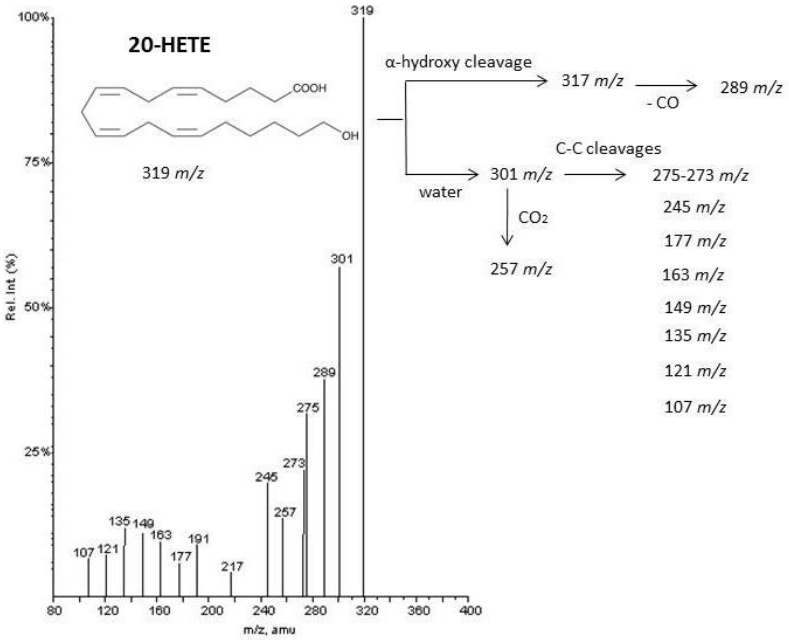
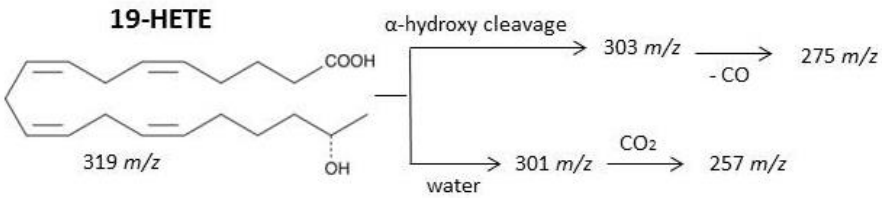
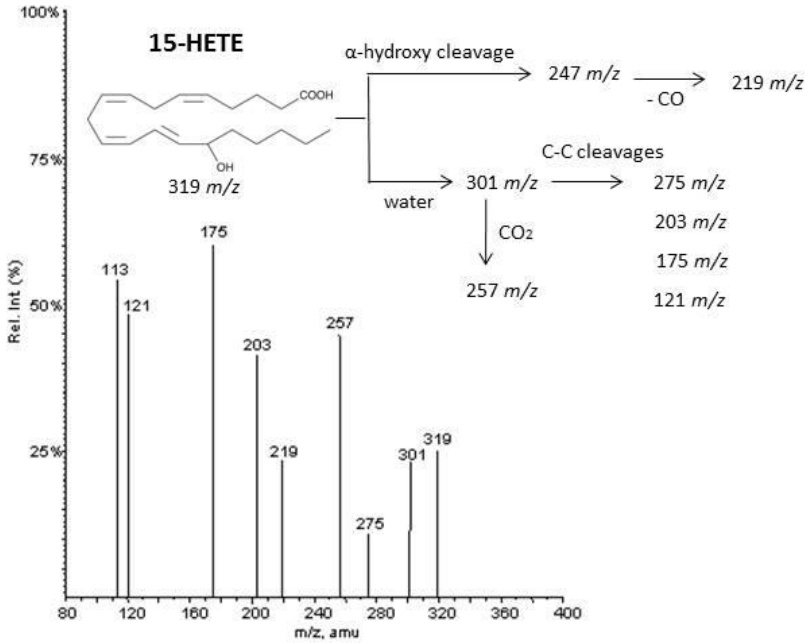
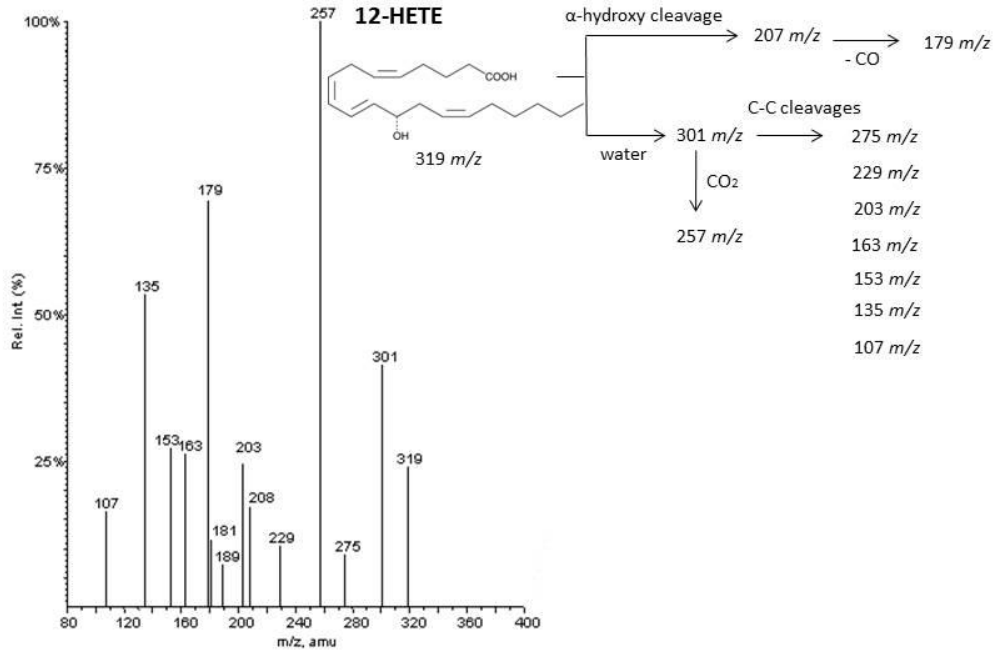
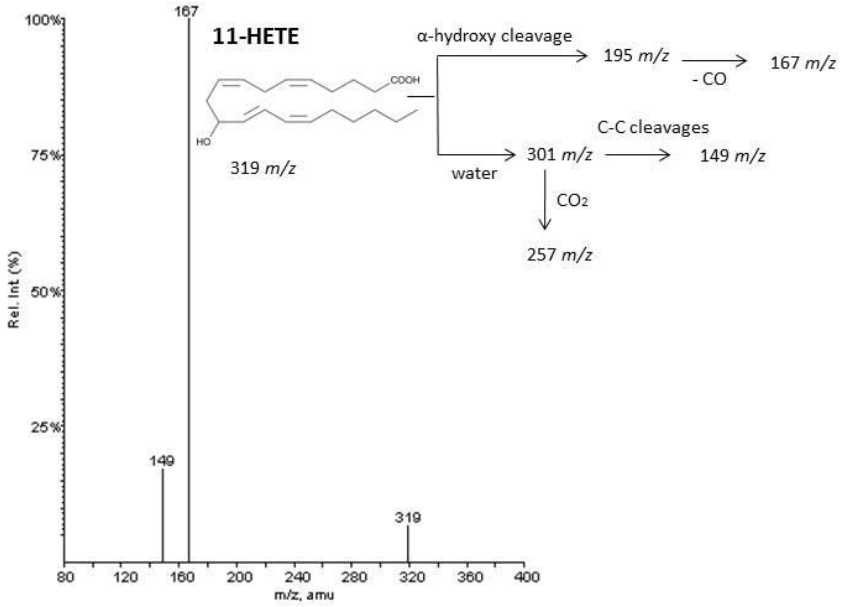
Supplementary Material S1: Common and specific transitions suggested for hydroxy-derivates from ARA, EPA and DHA. Product ion spectrum at *m/z* 319 for HETEs, *m/z* 317 for HEPEs, and *m/z* 343 for HDoHEs were obtained from database of *LIPID MAPS* at CID 30V. No spectra was found for 19-HETE.

