

Electronic Supporting Information

Standard curve of SMX:

Prepare standard solutions of SMX at the concentrations of 10, 20, 30, 40 and 50 mg L⁻¹. Use HPLC to measure these standard concentrations of SMX to obtain the peak area. On the basis of the peak area and corresponding concentrations of SMX, the standard curve of SMX can be drawn (Figure S1).

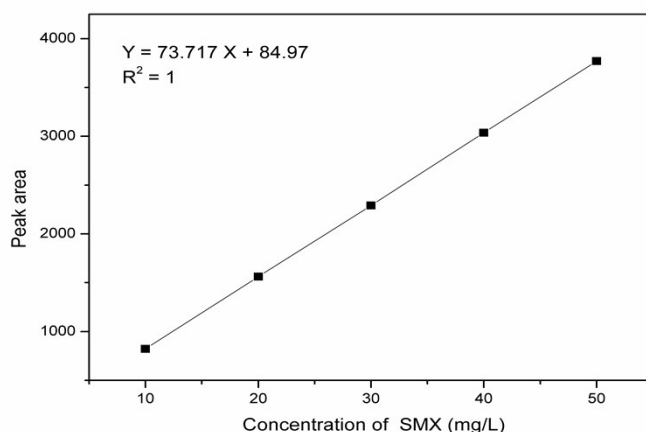


Figure S1 Standard curve of SMX

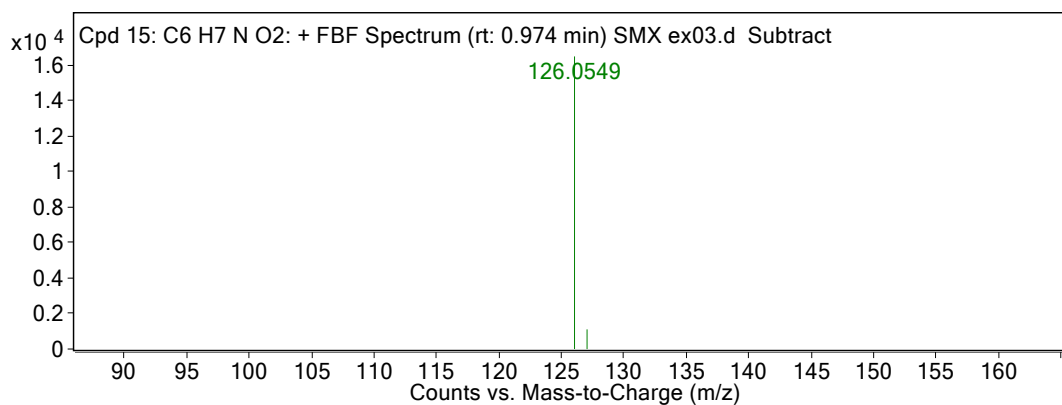
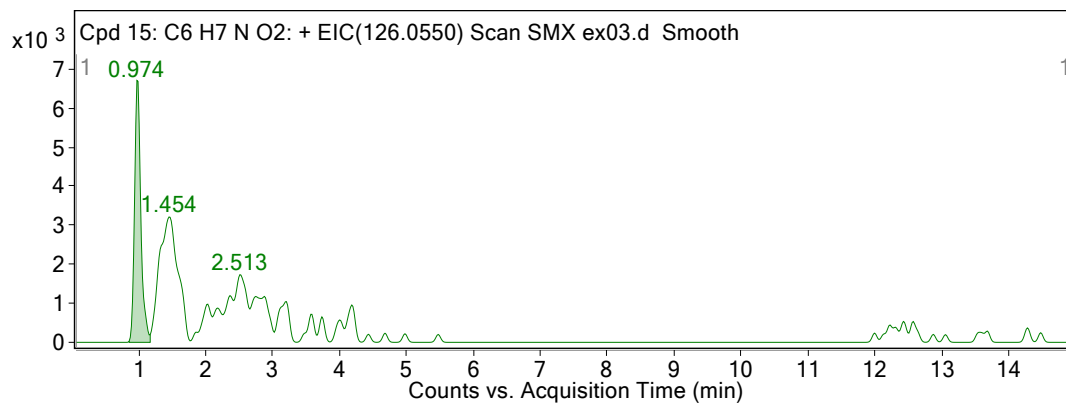
Table S1 SMX-degrading strains and their corresponding biodegradability ability

Strain	Taxa	Degradation rate	Optimal degradation temperature
<i>Phanerochaete chrysosporium</i>	Fungi	74 %	35 °C
<i>Achromobacter denitrificans</i> PR1	Bacterium	99.1 %	30 °C
<i>Pseudomonas psychrophila</i> HA-4	Bacterium	34.3 %	10-15 °C
<i>Rhodococcus rhodochrous</i>	Bacterium	20 %	26 °C
<i>Bjerkandera adusta</i>	Fungi	64-80 %	22 ± 2 °C

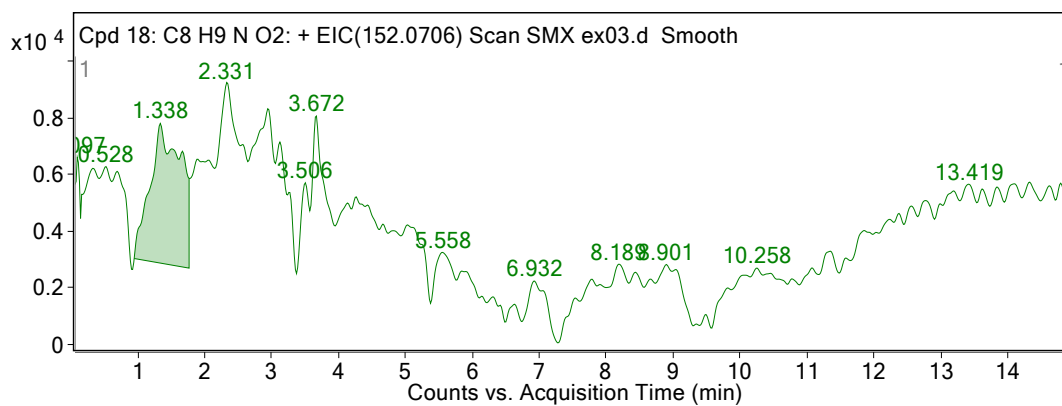
As shown in Table S1, there are various SMX-degrading strains, some of which demonstrate high biodegradability of SMX. But most biodegradation experiments are conducted in a water environment. Accelerating research of SMX degradation in the soil environment is a priority.

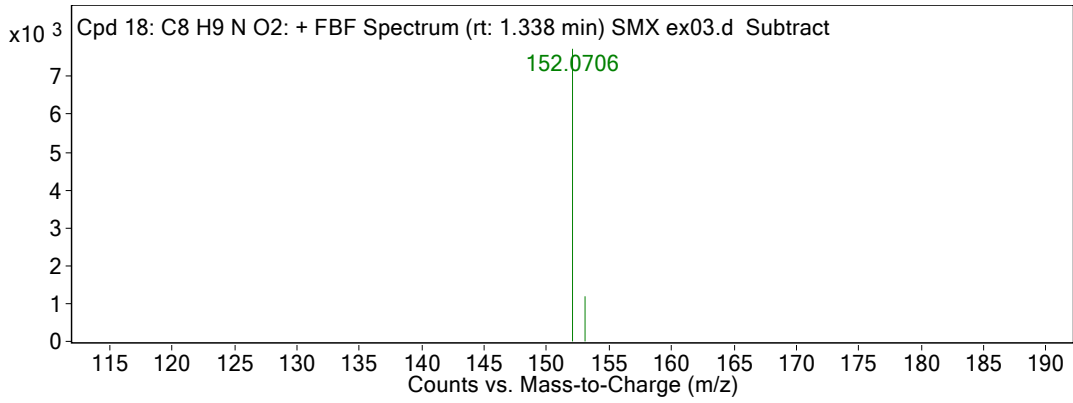
The UPLC-Q-TOF spectra of proposed SMX biodegradation metabolites can be seen in the following figures.

Compound Label	<i>m/z</i>	RT	Mass
Cpd 15: C6 H7 N O2	126.0549	1	125.04761

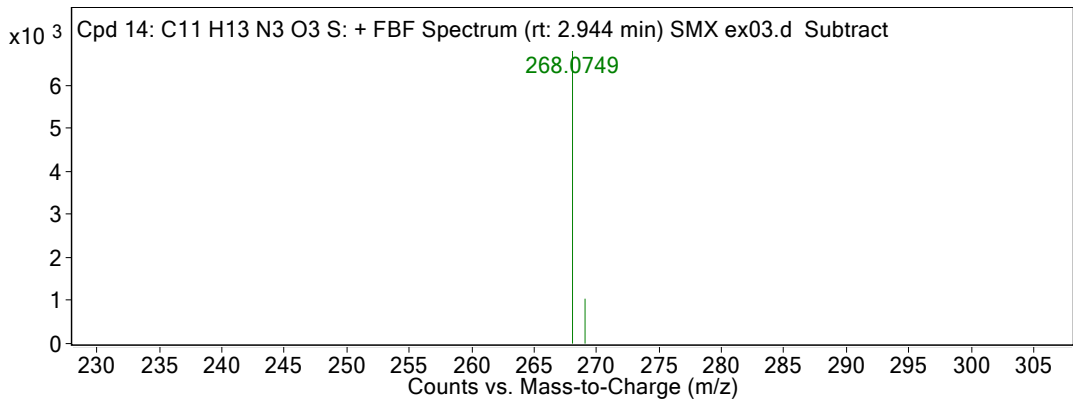
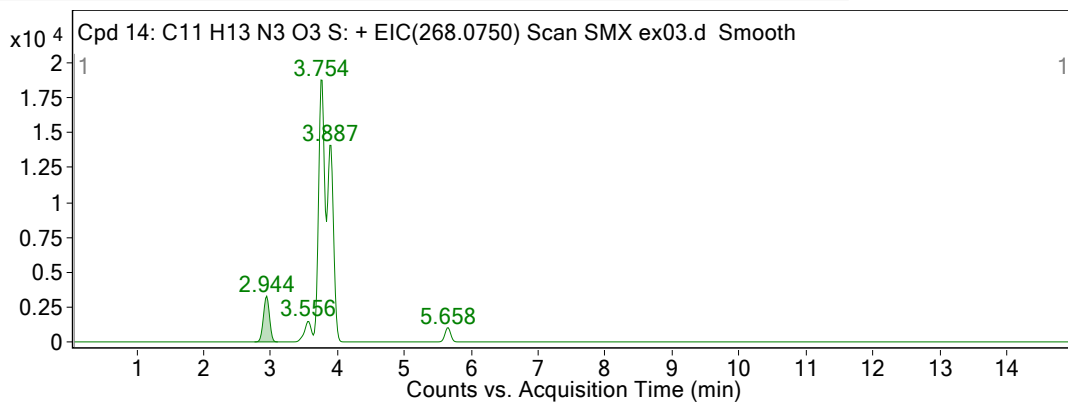


