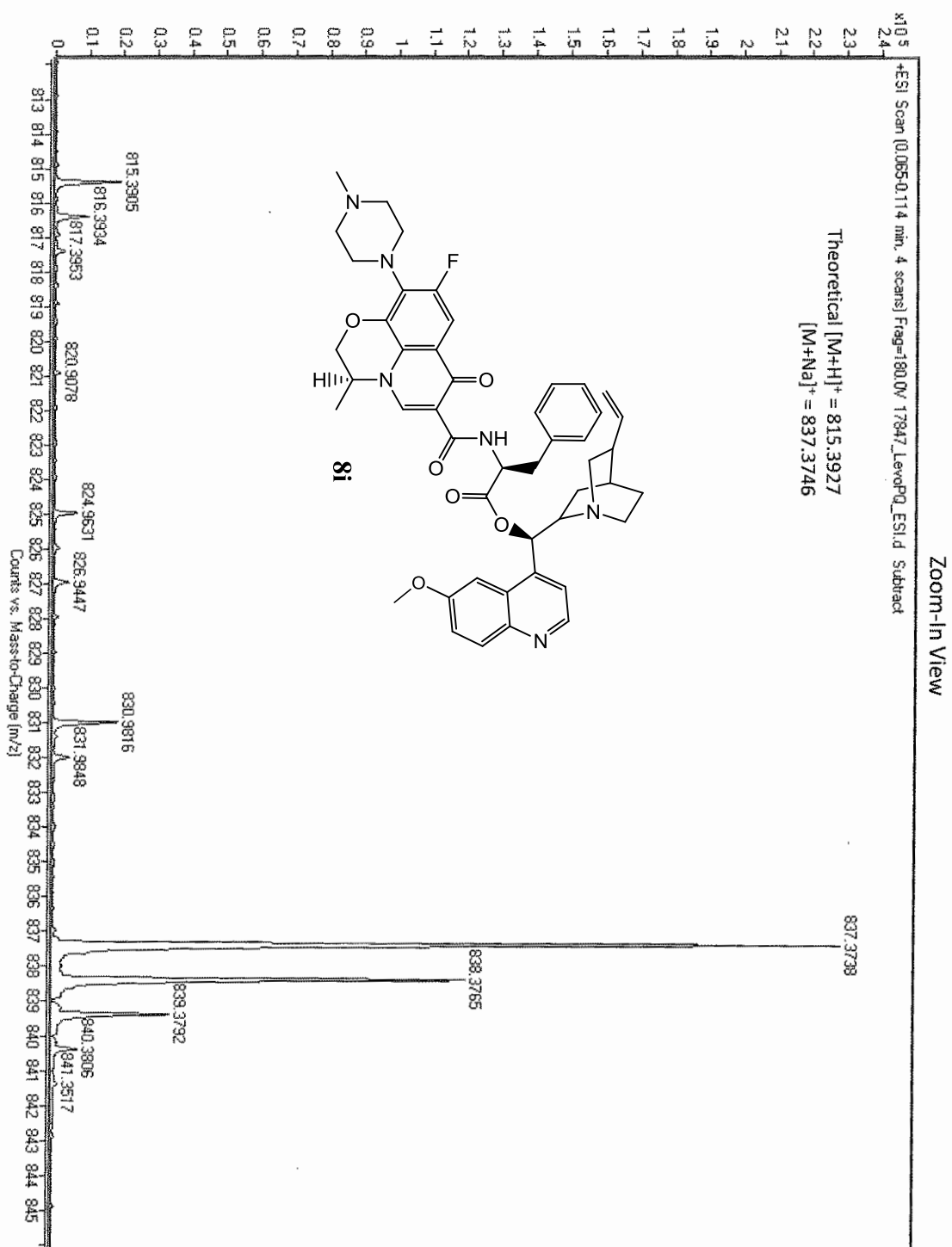


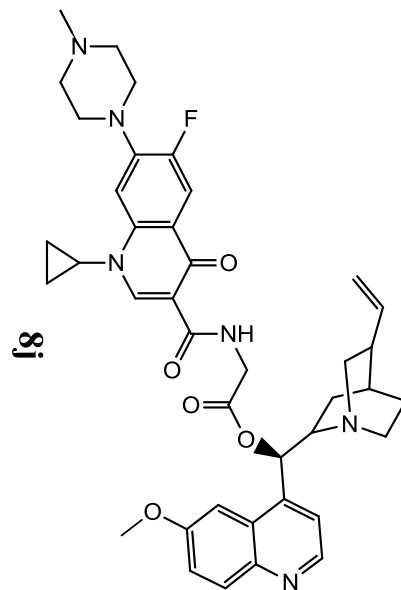
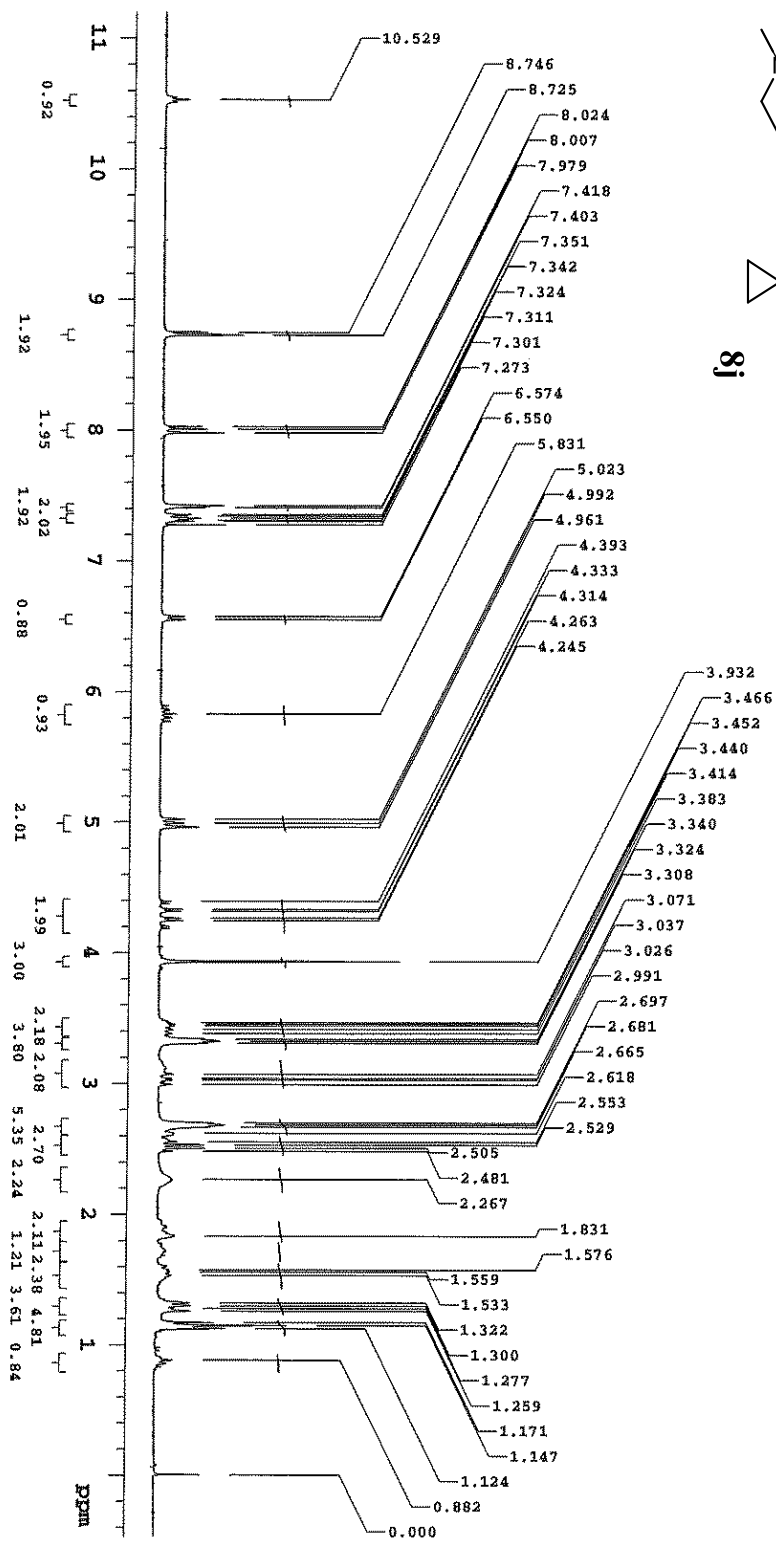


