S-1. Solid phase extraction

SPE for the 18 compounds were performed using Waters Oasis HLB 200mg (6cc) cartridges. 500 ml of sample was used for the extraction. The samples were acidified before extraction and passed through the cartridges at a flowrate of 1-2 drops/second under vacuum. Next the cartridges were vacuum dried for 15 minutes. The dried cartridges are eluted using 8 ml of acidified (10% AA) methanol followed by 6 ml of 50:50 acetonitrile: isopropyl alcohol and 3 ml of ethyl acetate. The eluents are dried under gentle stream of nitrogen and reconstituted with 90:10 mix of water and methanol. The samples were then analysed in HPLC-MS and UPLC-QToF

S-2. Method for HPLC-MS

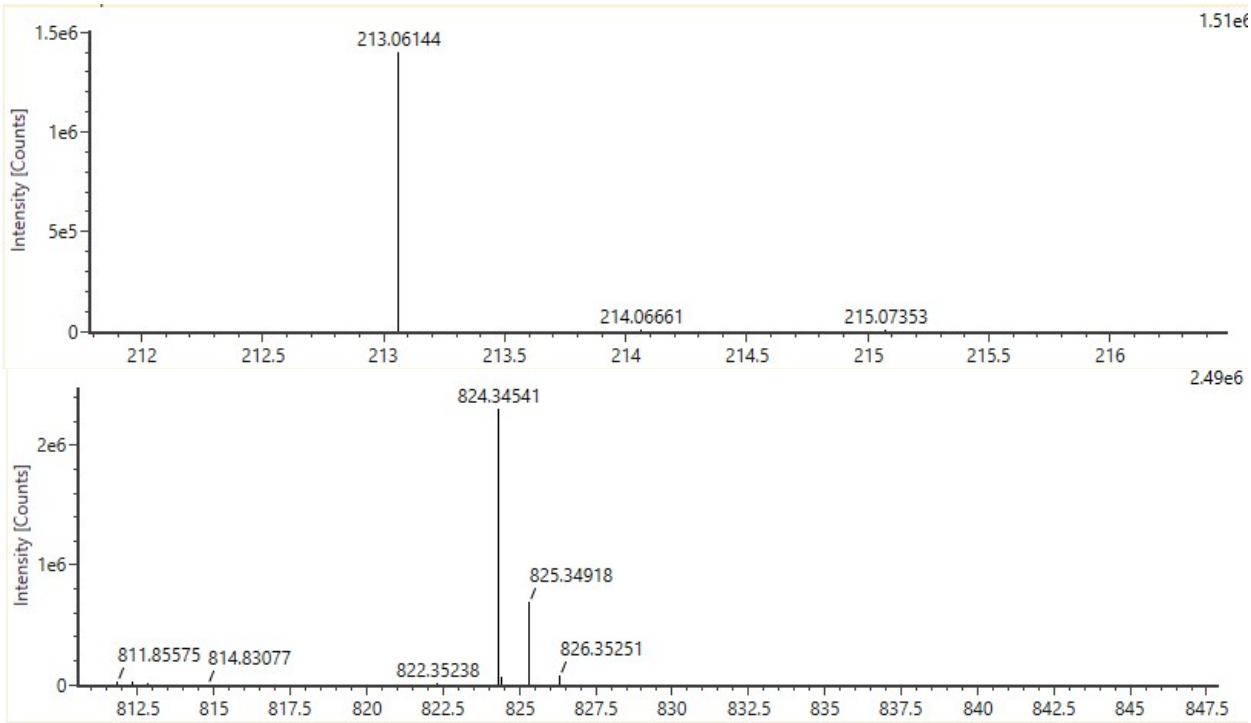
The chromatographic separations were achieved with Sunfire C18 column (4.6 X 250 mm) maintained at a temperature of 40˚C. The sample was kept at a temperature of 15°C and 10µL injection volume was used. The 25 min gradient was started with 90% of mobile phase A and 10% of mobile phase B. At time 2 minutes, the mobile phase A was reduced to 60%. At 5 minutes the mobile phase A became 0% which was held up to 11 minutes. At 21 minutes, 100% of mobile phase A was flowing which was further reduced to 60% at 22 minutes. At 24 minutes, the mobile phase A was increased to 90% and held up to 25 minutes of the program. The capillary voltage of the mass spectrometer was fixed at 3 kV while cone voltage for each analyte was fixed via direct infusion into the ESI-MS.

