Characterization of Differential Cocaine Metabolism in Mouse and Rat through Metabolomics-guided Metabolite Profiling

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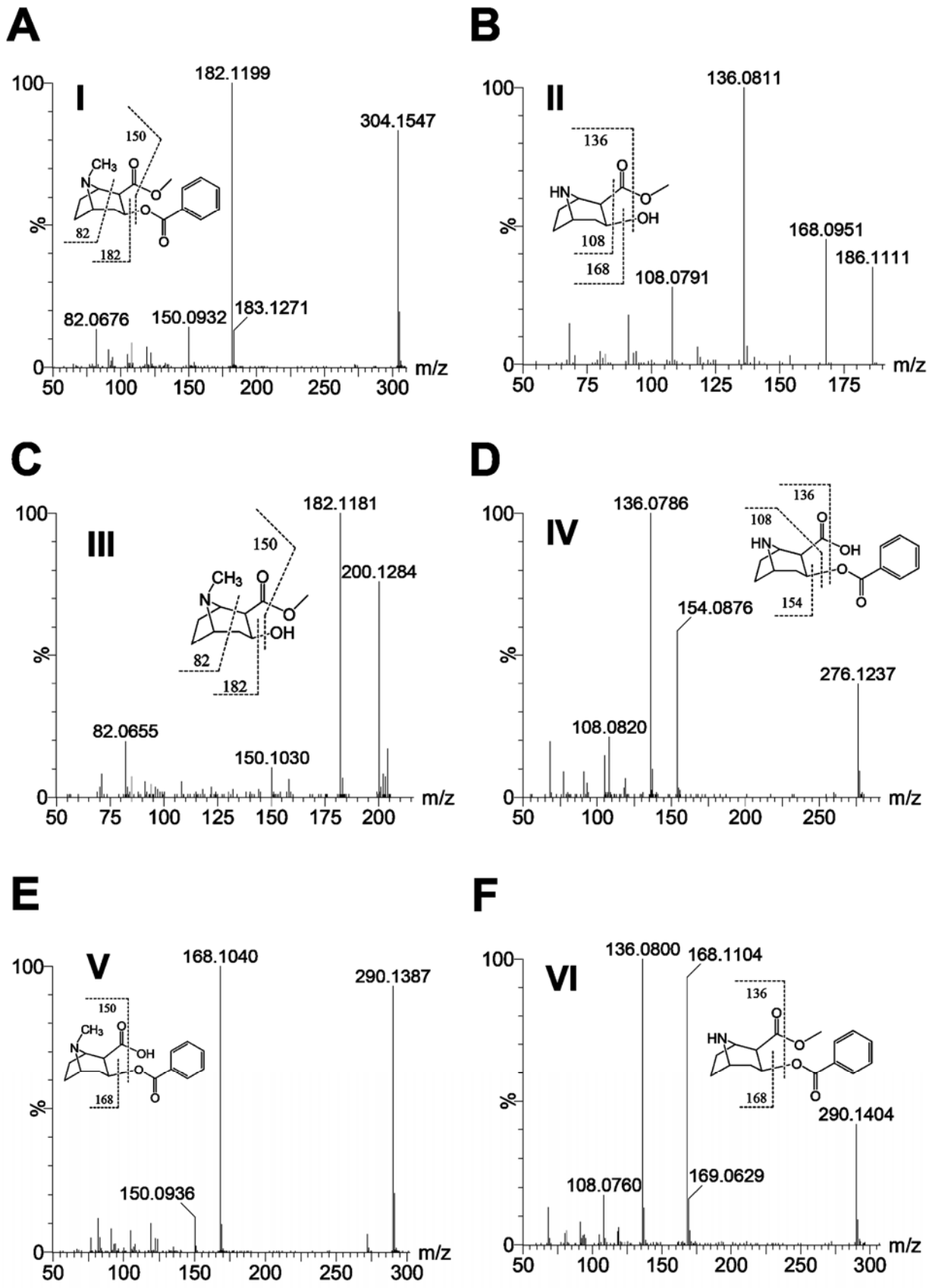
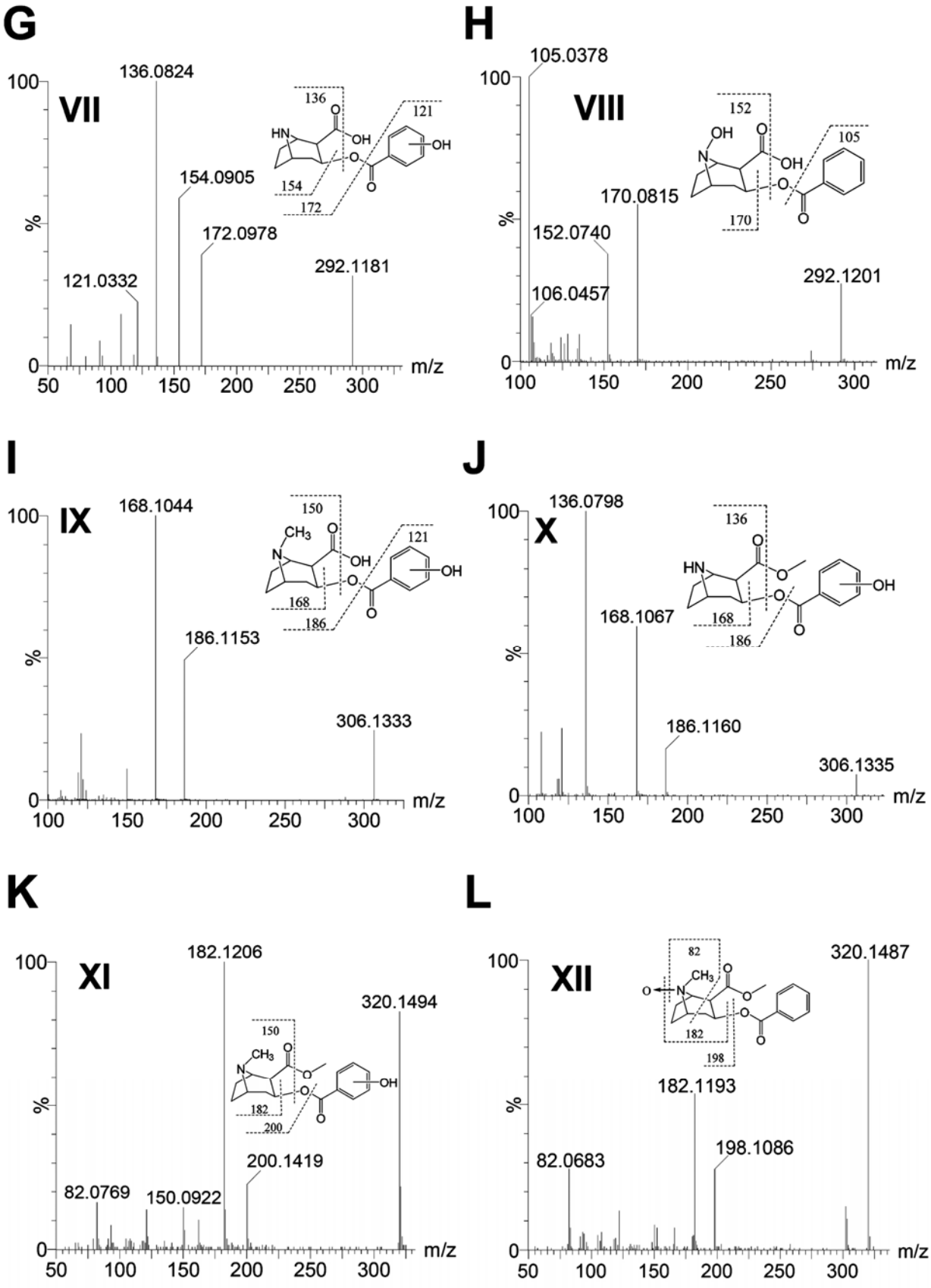
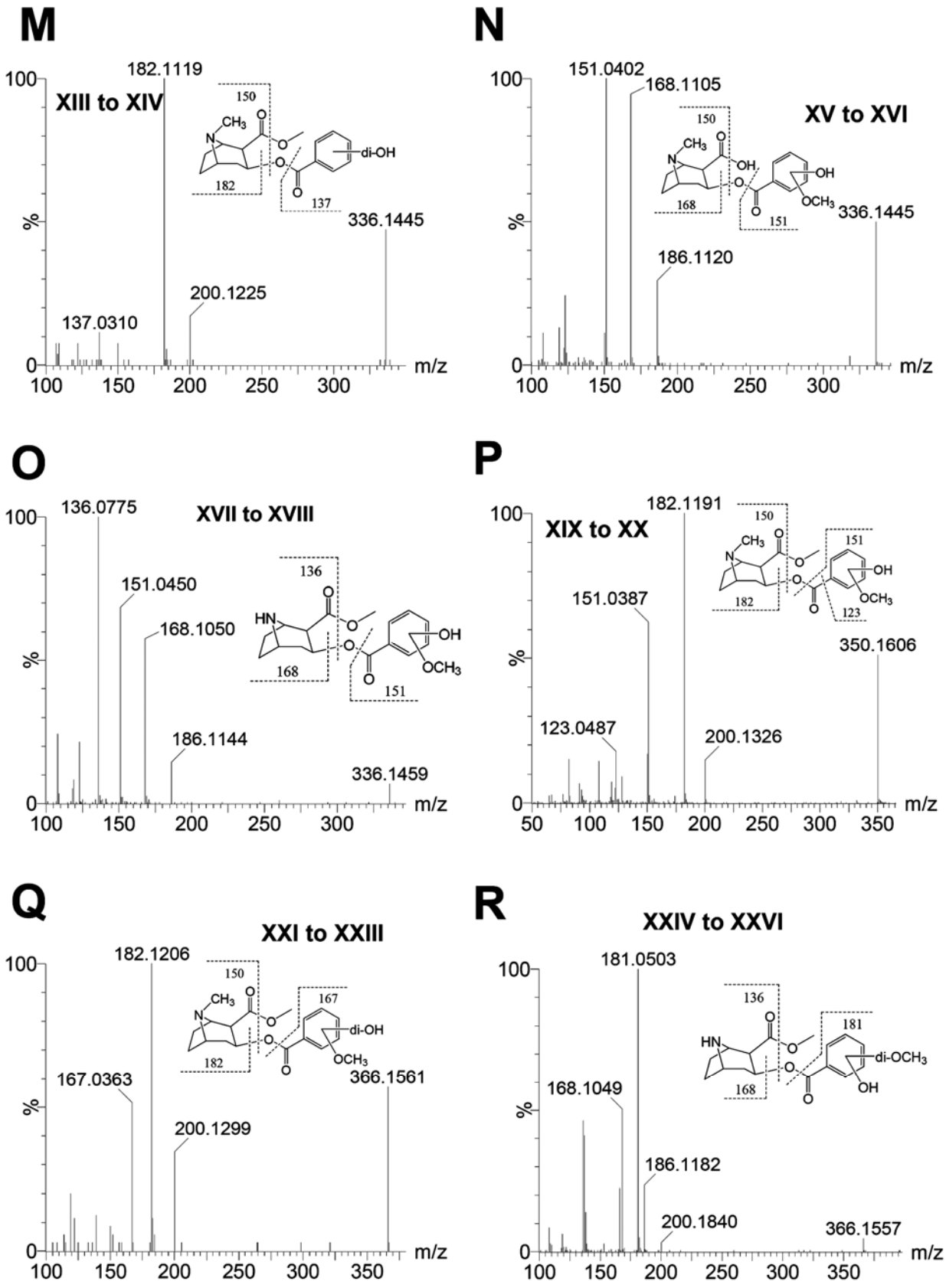
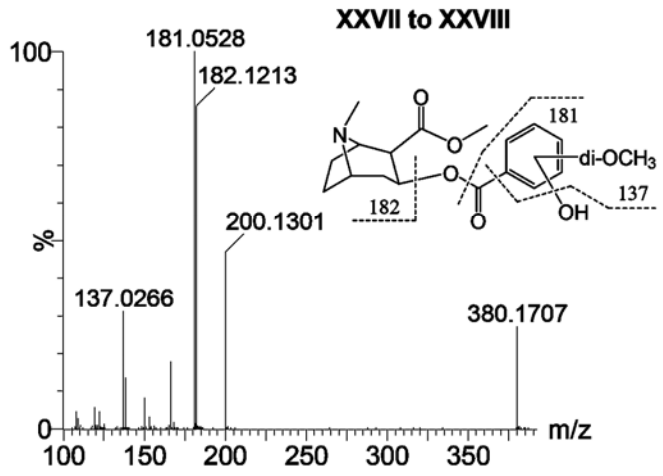
Supplemental Fig. 1. Tandem MS (MS/MS) spectra and structural elucidation of cocaine and cocaine metabolites. ***A.*** Cocaine (**I**). ***B.*** Norecgonine methyl ester (**II**). ***C.*** Ecgonine methyl ester (**III**). ***D.*** Benzoylnorecgonine (**IV**). ***E.