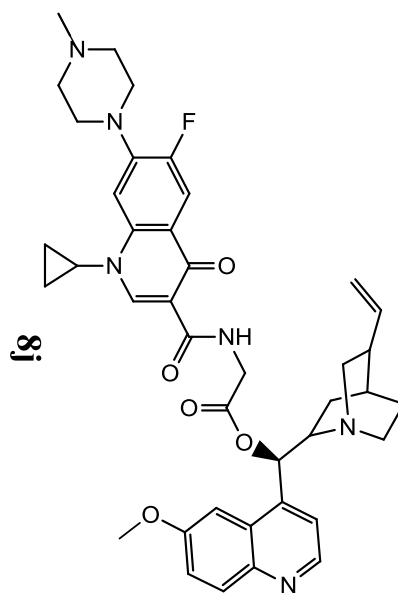
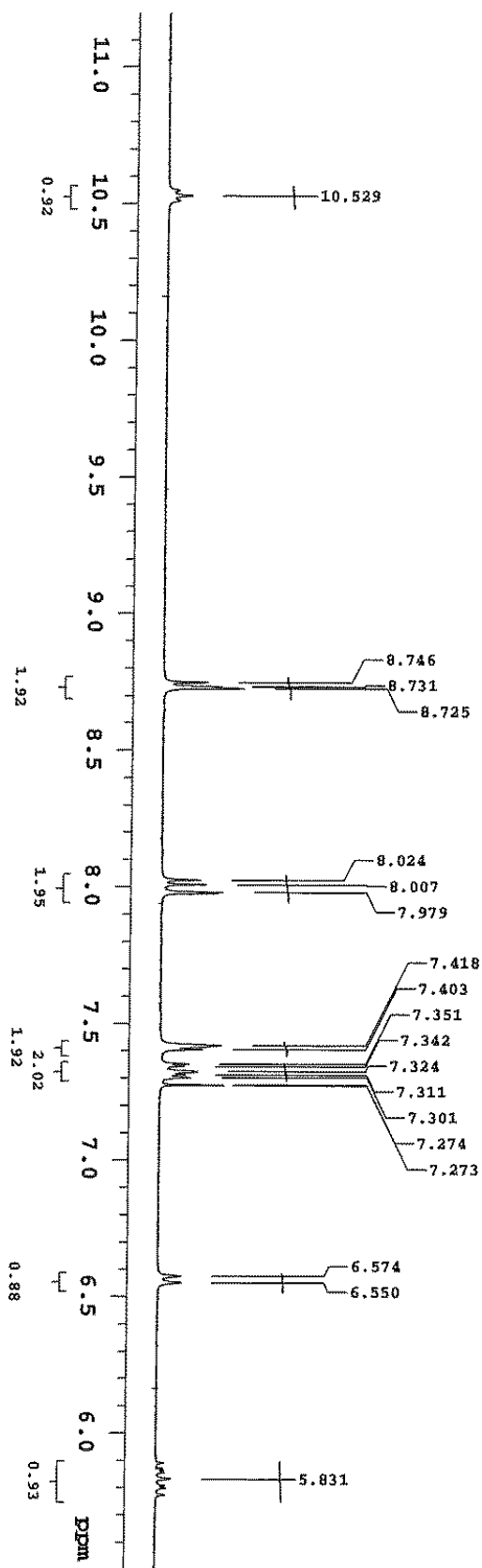