Compound Label	<i>m/z</i>	RT	Mass
Cpd 18: C8 H9 N O2	152.0706	1	151.06324

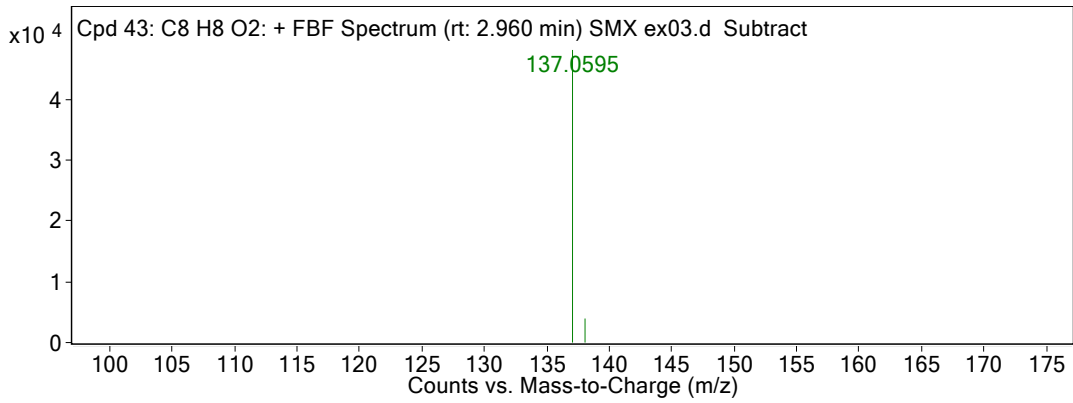
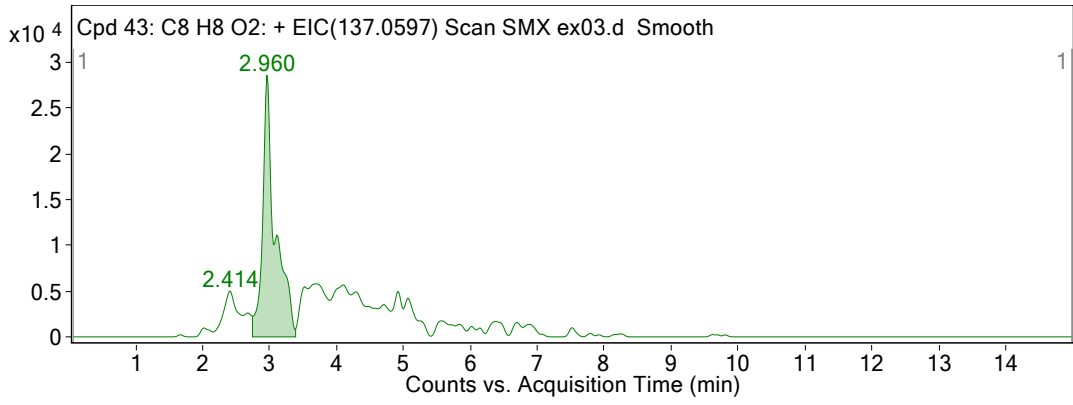




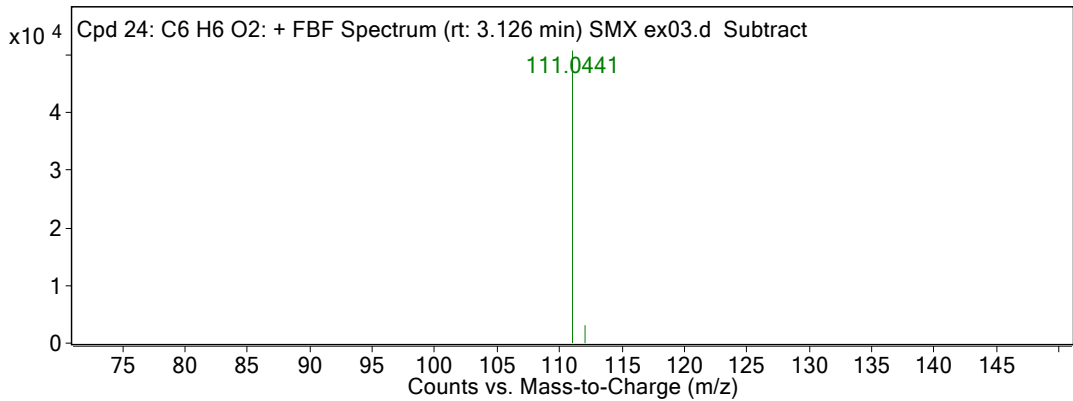
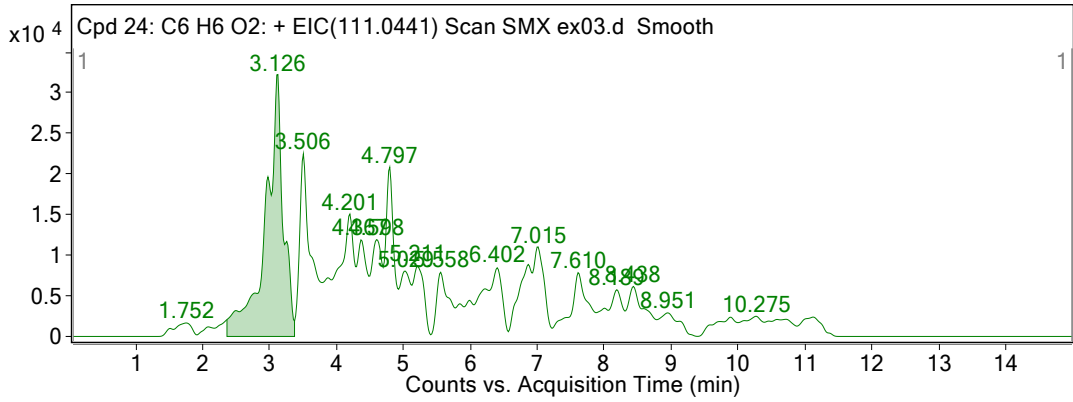
Compound Label	<i>m/z</i>	RT	Mass
Cpd 14: C ₁₁ H ₁₃ N ₃ O ₃ S	268.0749	3	267.06768



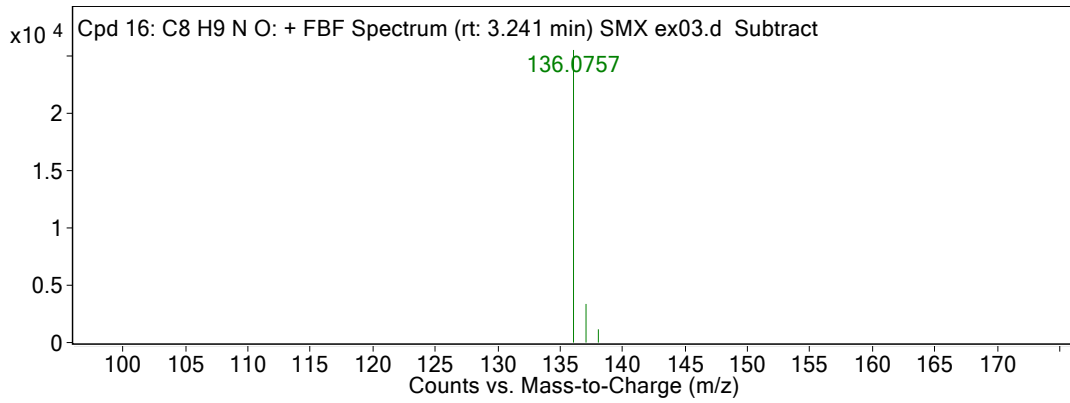
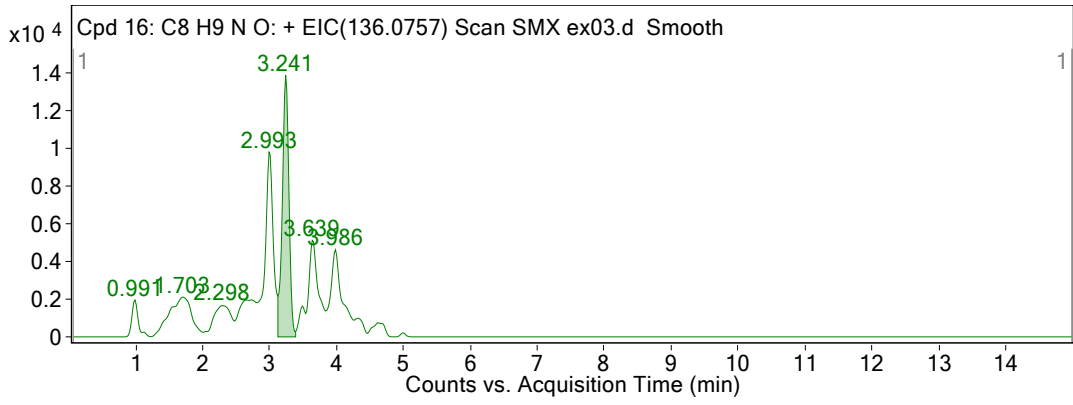
Compound Label	<i>m/z</i>	RT	Mass
Cpd 43: C ₈ H ₈ O ₂	137.0595	3	136.05211