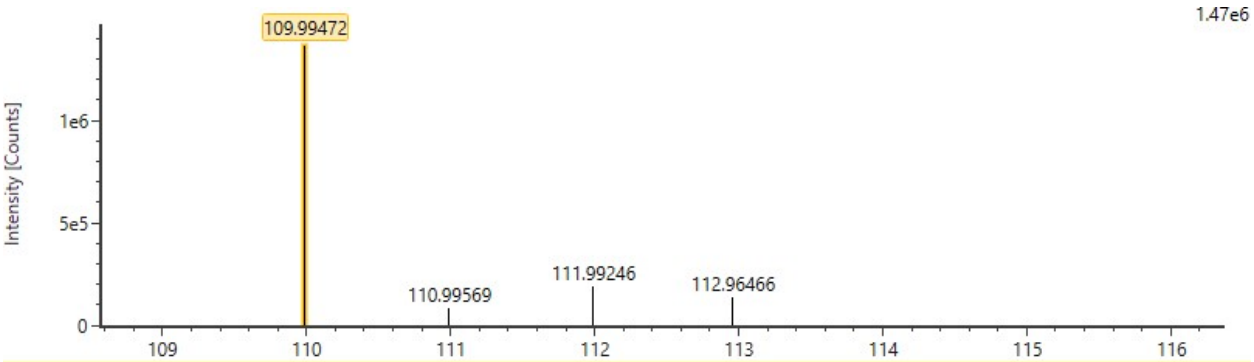
S-3. Method for UPLC-QToF

The analyses were completed using a UPLC (Waters Acquity) coupled to QToF (Waters Xevo G2-XS). The UPLC was equipped with a reversed phase C18 column (Acquity UPLC BEH C18 1.7µm, 2.1 x 150 mm). The column was operated at a temperature of 50°C while the samples were maintained at a temperature of 15°C. Water with .1% formic acid (mobile phase A) and acetonitrile with 0.1% formic acid (mobile phase B) were used as mobile phases. A 12 minutes gradient program with a constant flowrate of 0.4 ml/min was