*** Benzoylecgonine (**V**). ***F.*** Norcocaine (**VI**). ***G.*** Hydroxybenzoylnorecgonine (**VII**). ***H.*** *N*-hydorxybenzoylnorecgonine (**VIII**). ***I.*** Hydroxybenzoylecgonine (**IX**). ***J.*** Hydroxynorcocaine (**X**). ***K.*** Hydroxycocaine (**XI**). ***L***. Cocaine-*N*-oxide (**XII**). ***M.*** Dihydroxycocaine (**XIII-XIV**). ***N.*** Hydroxymethoxybenzoylecgonine (**XV-XVI**). ***O.*** Hydroxymethoxynorcocaine (**XVII-XVIII**). ***P.*** Hydroxymethoxycocaine (**XIX-XX**). ***Q.*** Dihydroxymethoxycocaine **(XXI-XXIII).** ***R.*** Hydroxydimethoxynorcocaine (**XXIV-XXVI**). ***S.*** Hydroxydimethoxycocaine (**XXVII-XXVIII**). ***T.*** Hydroxymethoxynorcocaine glucuronide (**XXX-XXXII**). ***U.*** Hydroxymethoxycocaine glucuronide (**XXXIII-XXXIV**). ***V.*** Dihydroxymethoxycocaine glucuronide (**XXXV-XXXVIII**). ***W.*** Hydroxydimethoxynorcocaine glucuronide (**XXXIX-XXXX**). ***X***. *N*-hydroxynorcocaine (NHNC). Major daughter ions from fragmentation were interpreted in the inlaid structural diagrams. The procedures of conducting accurate mass measurement and calculating elemental composition are described in the *Materials and Methods*.