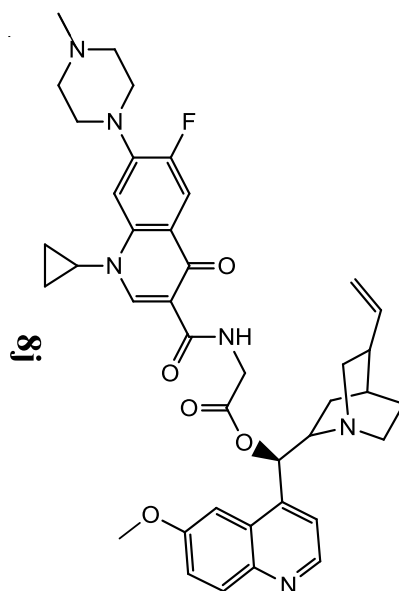
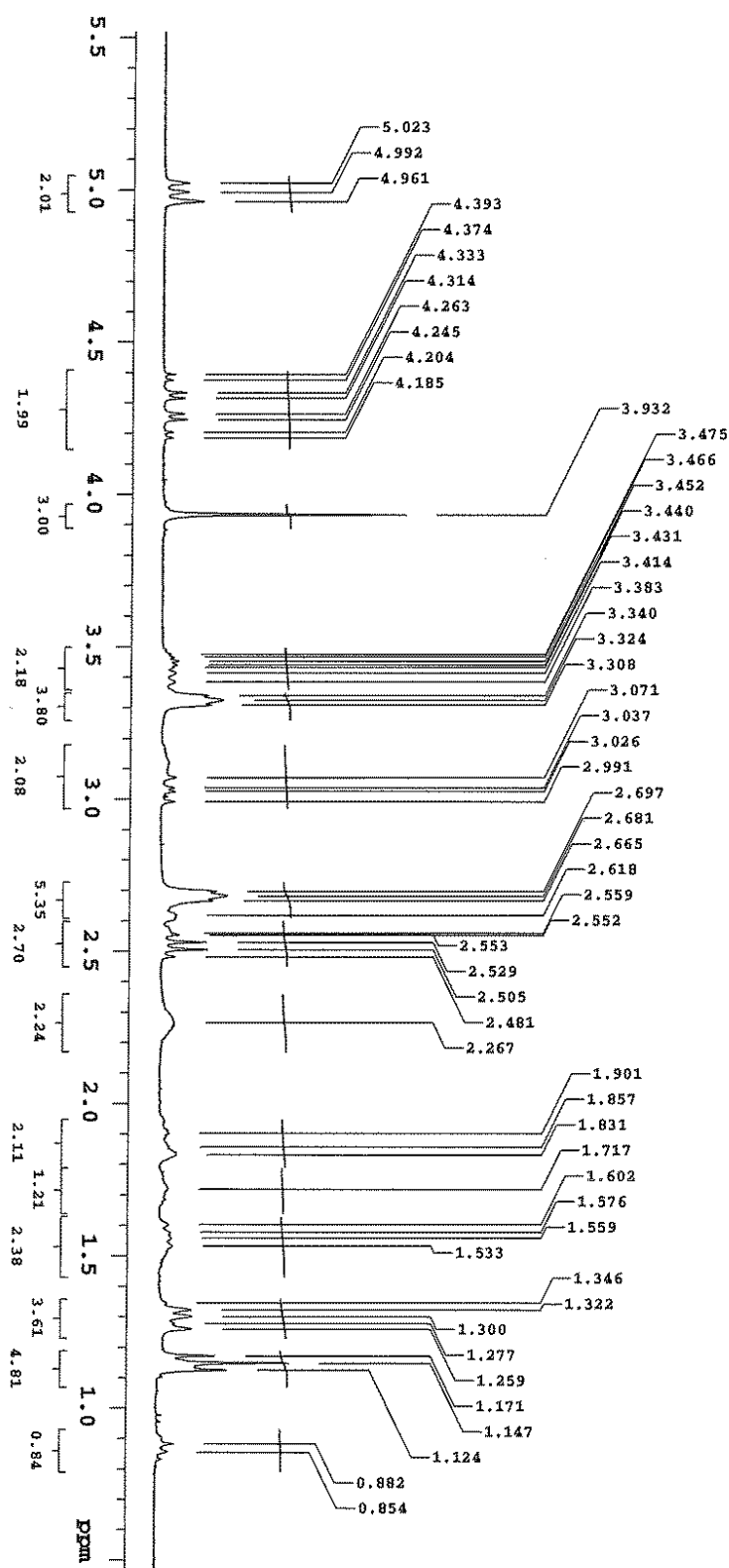


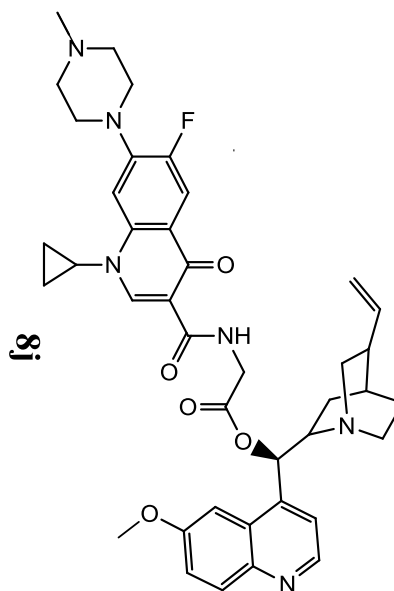
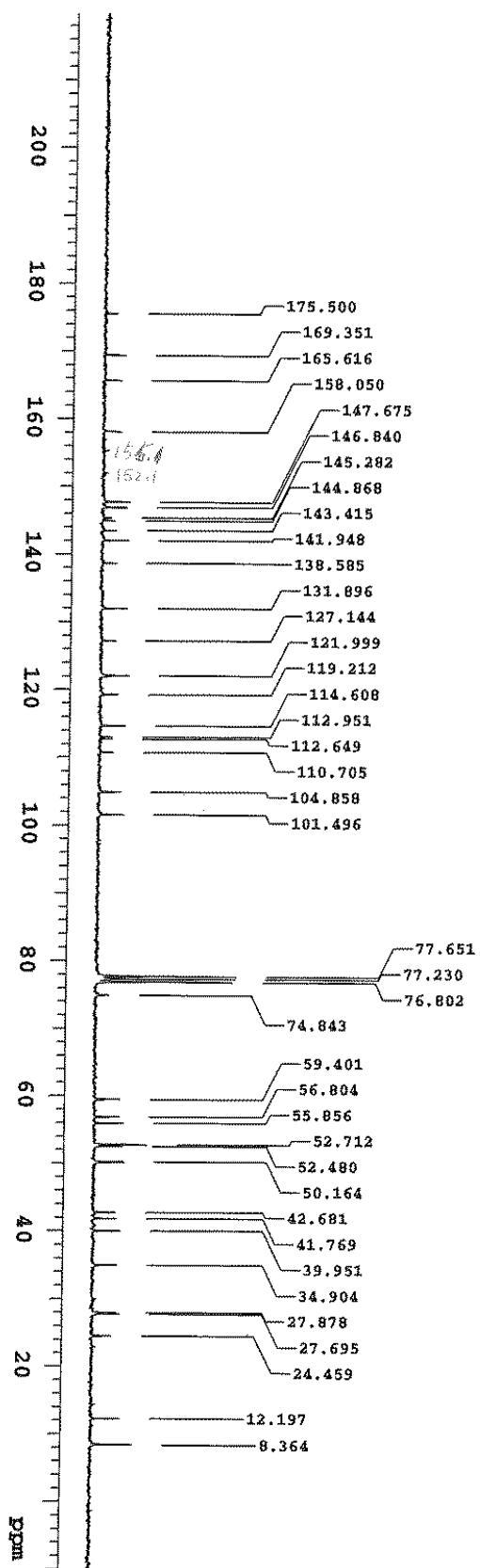