used to achieve the chromatographic separation. The gradient started with 80% of mobile

phase A which was held up to 0.5 minutes then gradually changed to 10% of mobile phase A at 9 minutes. At time 11 minutes, composition of mobile phase A was again brought back to 80% which was held up to 12 minutes. All the samples were analyzed in ESI positive. Argon gas used as collision gas while nitrogen gas was used as nebulizing gas. The capillary and cone voltages were equal to 3 kV and 40 V respectively. The high collision energy was varied between 20 to 30 eV. The HRMS scans were performed for m/z 50-1200 with continuous infusion of 200 ng/mL of leucine-enkephalin for maintaining high mass accuracy. The acquired data was further analyzed with Empower software (Waters).

S-4. Transformation products

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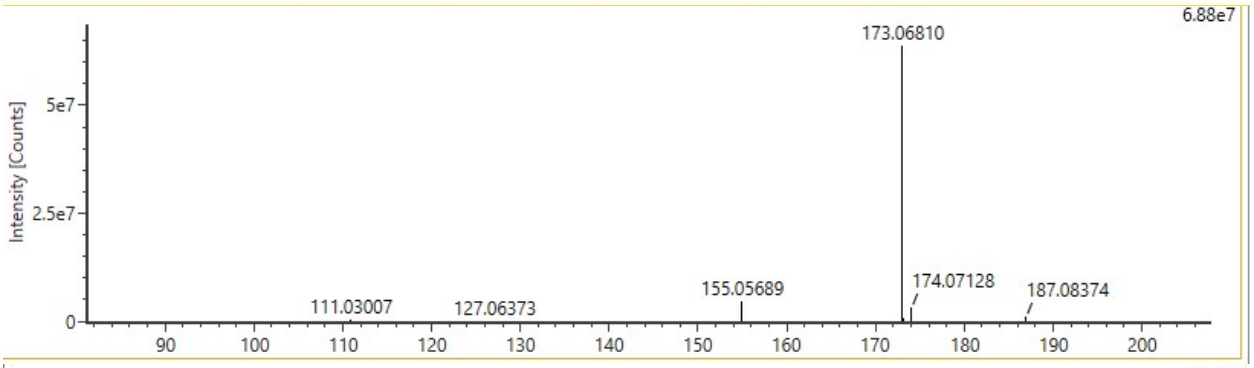
110
111
112
113
114
115
116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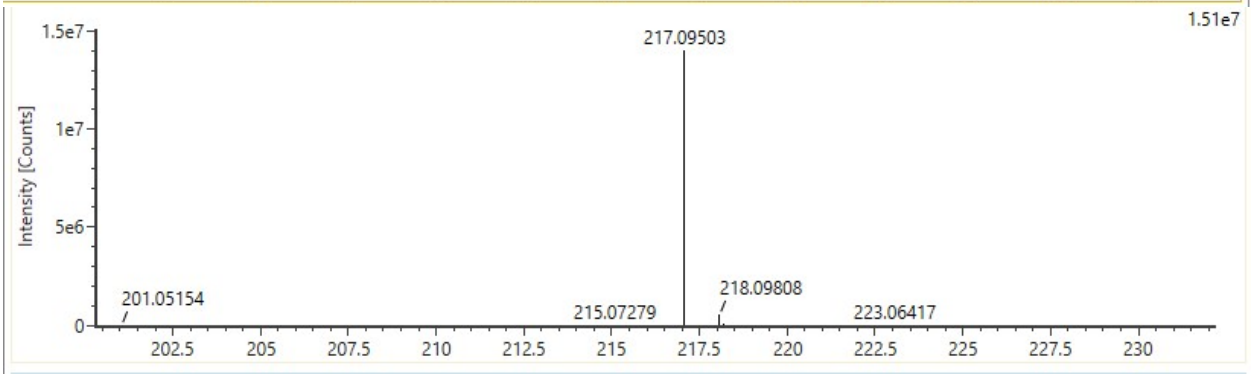
110
120
130
140
150
160
170
180
190
200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202.5
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207.5