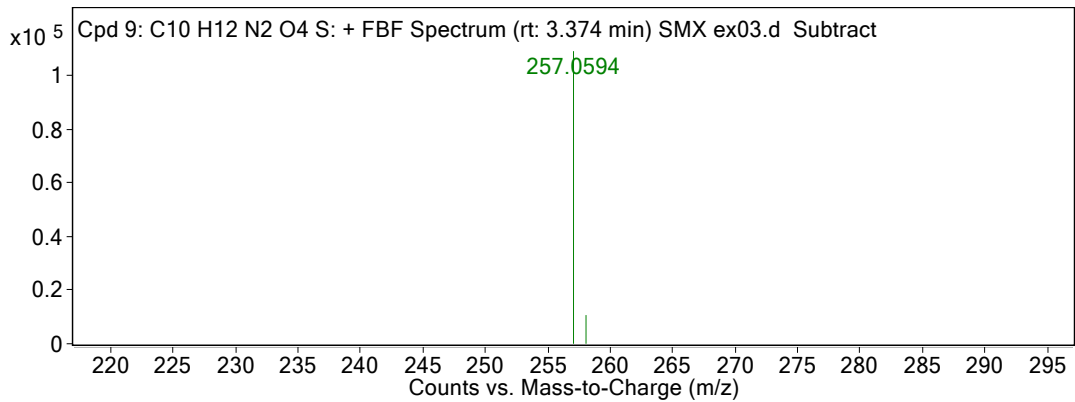
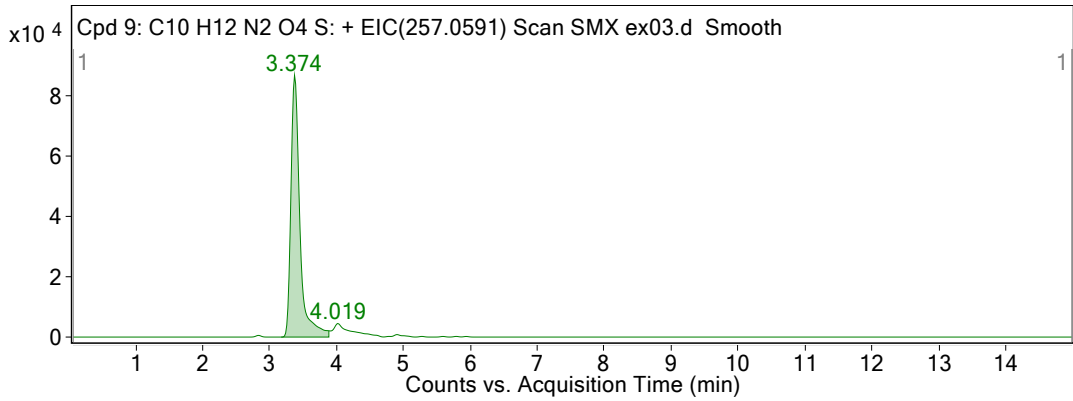
Compound Label	<i>m/z</i>	RT	Mass
Cpd 24: C ₆ H ₆ O ₂	111.0441	3	110.03676



Compound Label	<i>m/z</i>	RT	Mass
Cpd 16: C ₈ H ₉ N O	136.0757	3	135.06764

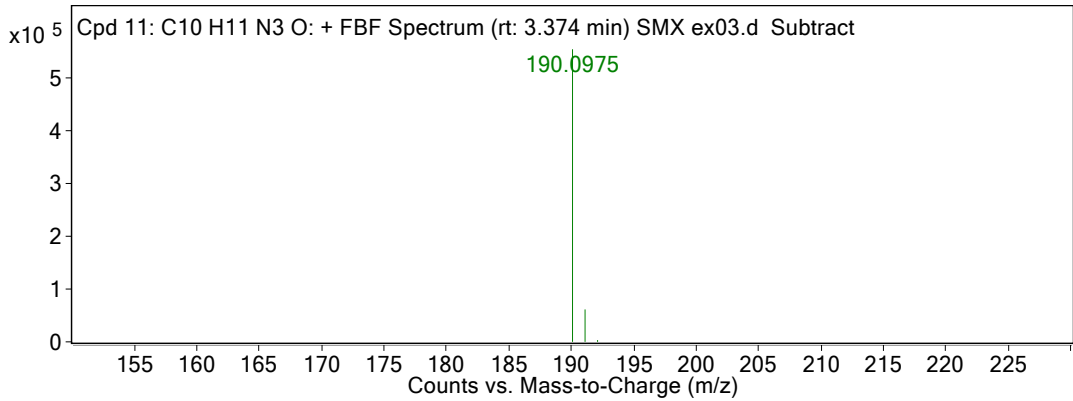
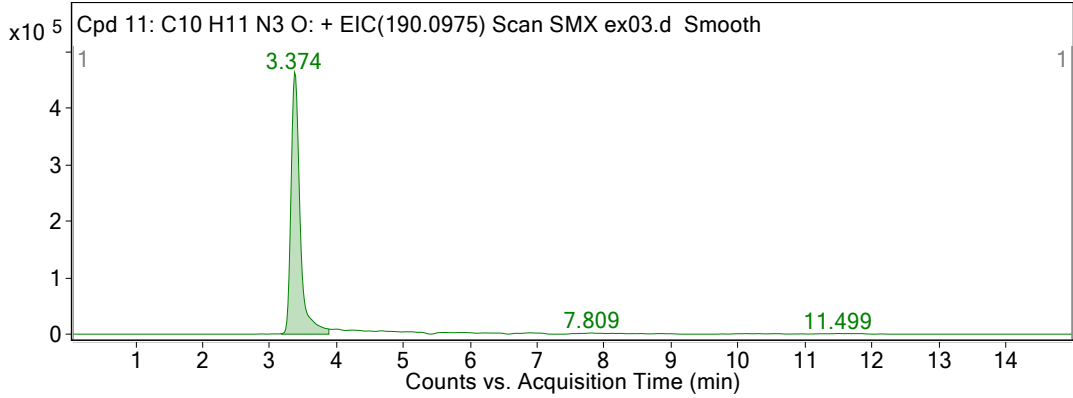


Compound Label	<i>m/z</i>	RT	Mass
Cpd 9: C ₁₀ H ₁₂ N ₂ O ₄ S	257.0594	3	256.05198

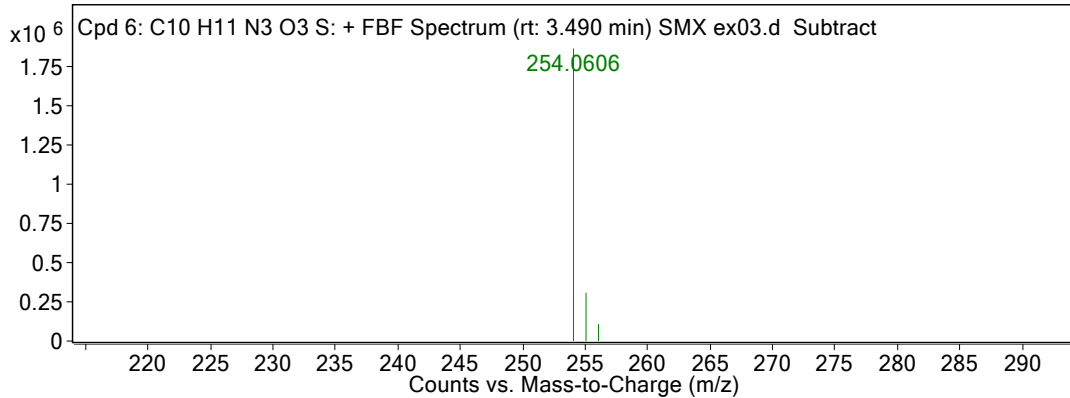
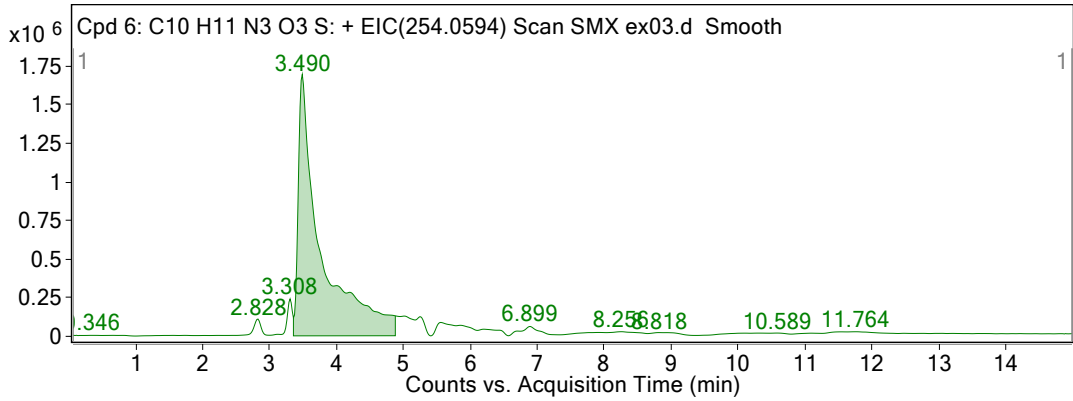


Compound Label	<i>m/z</i>	RT	Mass
----------------	------------	----	------

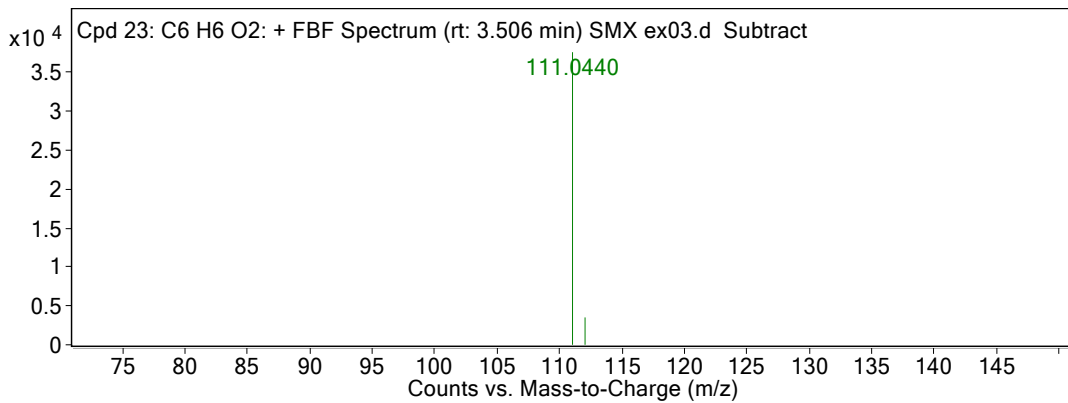
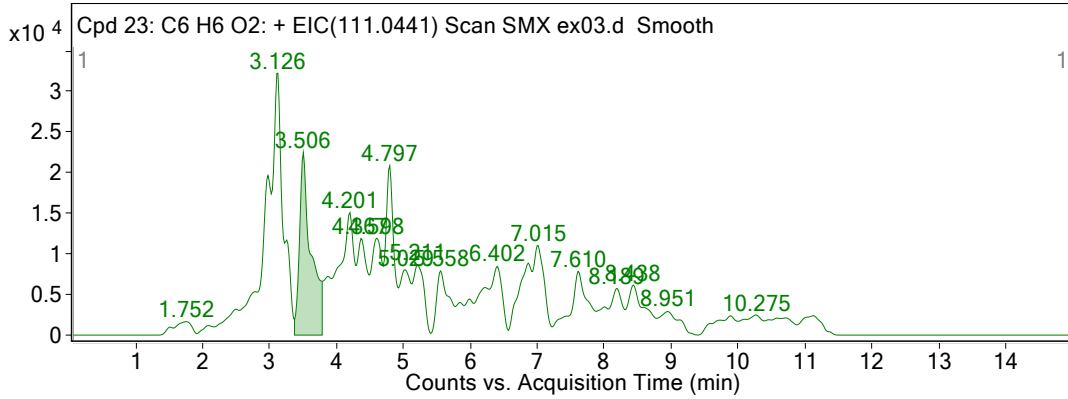
Cpd 11: C10 H11 N3 O	190.0975	3	189.09031
----------------------	----------	---	-----------