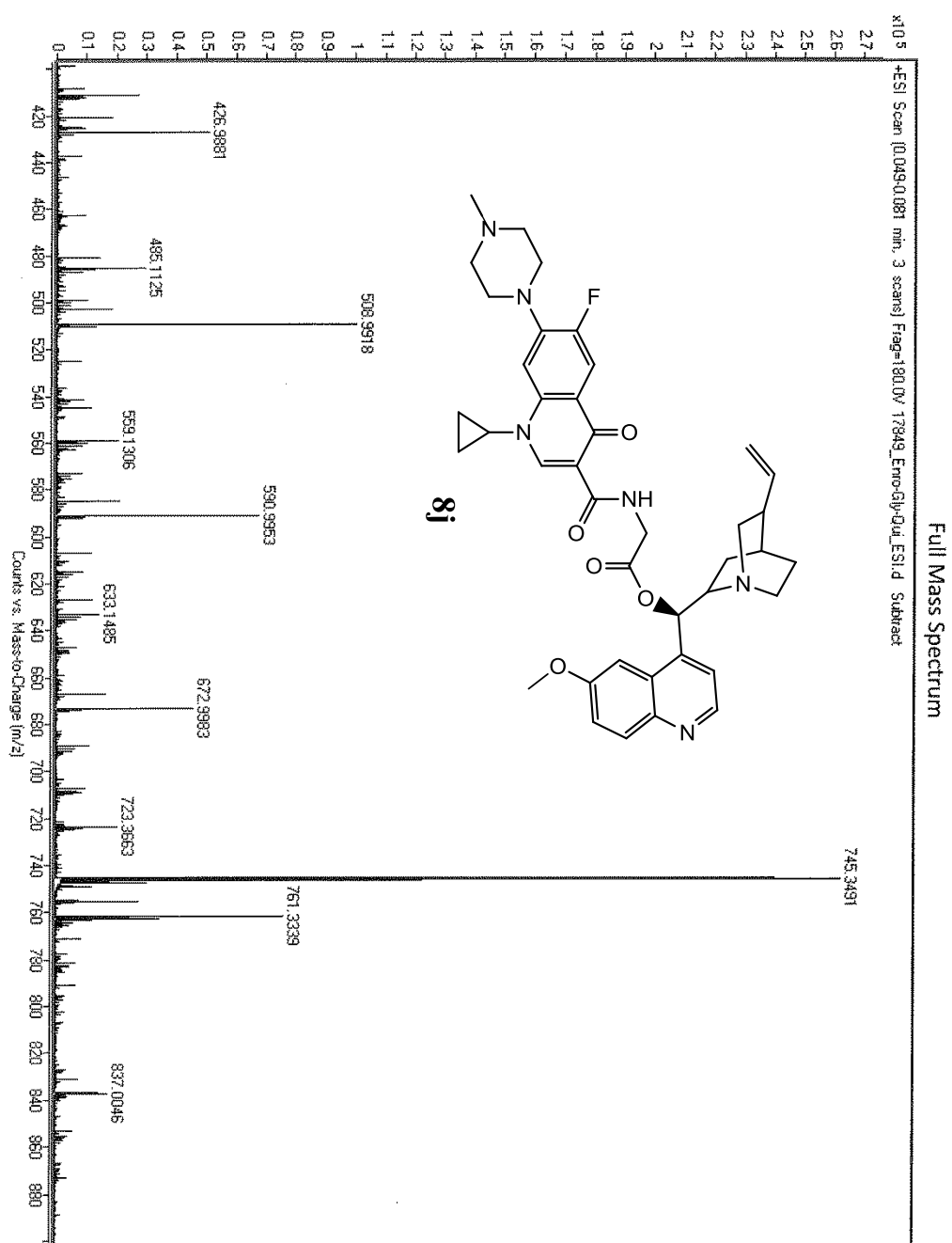


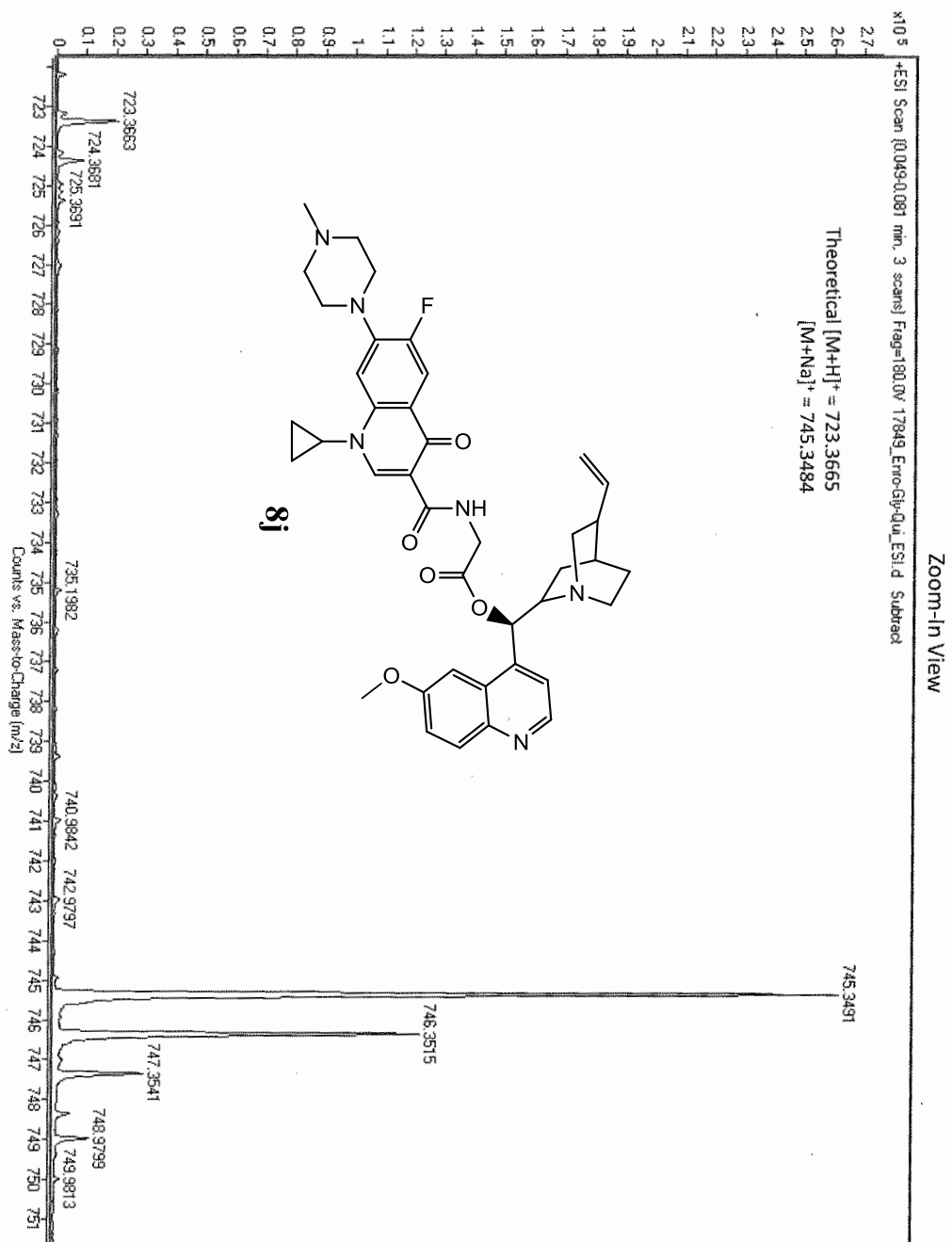