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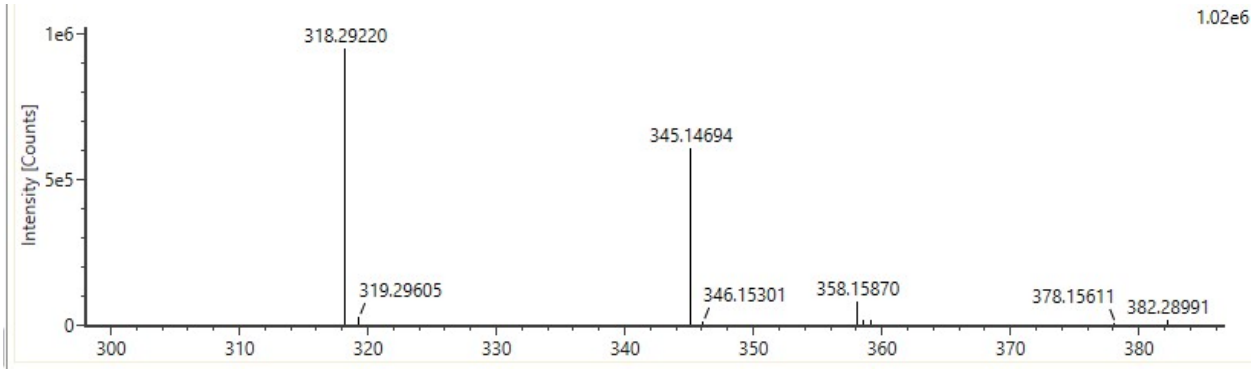
212.5
215
217.5
220
222.5
225
227.5
230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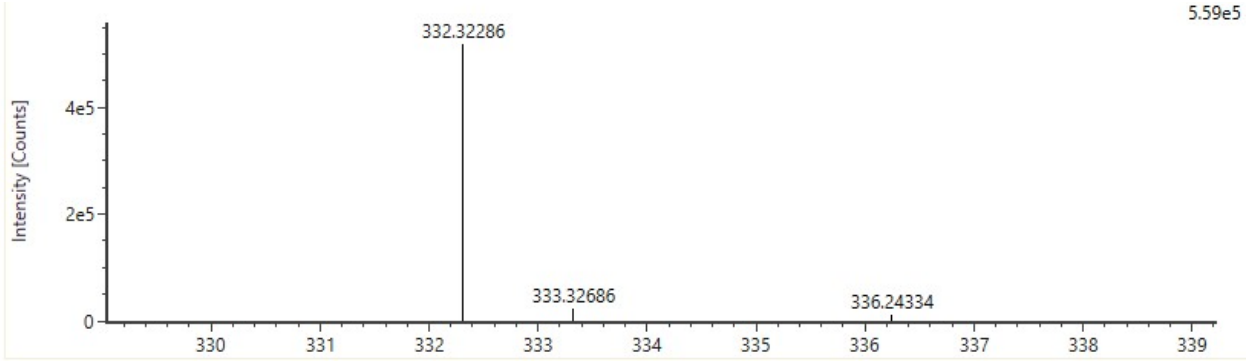
310
320
330
340
350
360
370
380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333
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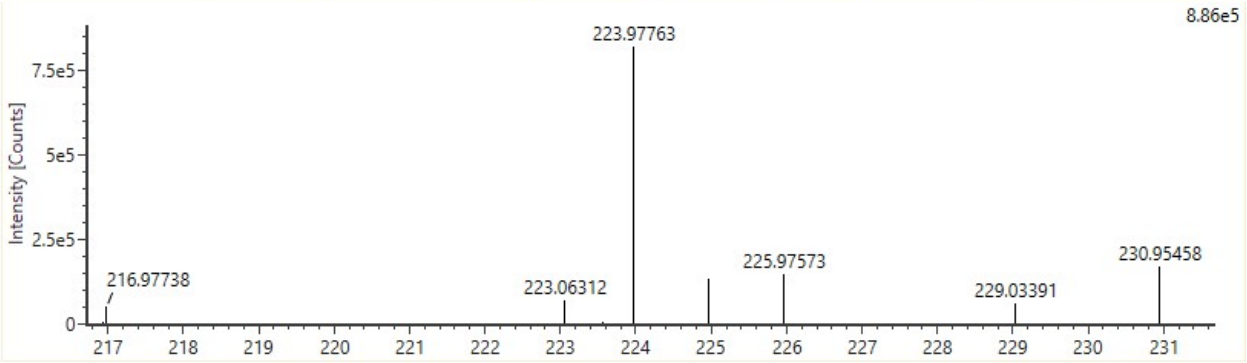
335
336
337
338
339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220
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223