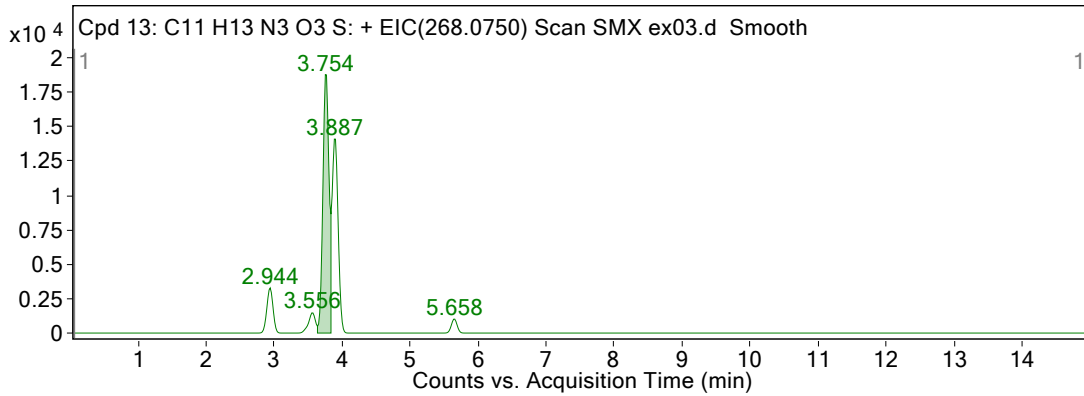
Compound Label	m/z	RT	Mass
Cpd 6: C10 H11 N3 O3 S	254.0606	3	253.05315

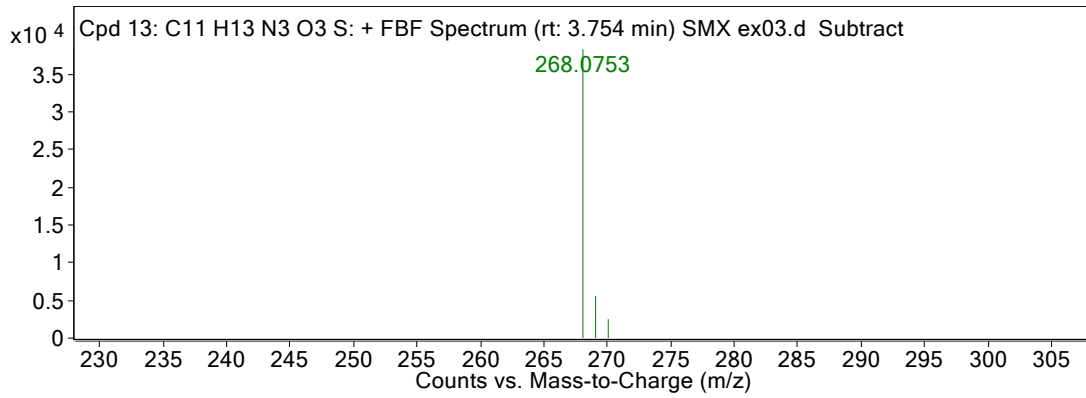


Compound Label	<i>m/z</i>	RT	Mass
Cpd 23: C6 H6 O2	111.044	3.506	110.03672

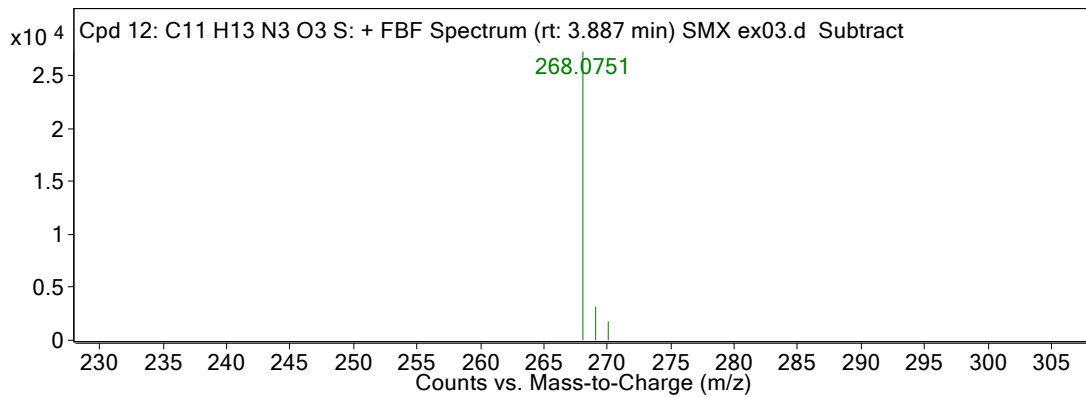
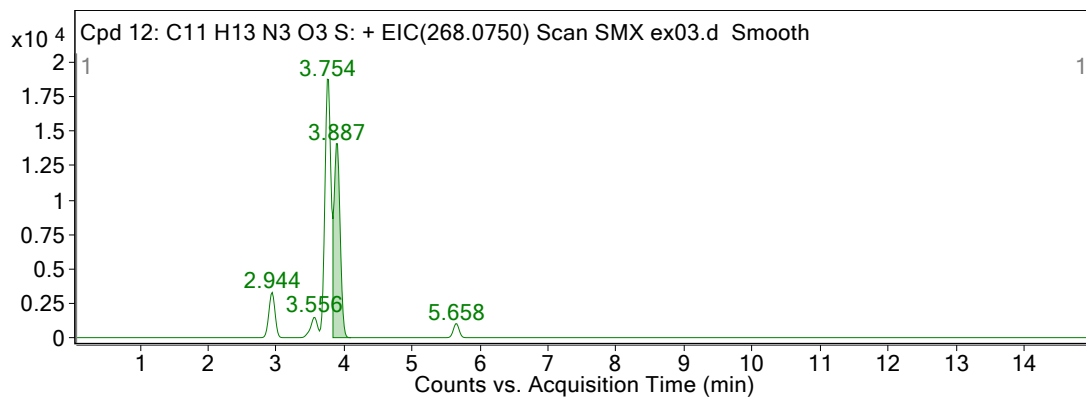


Compound Label	<i>m/z</i>	RT	Mass
Cpd 13: C11 H13 N3 O3 S	268.0753	4	267.06794

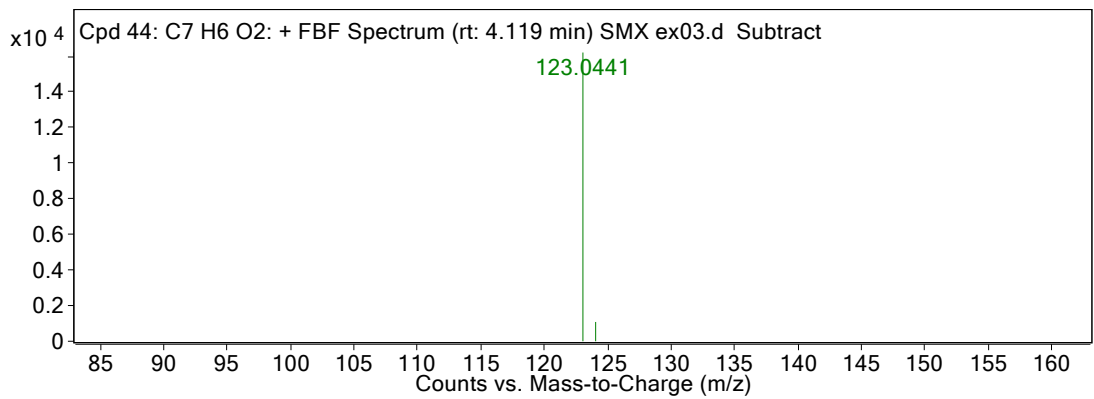
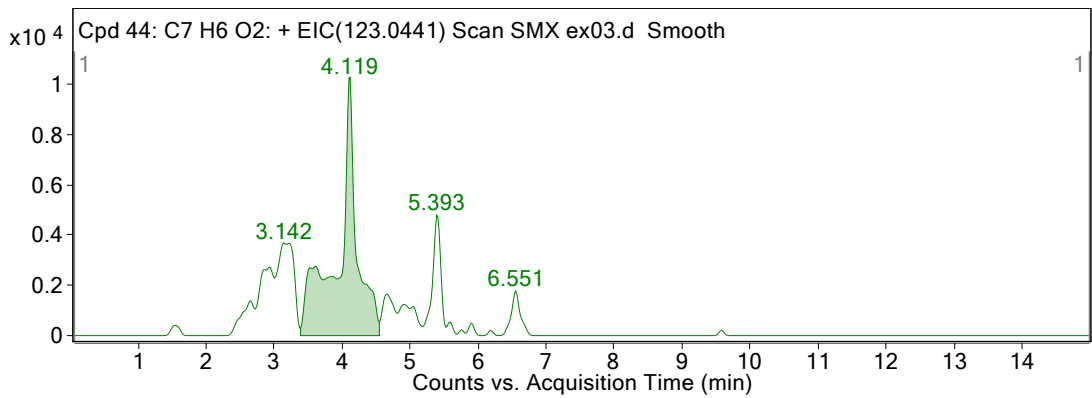