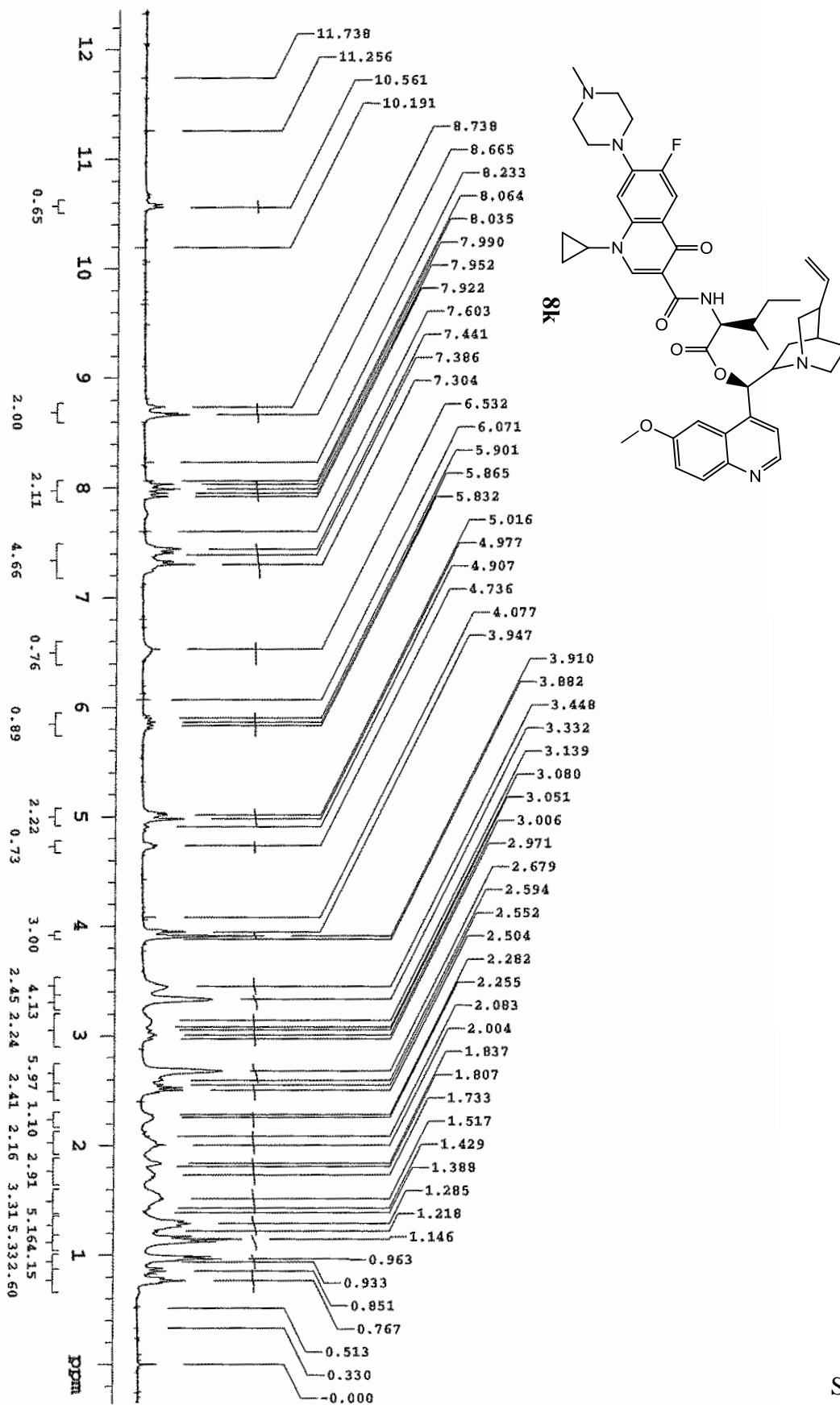


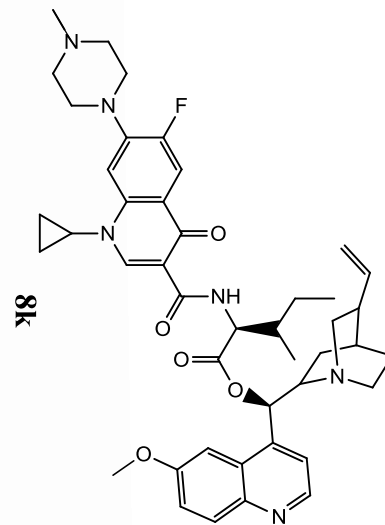
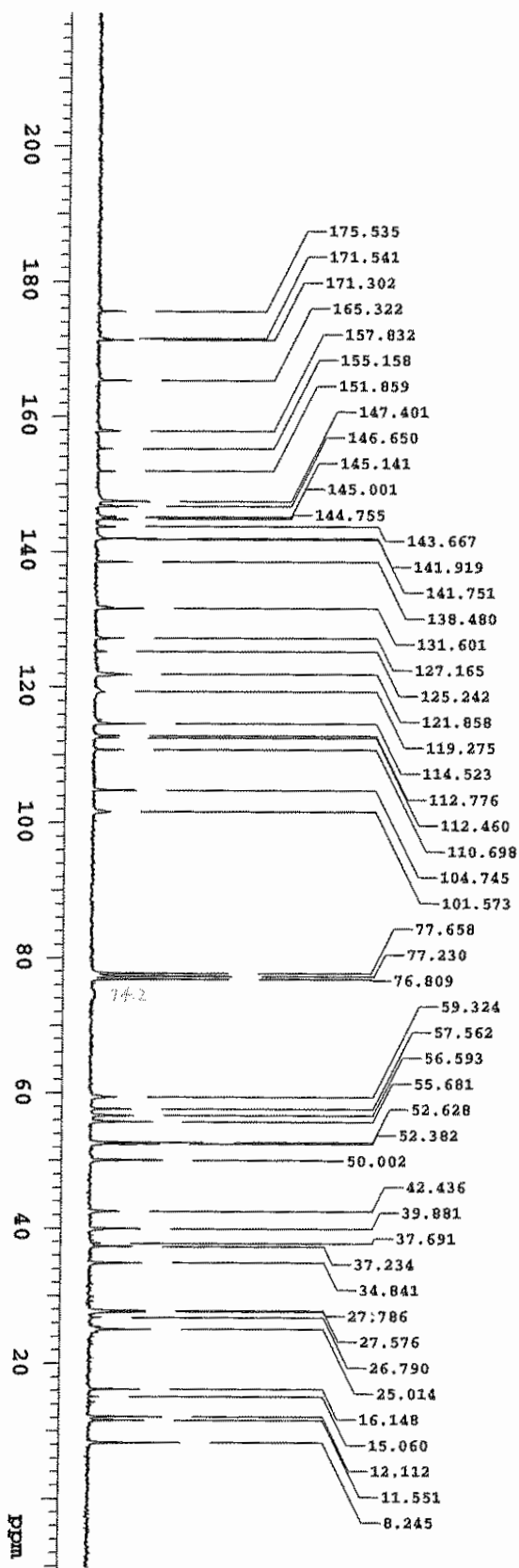