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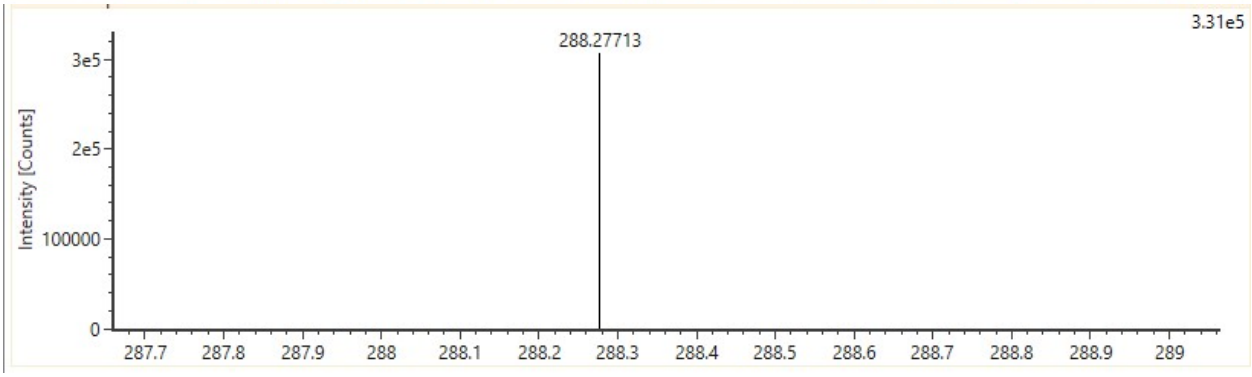
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288.8
288.9
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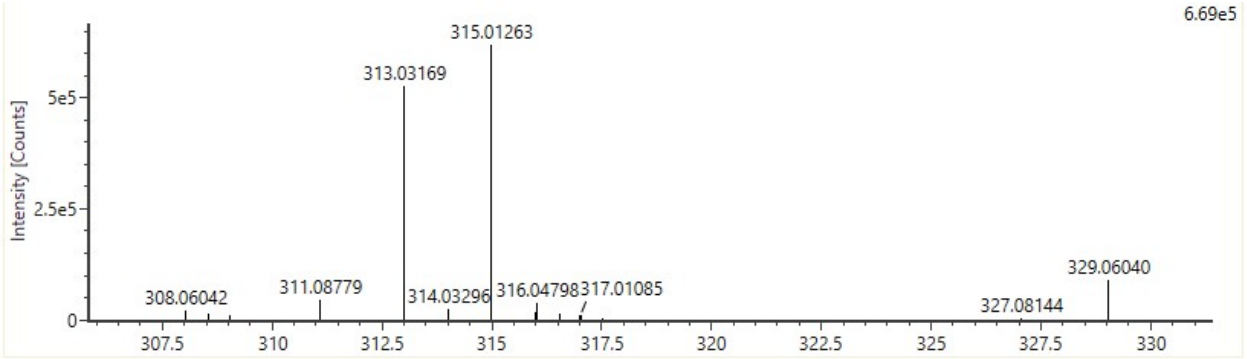
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327.5
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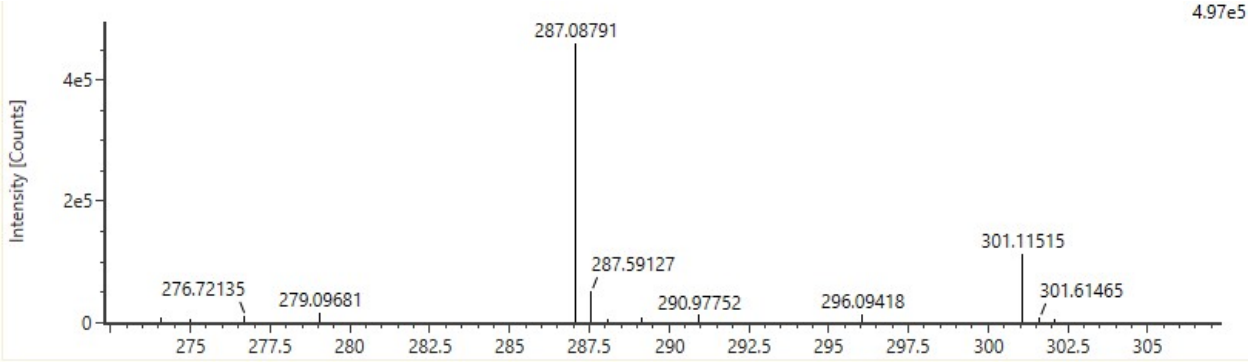
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292.5
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297.5
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302.5