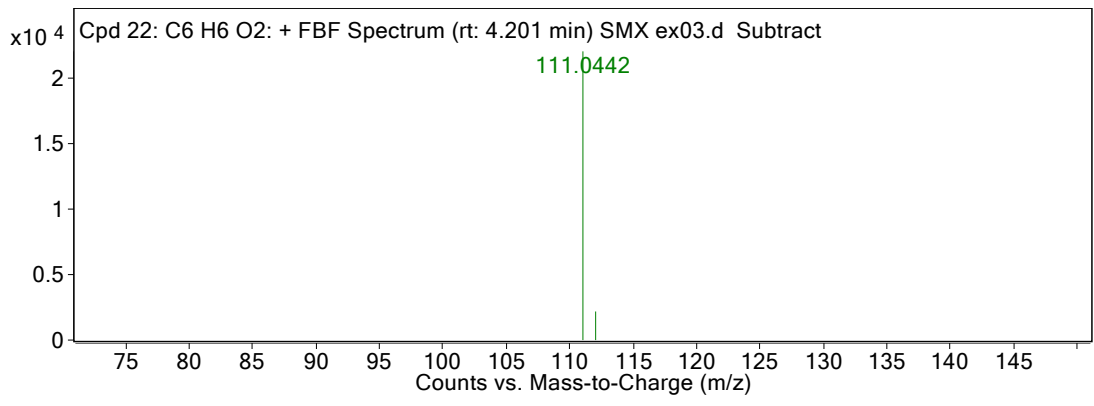
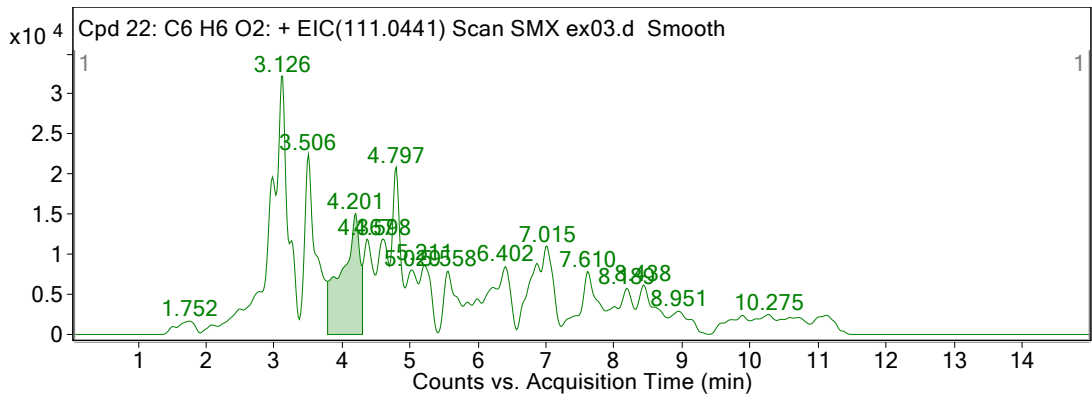
Compound Label	<i>m/z</i>	RT	Mass
Cpd 12: C ₁₁ H ₁₃ N ₃ O ₃ S	268.0751	4	267.06781



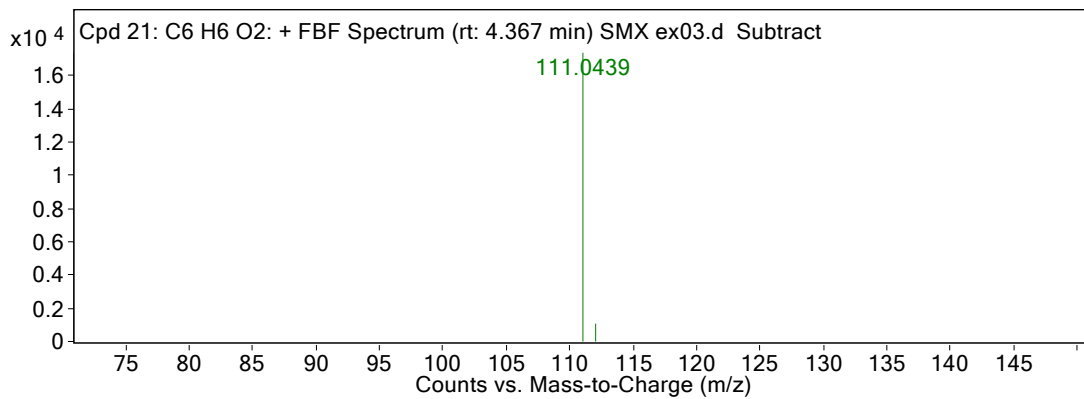
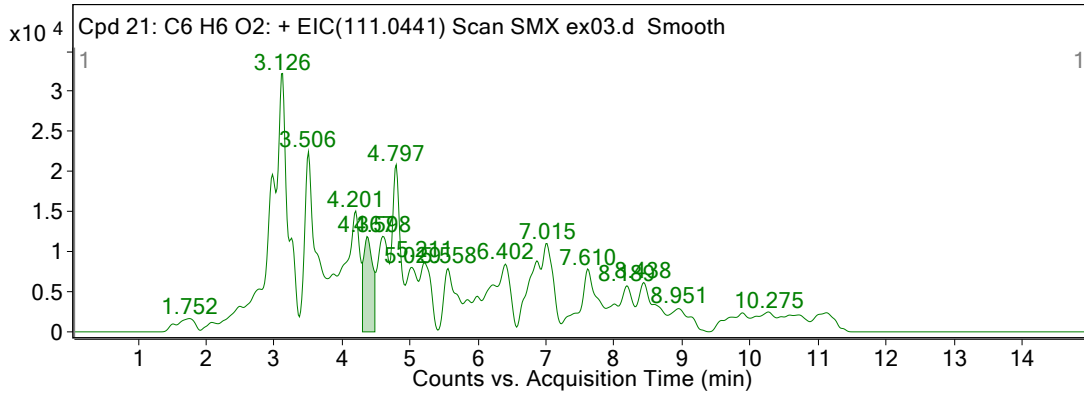
Compound Label	<i>m/z</i>	RT	Mass
Cpd 44: C ₇ H ₆ O ₂	123.0441	4	122.03684



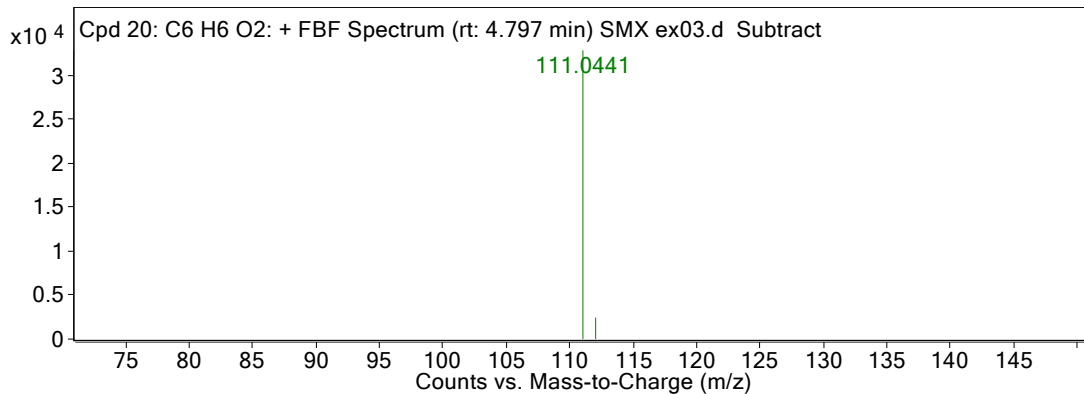
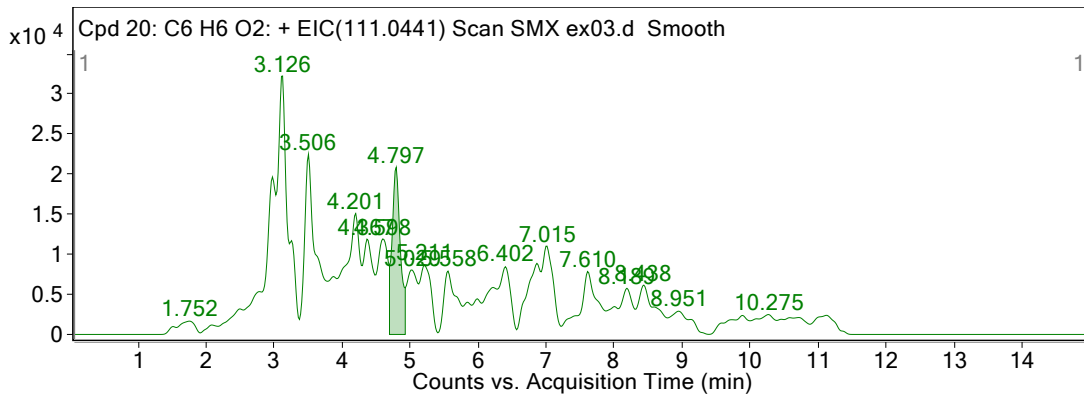
Compound Label	m/z	RT	Mass
Cpd 22: C6 H6 O2	111.0442	4	110.03689



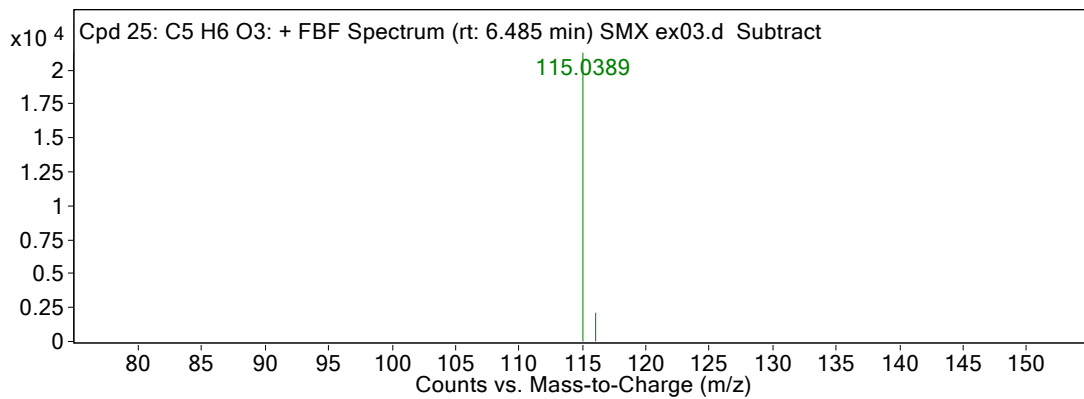
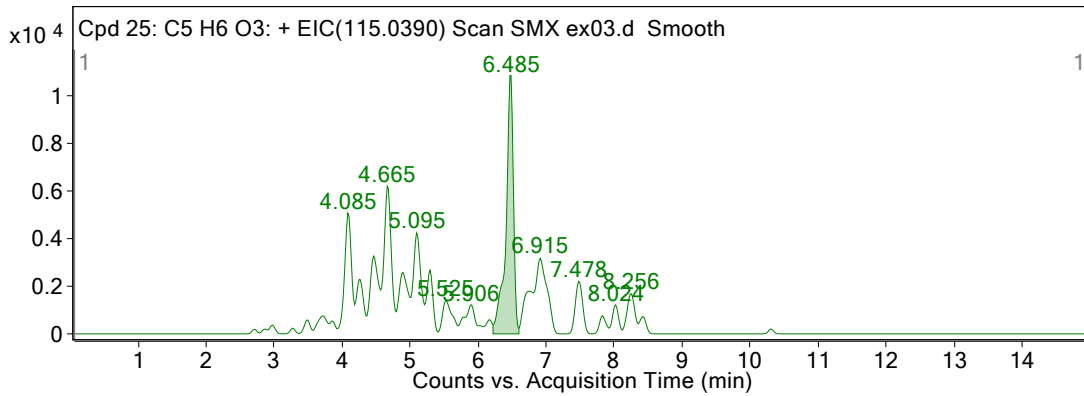
Compound Label	<i>m/z</i>	RT	Mass
Cpd 21: C6 H6 O2	111.0439	4	110.03668