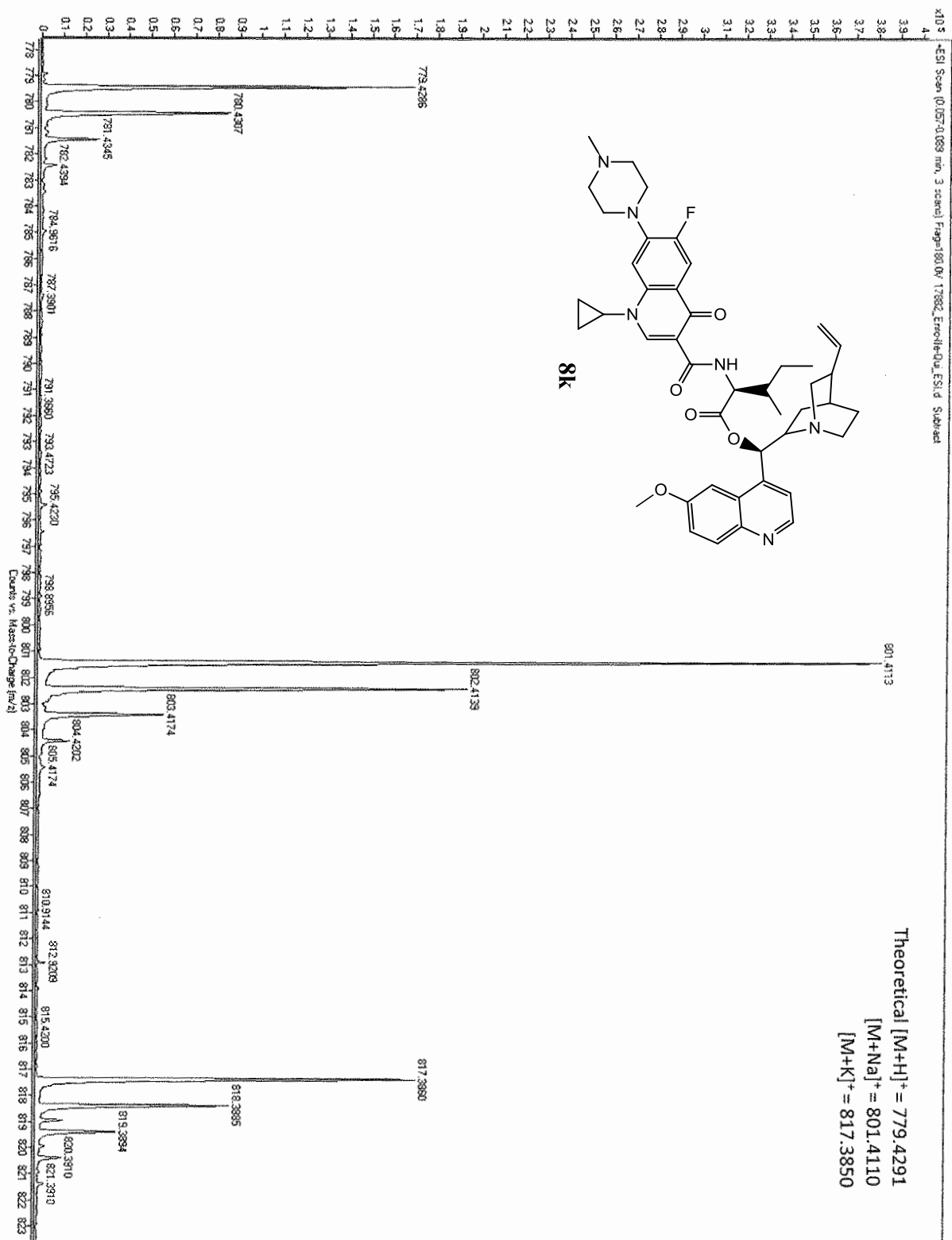






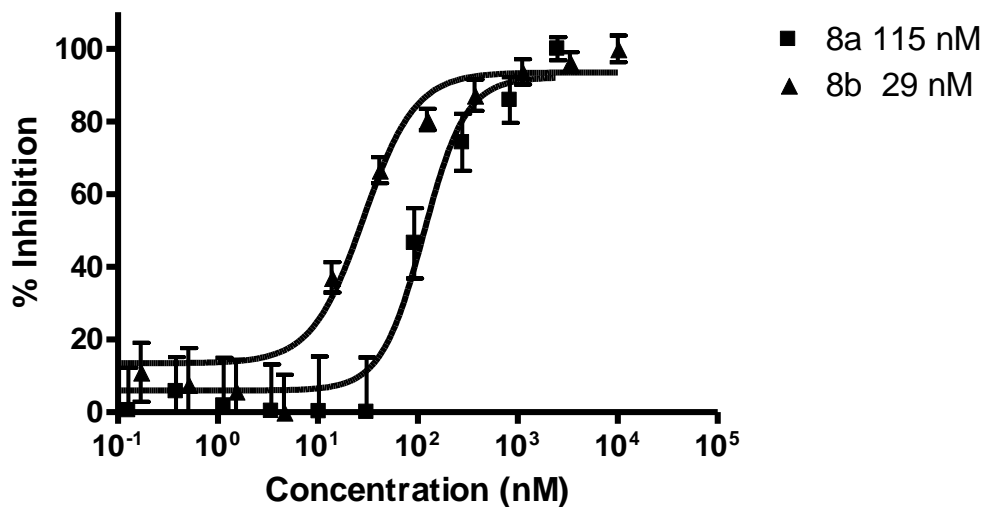




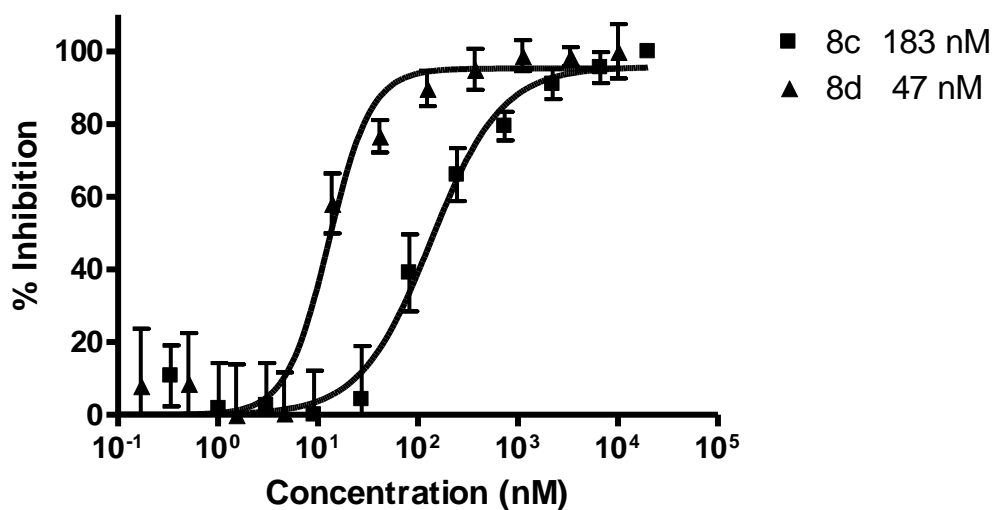


**Graphs shown with % Inhibition.**

**Antimalarial activity against *P. falciparum* strain 3D7**

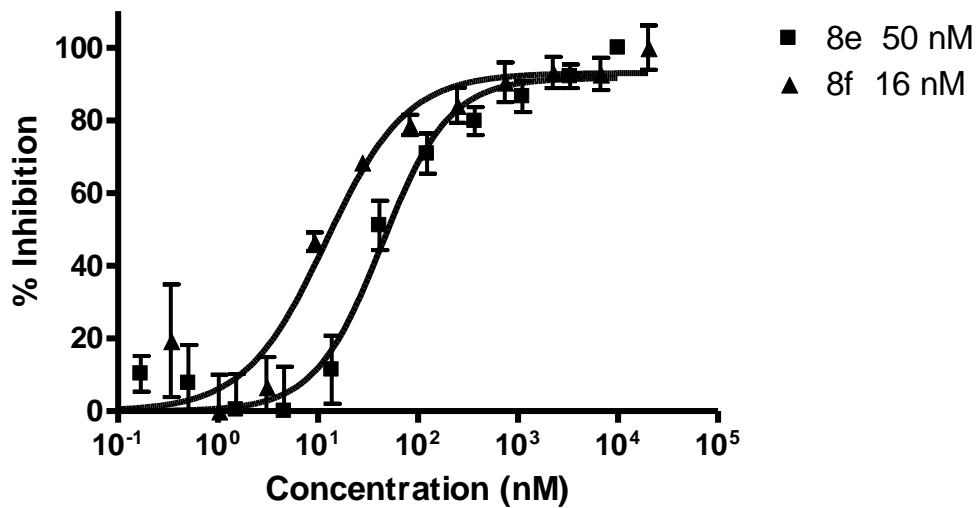