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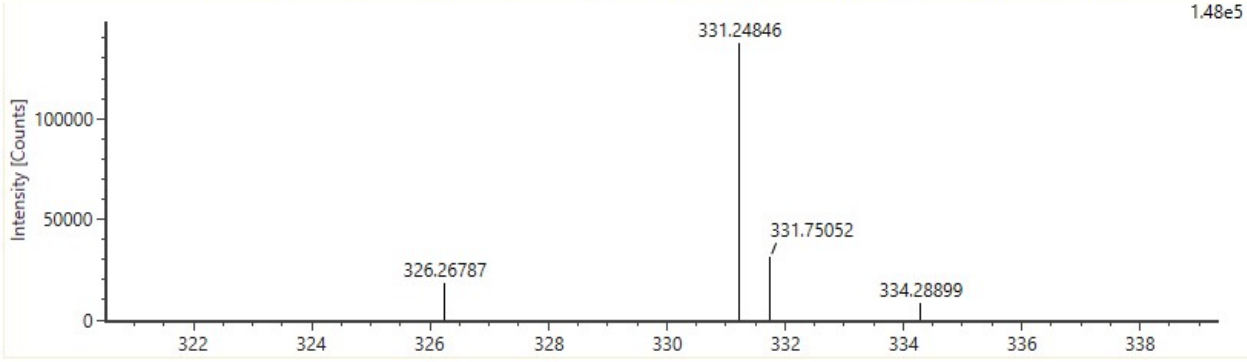
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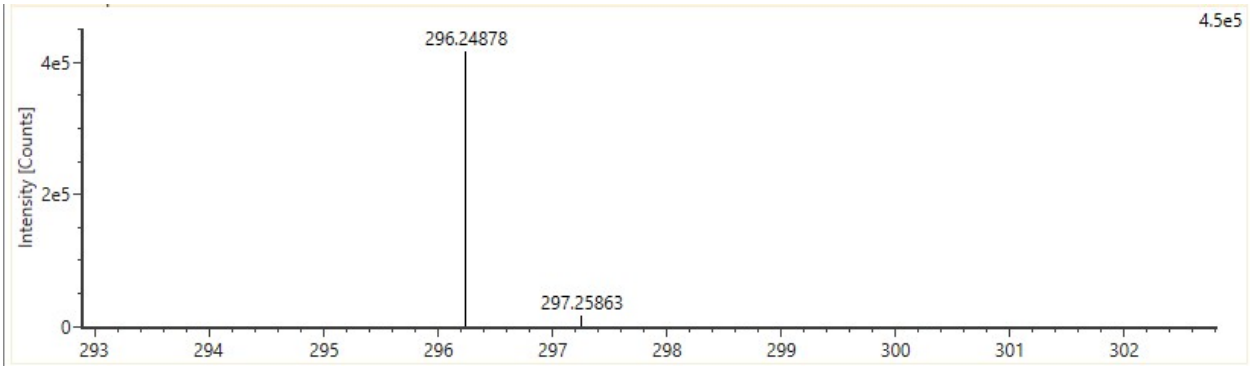
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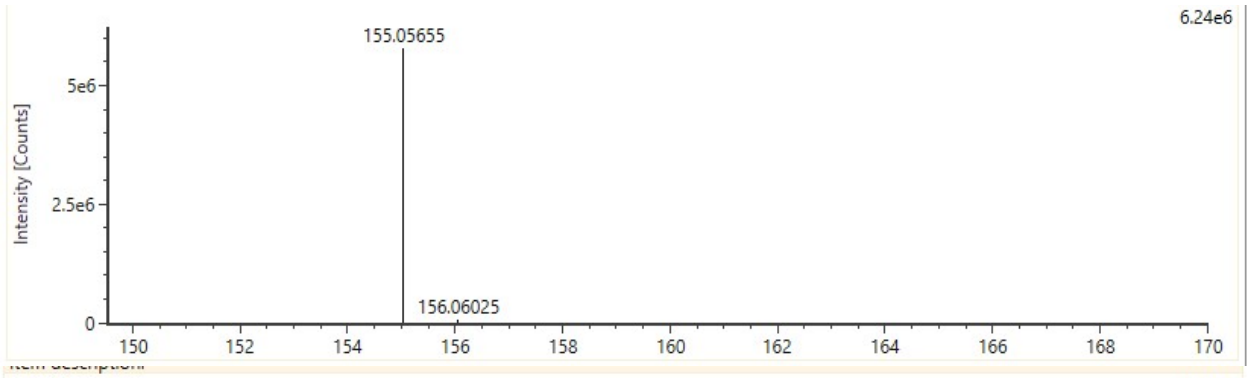
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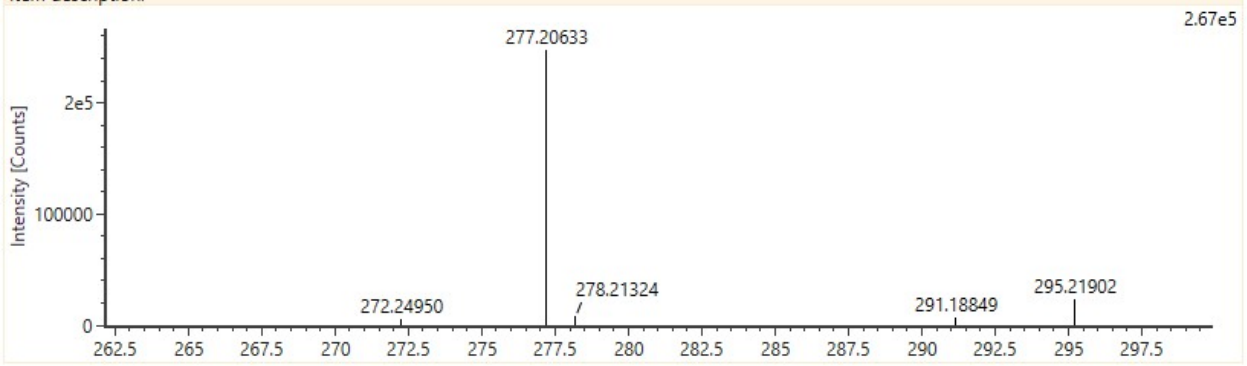
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292.5
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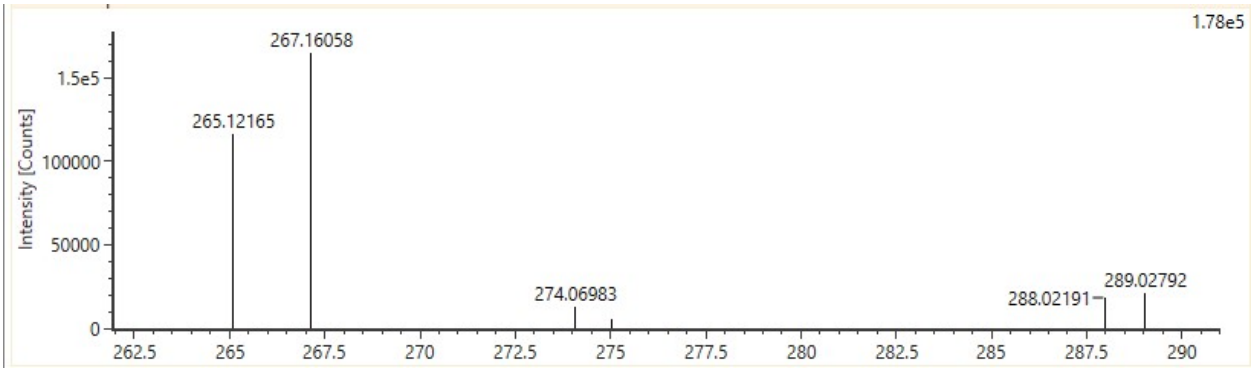