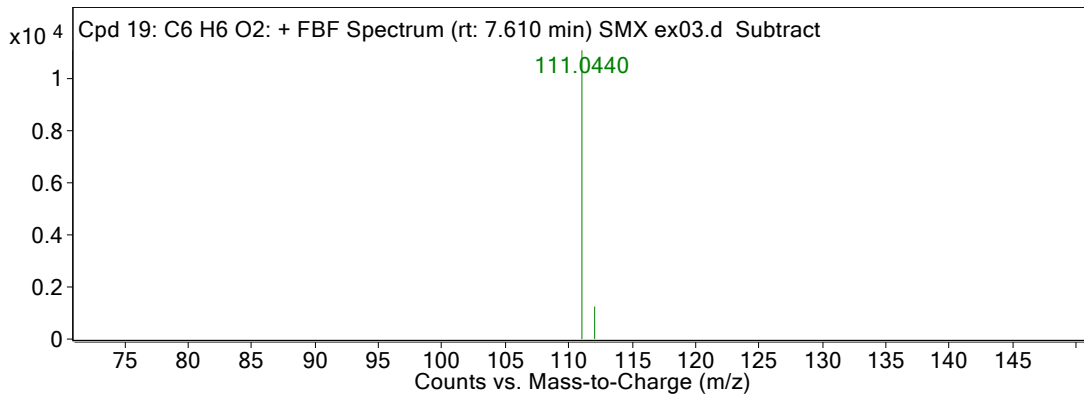
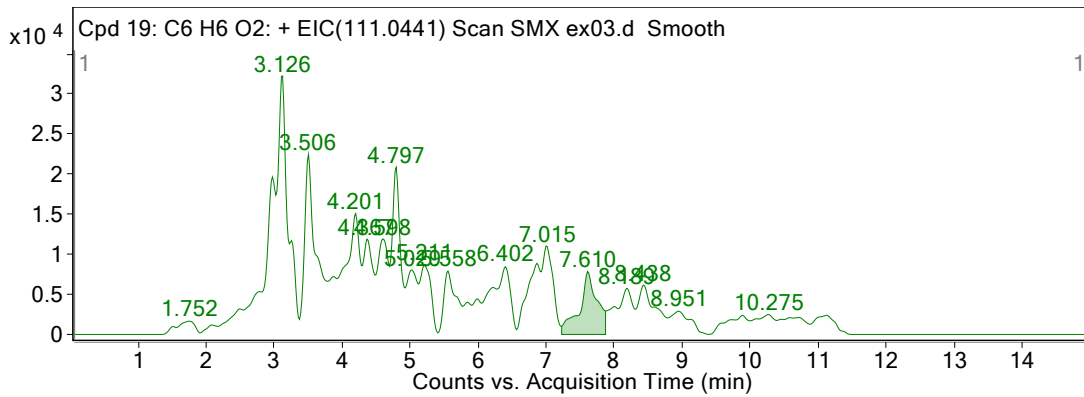
Compound Label	<i>m/z</i>	RT	Mass
Cpd 20: C6 H6 O2	111.0441	5	110.03684



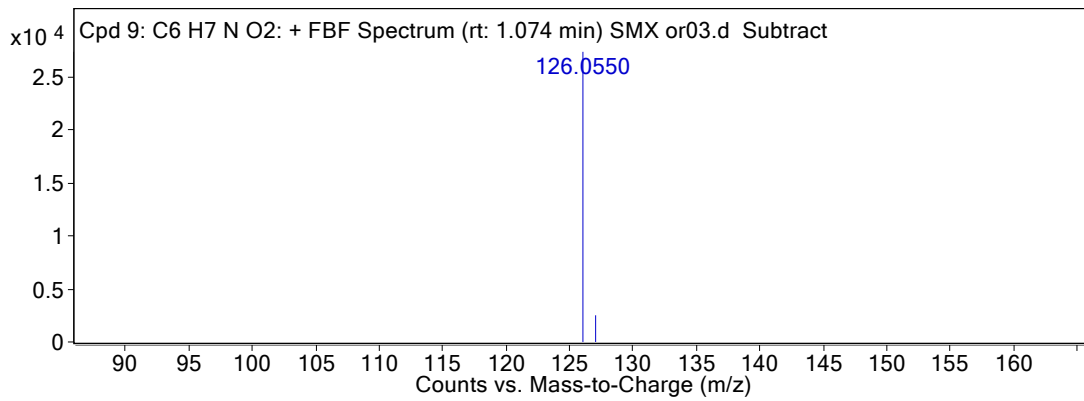
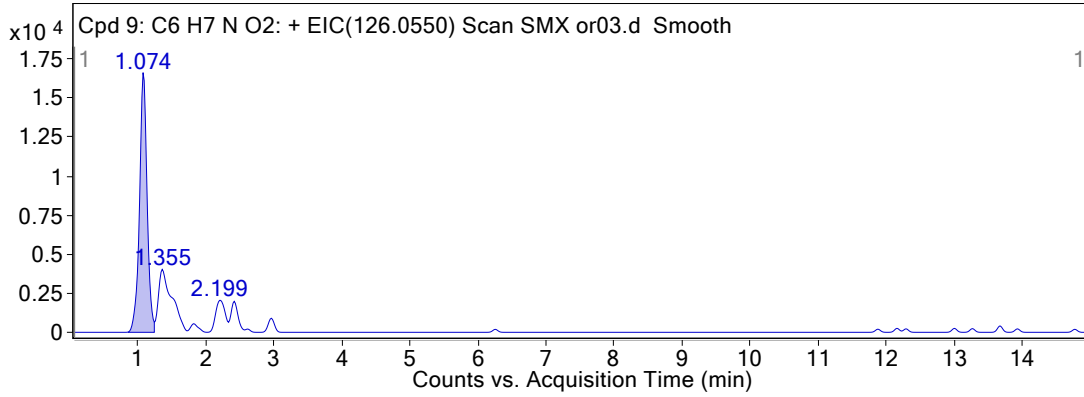
Compound Label	<i>m/z</i>	RT	Mass
Cpd 25: C5 H6 O3	115.0389	6	114.0316



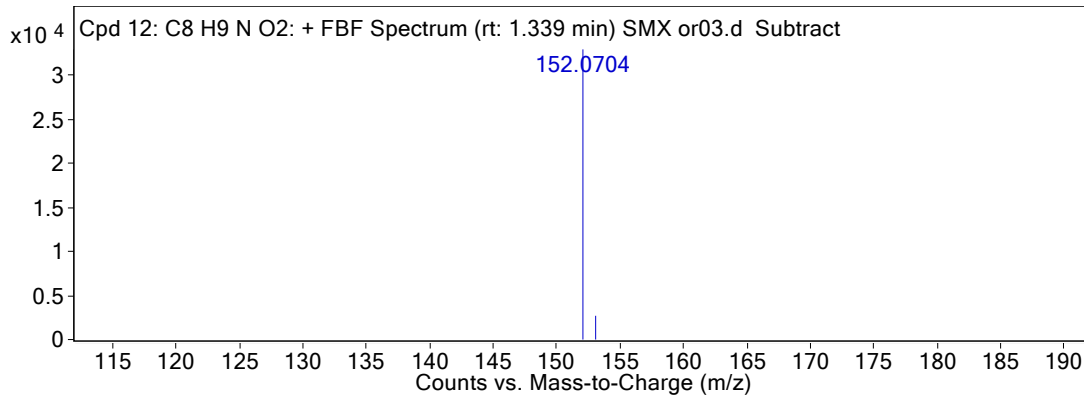
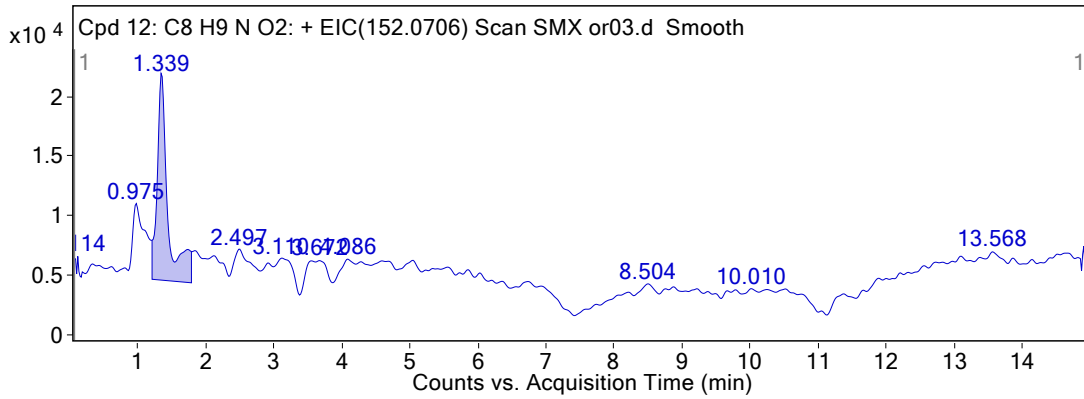
Compound Label	<i>m/z</i>	RT	Mass
Cpd 19: C6 H6 O2	111.044	7.61	110.03674