**Antimalarial activity against *P. falciparum* strain 3D7**

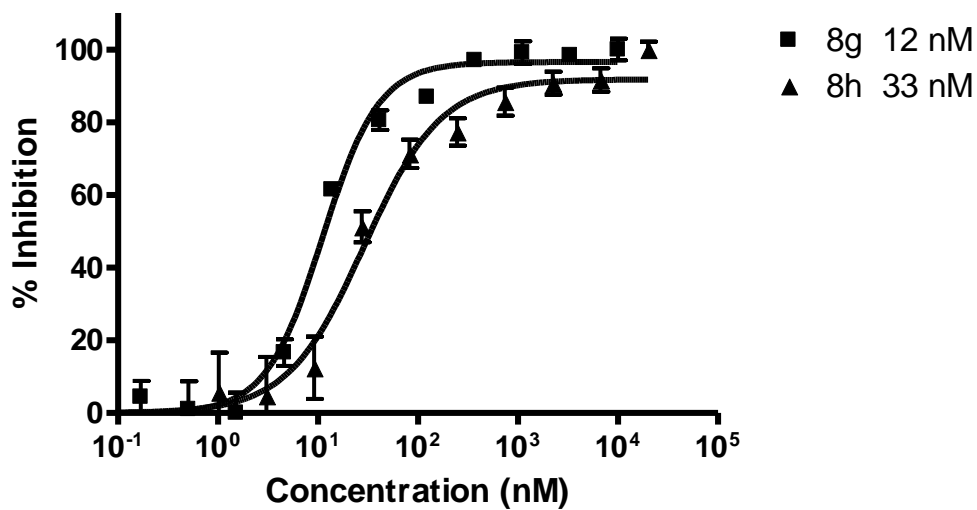




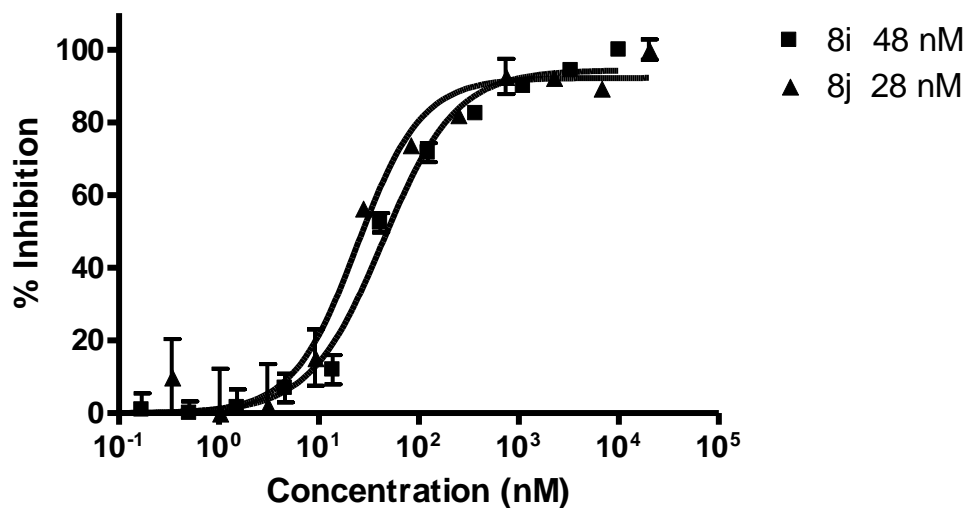
### Antimalarial activity against *P. falciparum* strain 3D7



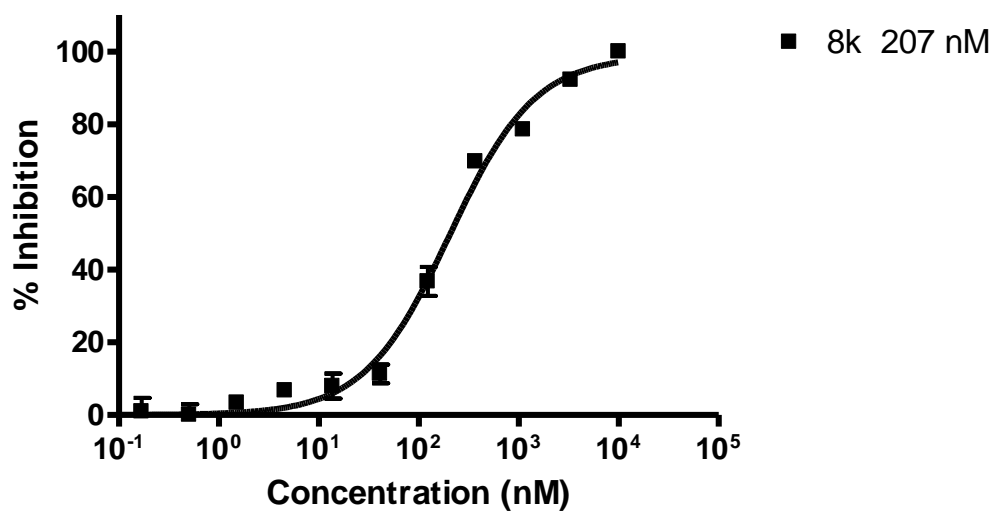
### Antimalarial activity against *P. falciparum* strain 3D7



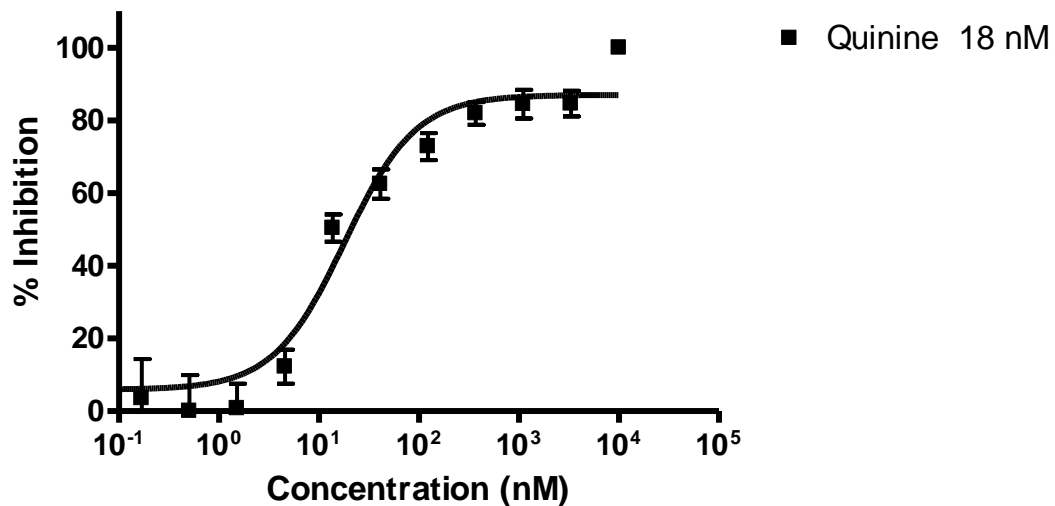
### Antimalarial activity against *P. falciparum* strain 3D7



### Antimalarial activity against *P. falciparum* strain 3D7



### Antimalarial activity against *P. falciparum* strain 3D7



### Antimalarial activity against *P. falciparum* strain 3D7