297.5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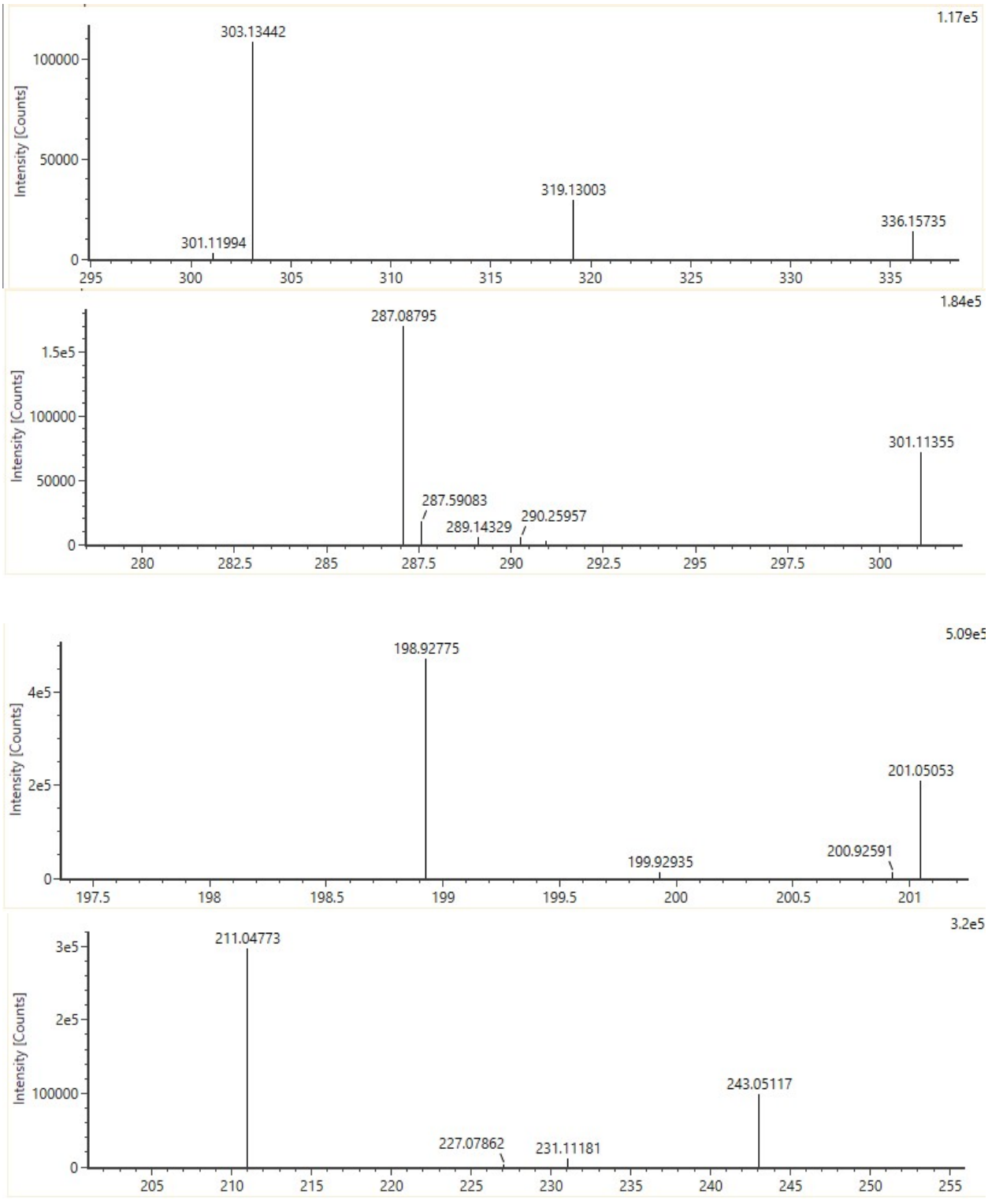
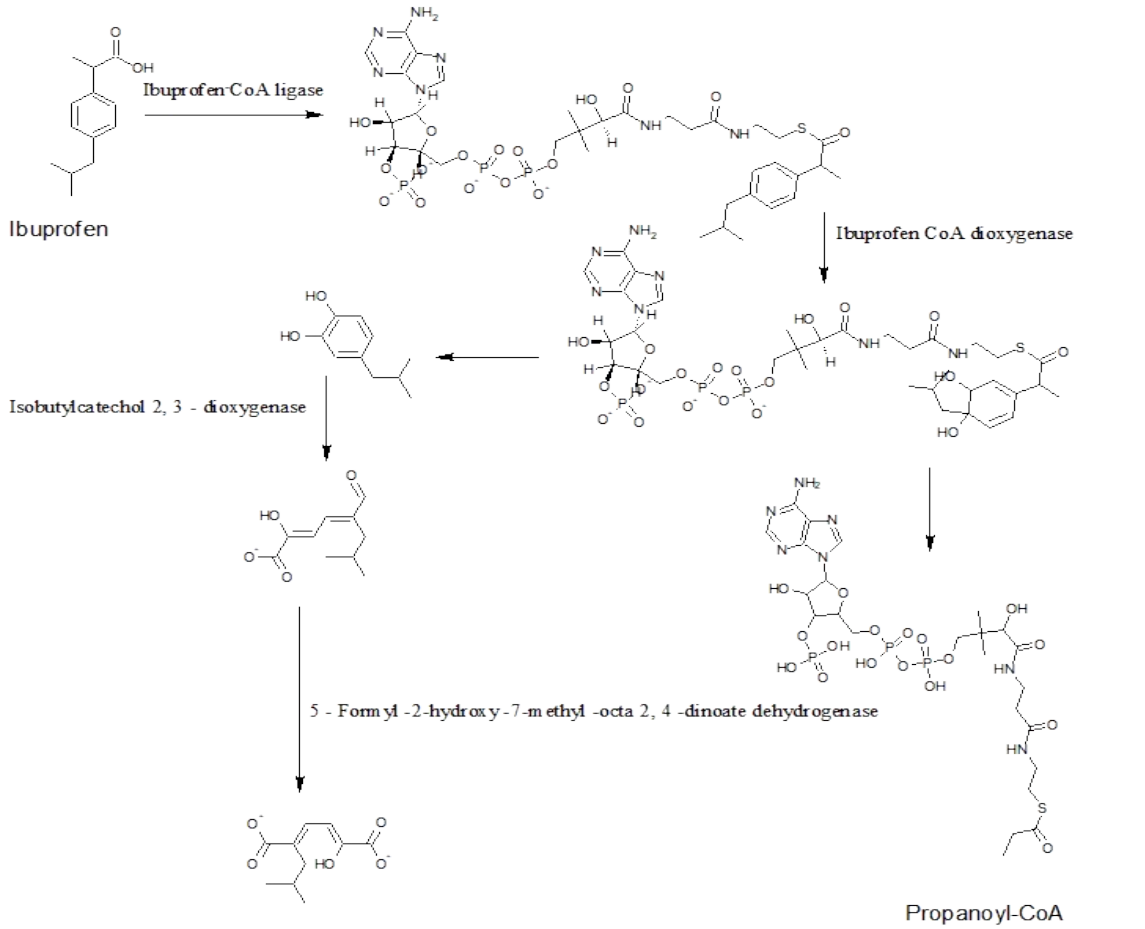
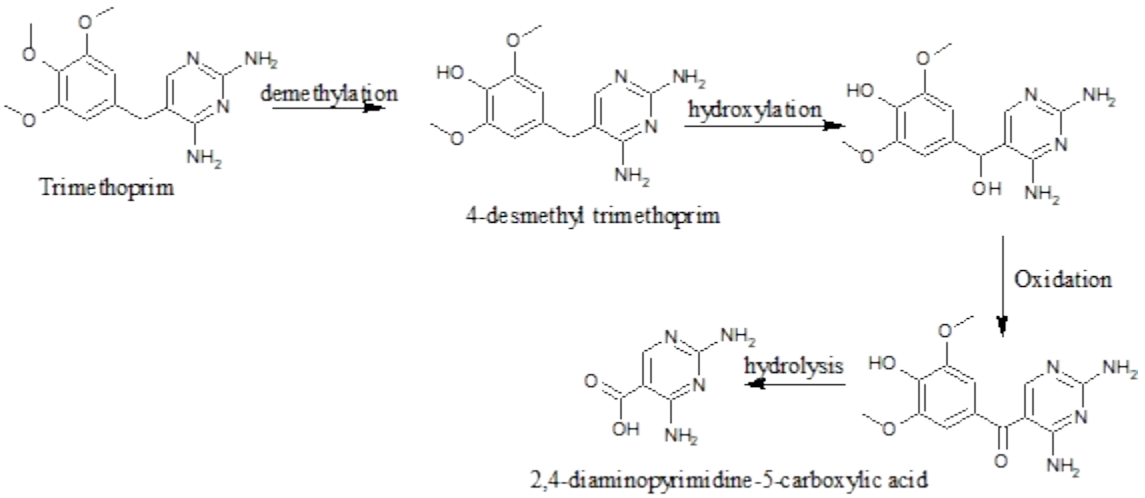


S-5. Based on the detected TPs, biodegradation pathways of (a) Ibuprofen (b) Trimethoprim


Ibuprofen
Ibuprofen-CoA ligase
Ibuprofen CoA dioxygenase
Isobutylcatechol 2, 3 - dioxygenase
5 - Formyl -2-hydroxy -7-methyl -octa 2, 4 -dinoate dehydrogenase
2-Hydroxy-5-isobutylhexa-2,4-dienoate
Propanoyl-CoA


Trimethoprim
demethylation
4-desmethyl trimethoprim
hydroxylation
Oxidation
hydrolysis
2,4-diaminopyrimidine-5-carboxylic acid