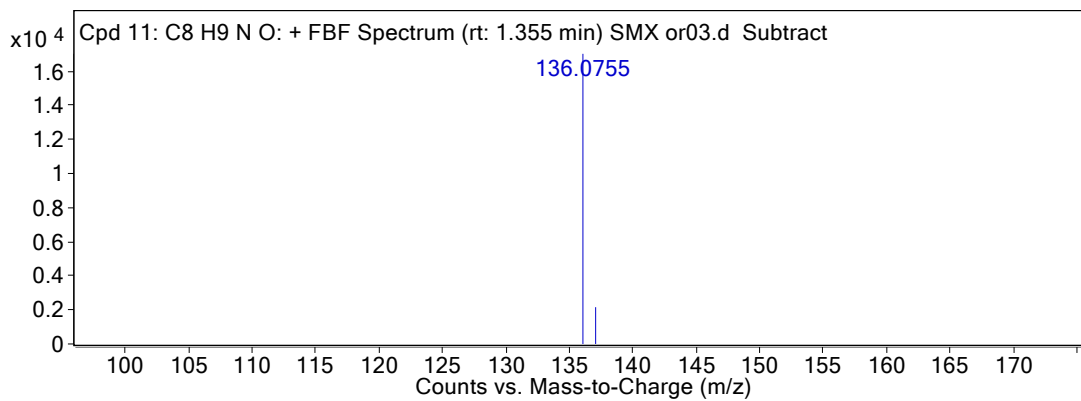
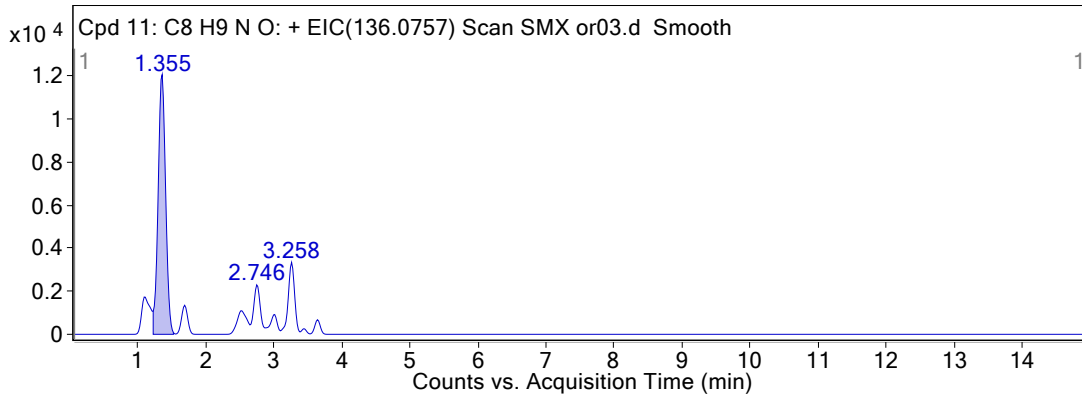
Compound Label	<i>m/z</i>	RT	Algorithm	Mass
Cpd 9: C6 H7 N O2	126.055	1.074	Find By Formula	125.04764



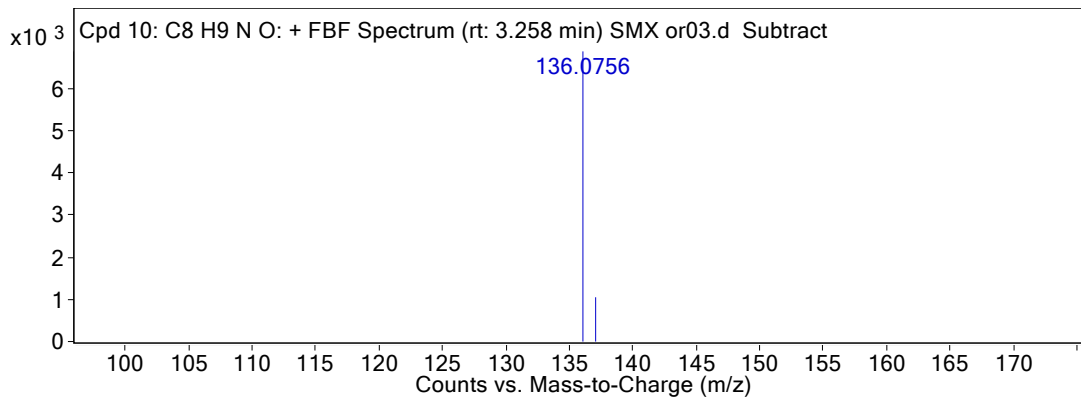
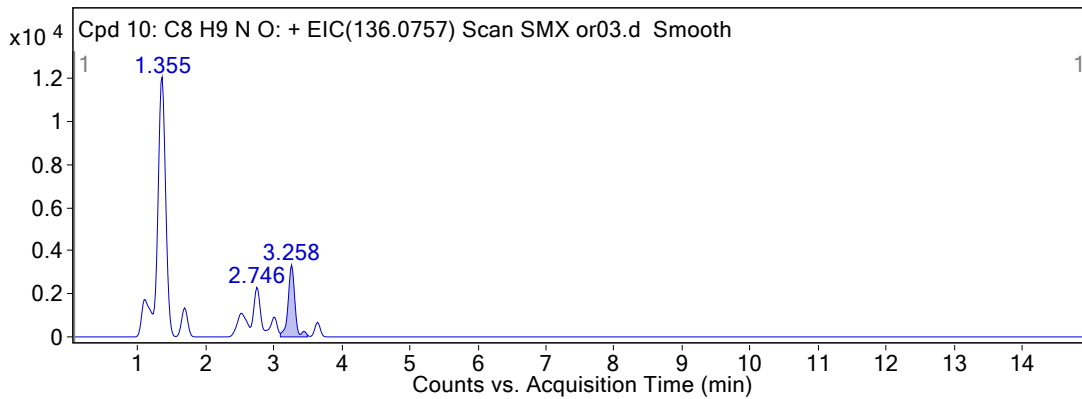
Compound Label	<i>m/z</i>	RT	Algorithm	Mass
Cpd 12: C8 H9 N O2	152.0704	1.339	Find By Formula	151.06321



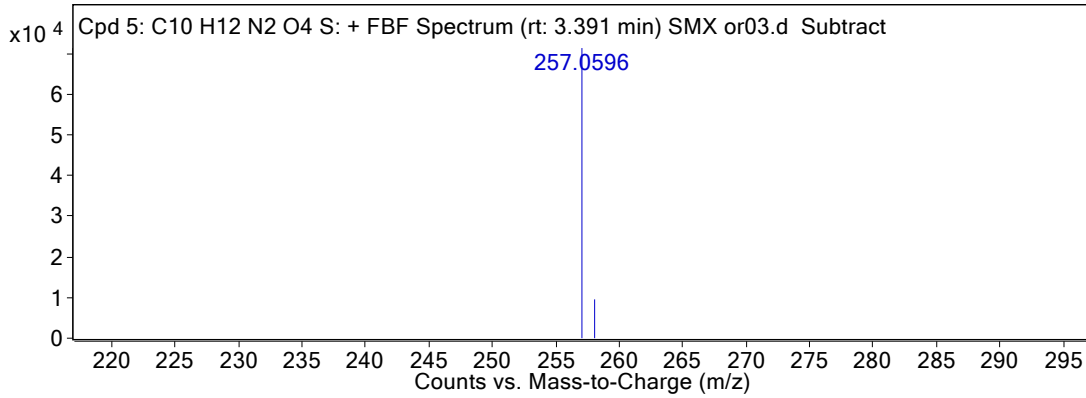
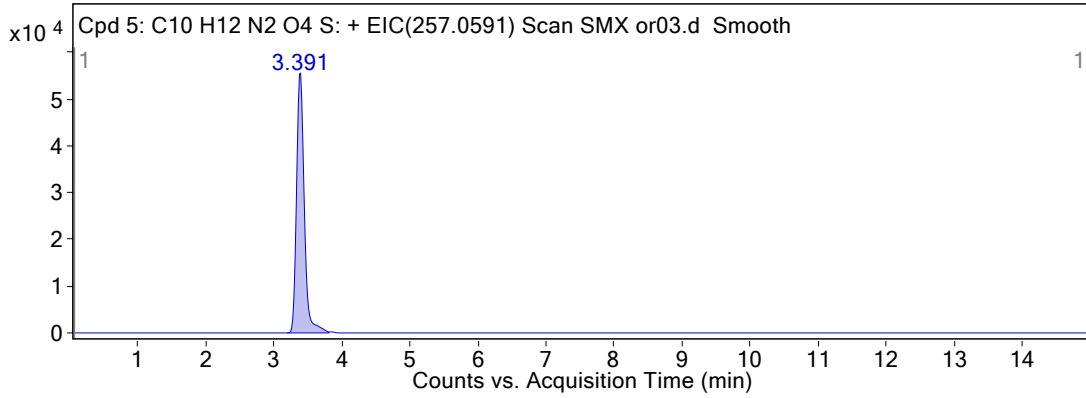
Compound Label	<i>m/z</i>	RT	Algorithm	Mass
Cpd 11: C8 H9 N O	136.0755	1.355	Find By Formula	135.06826



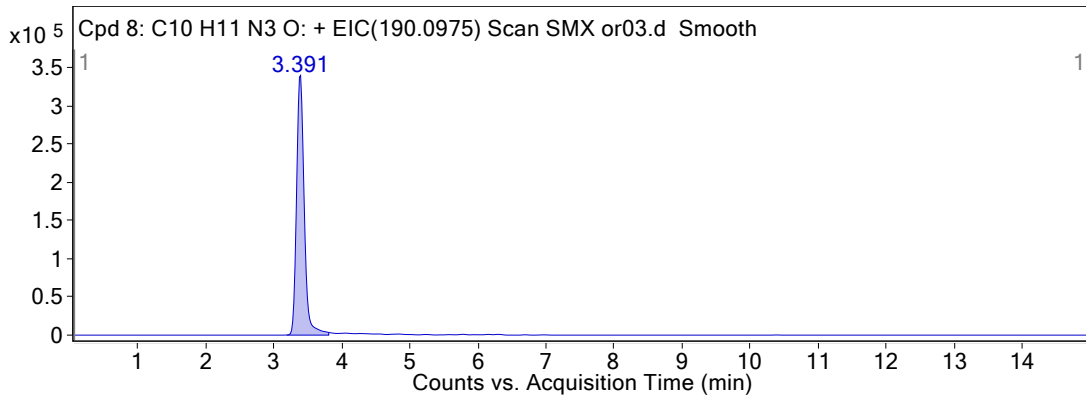
Compound Label	<i>m/z</i>	RT	Algorithm	Mass
Cpd 10: C8 H9 N O	136.0756	3.258	Find By Formula	135.0684

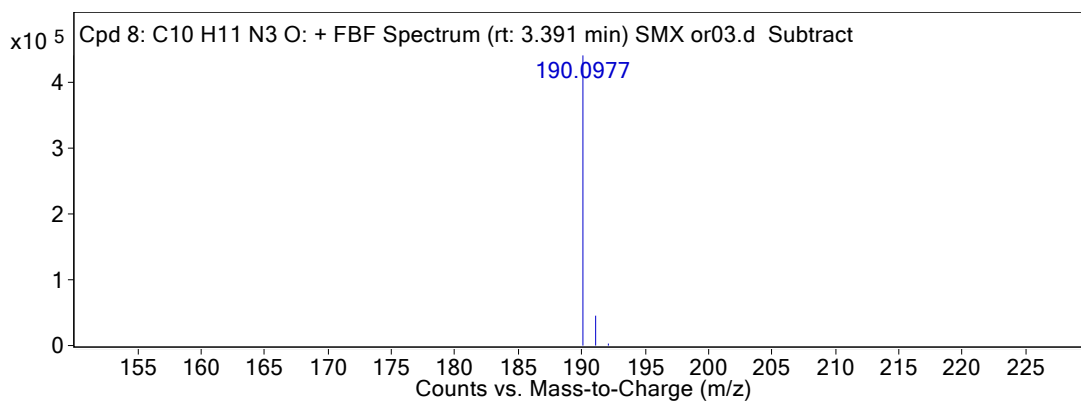


Compound Label	<i>m/z</i>	RT	Algorithm	Mass
Cpd 5: C10 H12 N2 O4 S	257.0596	3.391	Find By Formula	256.05214