A
I
182.1199
304.1547
150
82
182
82.0676
150.0932
183.1271
100
%
0
m/z
50 100 150 200 250 300
B
II
136.0811
136
108
168
168.0951
186.1111
108.0791
100
%
0
m/z
50 75 100 125 150 175
C
III
182.1181
150
200.1284
82
182
82.0655
150.1030
100
%
0
m/z
50 75 100 125 150 175 200
D
IV
136.0786
136
108
154
154.0876
276.1237
108.0820
100
%
0
m/z
50 100 150 200 250
E
V
168.1040
290.1387
150
168
150.0936
100
%
0
m/z
50 100 150 200 250 300
F
VI
136.0800
168.1104
136
168
290.1404
108.0760
169.0629
100
%
0
m/z
50 100 150 200 250 300

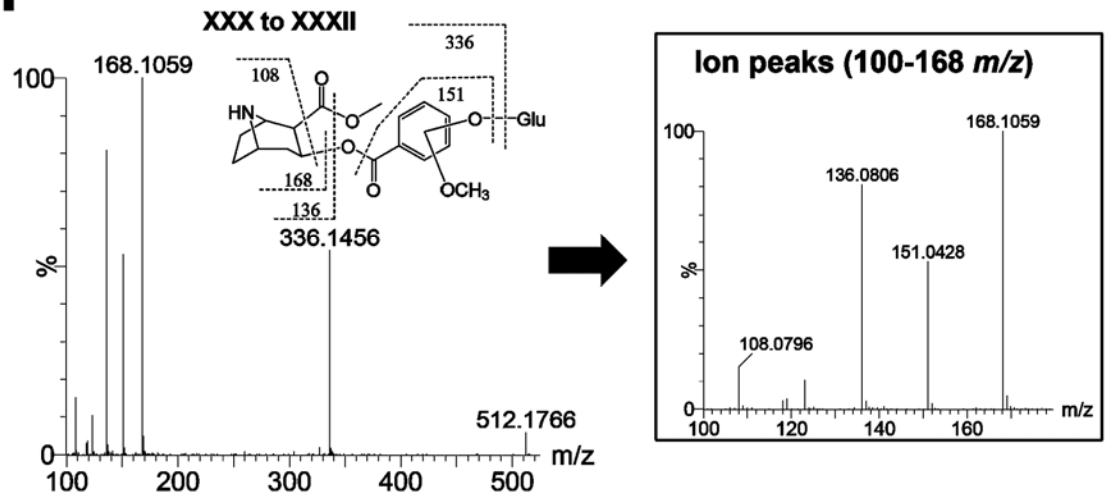

G
VII
136.0824
154.0905
172.0978
121.0332
292.1181
136
121
154
172
H
VIII
105.0378
170.0815
152.0740
106.0457
292.1201
152
105
170
I
IX
168.1044
186.1153
306.1333
150
121
168
186
J
X
136.0798
168.1067
186.1160
306.1335
136
168
186
K
XI
182.1206
320.1494
200.1419
82.0769
150.0922
150
182
200
L
XII
320.1487
182.1193
198.1086
82.0683
82
182
198
100
%
0
m/z
50
100
150
200
250
300