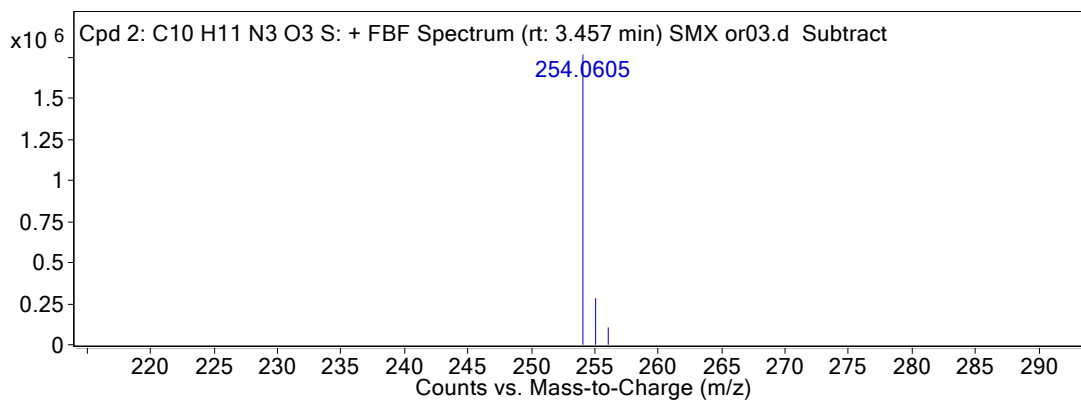
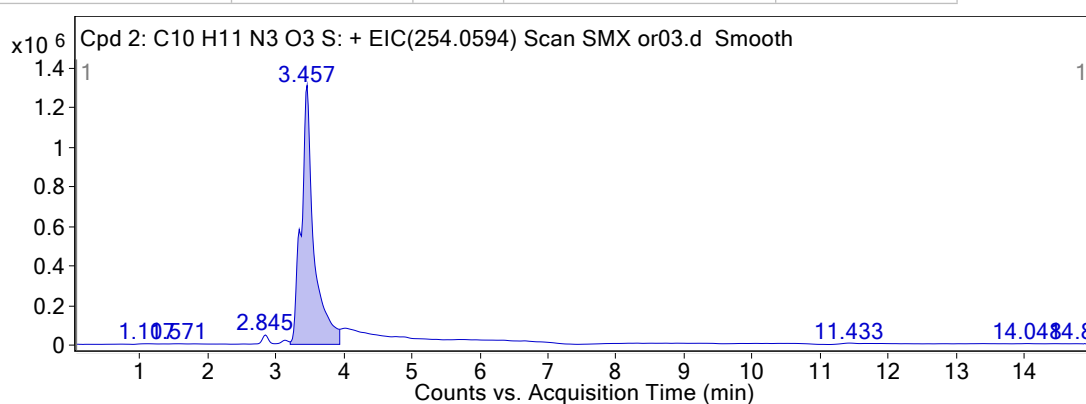


Compound Label	<i>m/z</i>	RT	Algorithm	Mass
Cpd 8: C10 H11 N3 O	190.0977	3.391	Find By Formula	189.09044

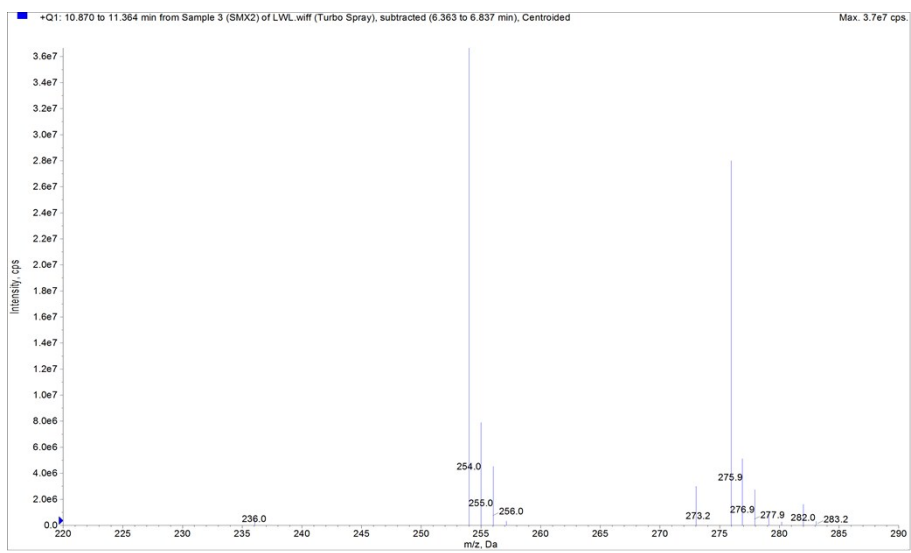
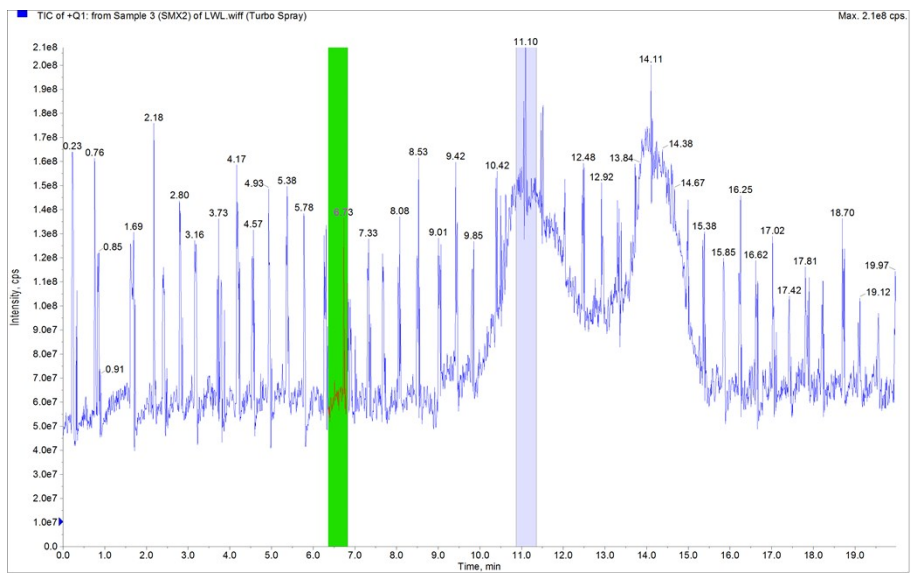
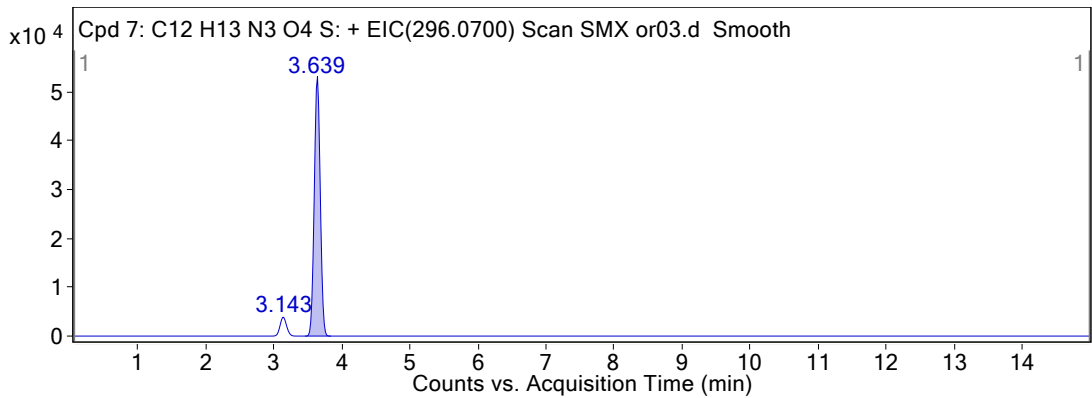


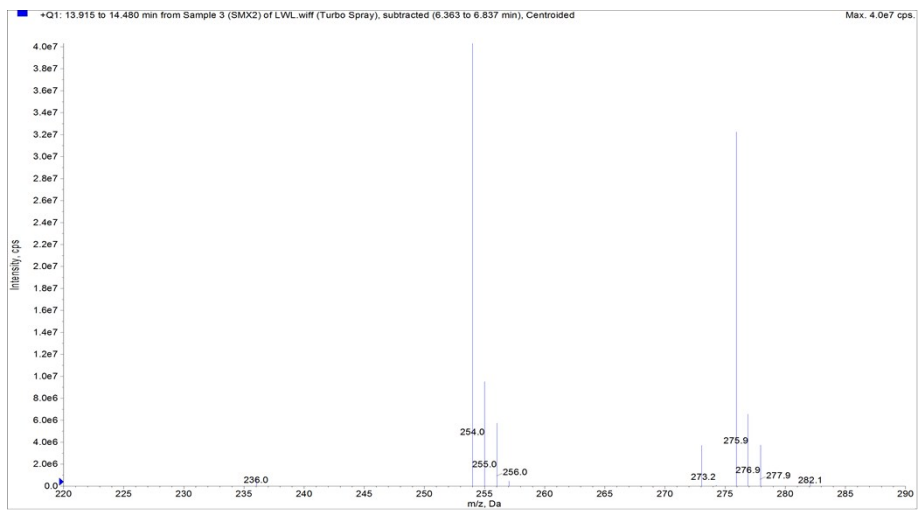


Compound Label	<i>m/z</i>	RT	Algorithm	Mass
Cpd 2: C ₁₀ H ₁₁ N ₃ O ₃ S	254.0605	3.457	Find By Formula	253.05304



Compound Label	<i>m/z</i>	RT	Algorithm	Mass
Cpd 7: C ₁₂ H ₁₃ N ₃ O ₄ S	296.07	3.639	Find By Formula	295.06275





HPLC-MS spectrum analysis of the transformation products of SMA in soil