M
XIII to XIV
182.1119
336.1445
200.1225
137.0310
150
182
137
di-OH
N
151.0402
168.1105
XV to XVI
336.1445
186.1120
168
151
O
XVII to XVIII
136.0775
151.0450
168.1050
186.1144
336.1459
136
168
151
HN
OH
OCH3
P
XIX to XX
182.1191
151.0387
350.1606
123.0487
200.1326
123
Q
XXI to XXIII
182.1206
167.0363
200.1299
366.1561
167
R
XXIV to XXVI
181.0503
168.1049
186.1182
200.1840
366.1557
181
di-OCH3
%
m/z

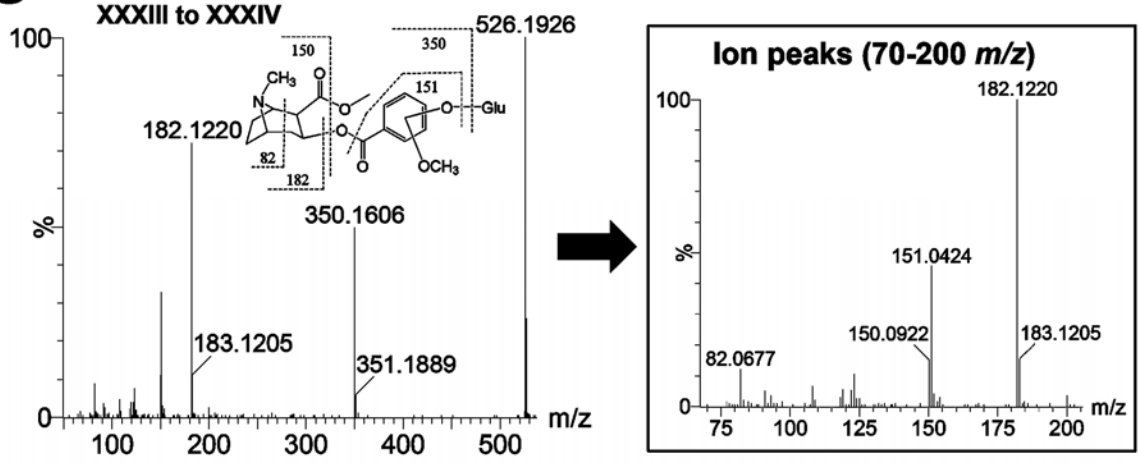
S

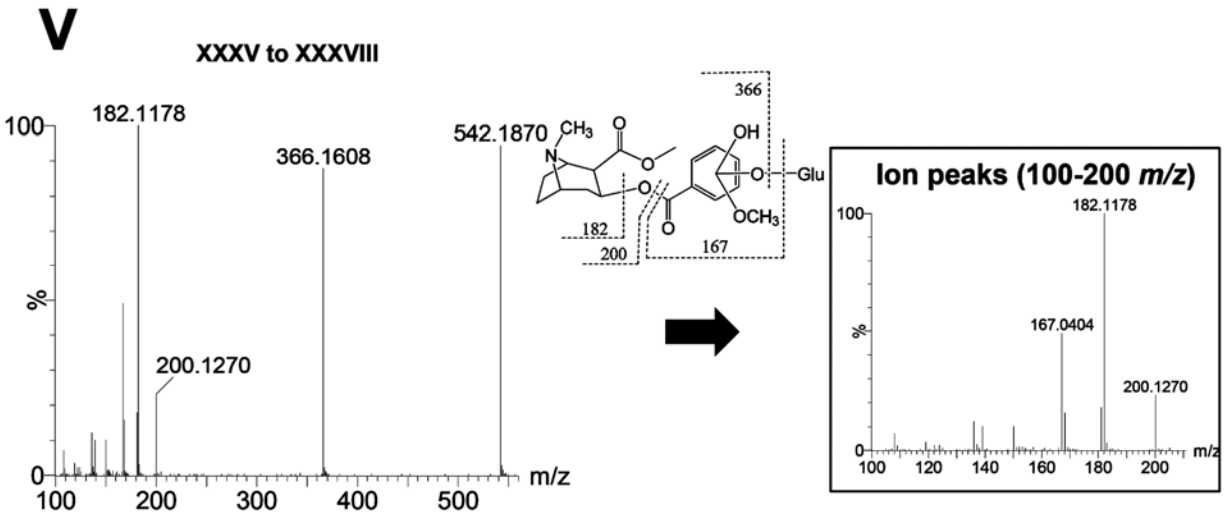

XXVII to XXVIII
181.0528
182.1213
200.1301
137.0266
380.1707
100
%
0
100 150 200 250 300 350
m/z
181
di-OCH3
137
182
OH

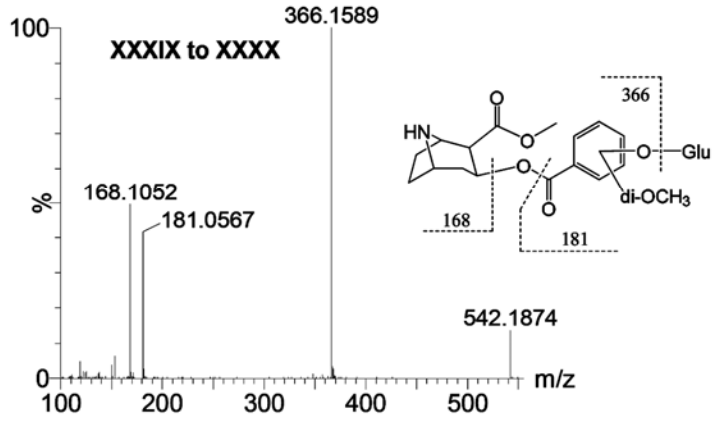
T

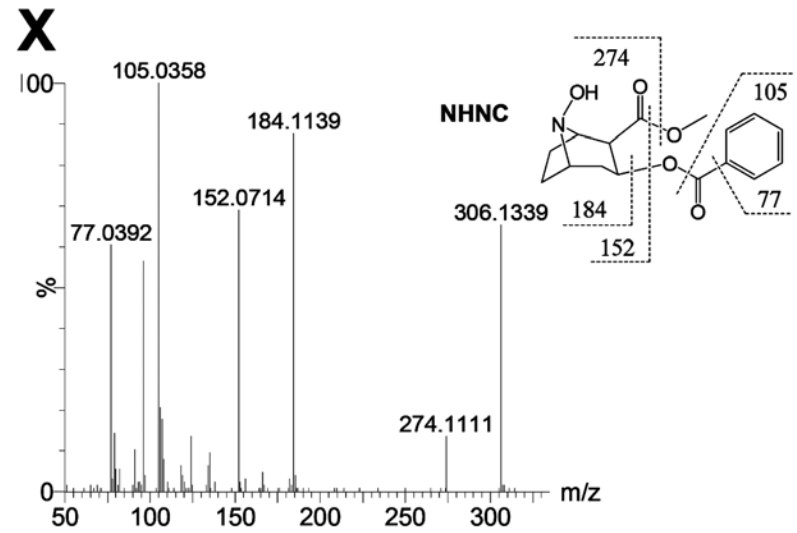

XXX to XXXII
168.1059
336.1456
512.1766
100
%
0
100 200 300 400 500
m/z
336
108
151
168
136
HN
Glu
OCH3
Ion peaks (100-168 m/z)
168.1059
136.0806
151.0428
108.0796
100 120 140 160

U


XXXIII to XXXIV
526.1926
182.1220
350.1606
183.1205
351.1889
100
%
0
100 200 300 400 500
m/z
150
350
151
82
182
CH3
Glu
OCH3
Ion peaks (70-200 m/z)
182.1220
151.0424
150.0922
183.1205
82.0677
75 100 125 150 175 200


V
XXXV to XXXVIII
182.1178
366.1608
542.1870
200.1270
100
%
0
100
200
300
400
500
m/z
366
182
200
167
Glu
OH
OCH3
Ion peaks (100-200 m/z)
182.1178
167.0404
200.1270
100
120
140
160
180
200


W
XXXIX to XXXX
366.1589
168.1052
181.0567
542.1874
100
%
0
100
200
300
400
500
m/z
366
168
181
Glu
di-OCH3


X
105.0358
184.1139
152.0714
77.0392
274.1111
100
%
0
50
100
150
200
250
300
m/z
NHNC
274
105
77
306.1339
184
152
OH