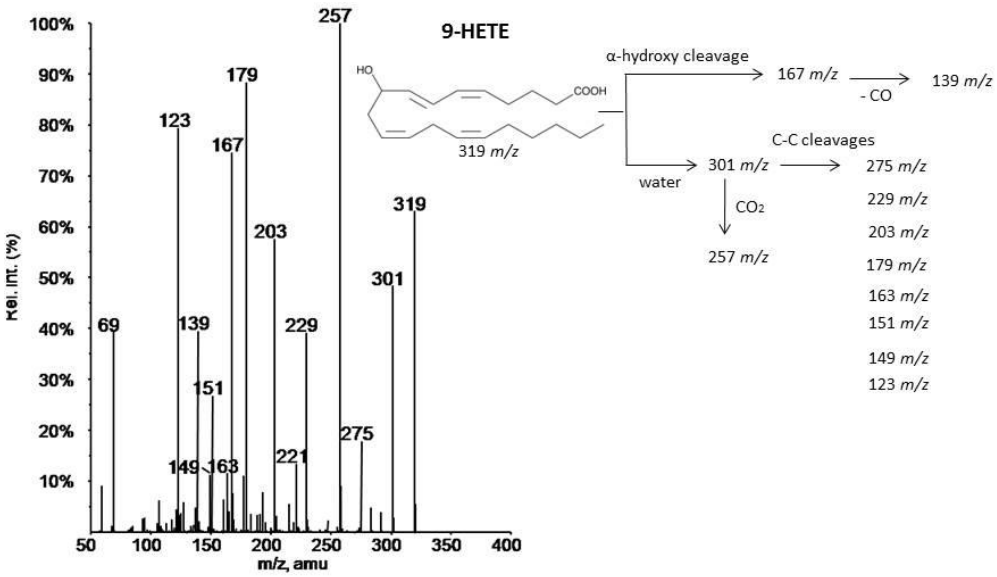


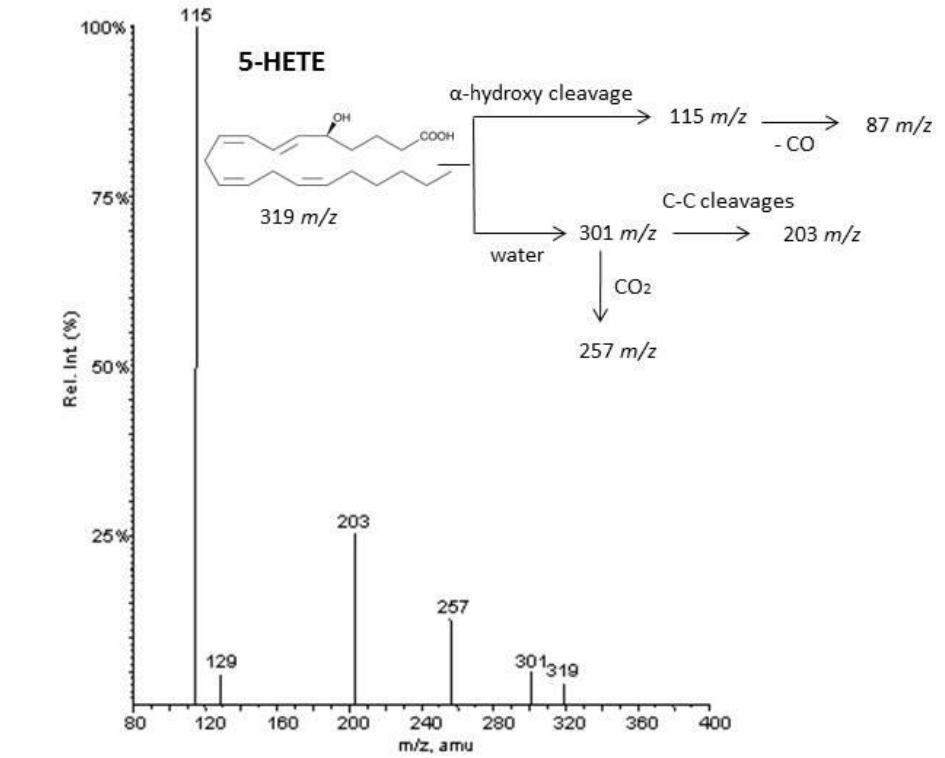


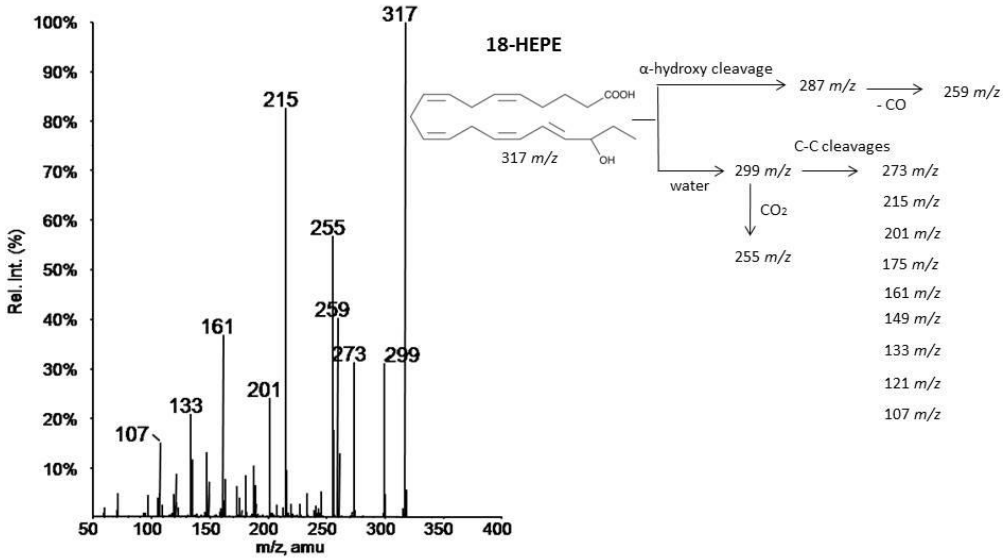


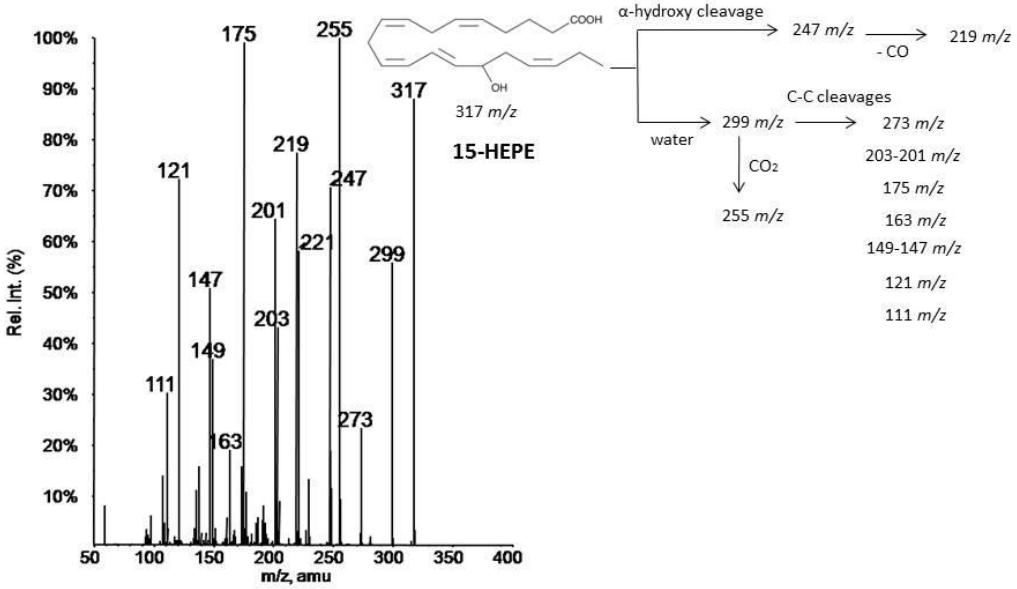

12-HETE
α-hydroxy cleavage
207 m/z
- CO
179 m/z
C-C cleavages
301 m/z
275 m/z
229 m/z
203 m/z
163 m/z
153 m/z
135 m/z
107 m/z
water
CO2
257 m/z
319 m/z
Rel. Int (%)
m/z, amu

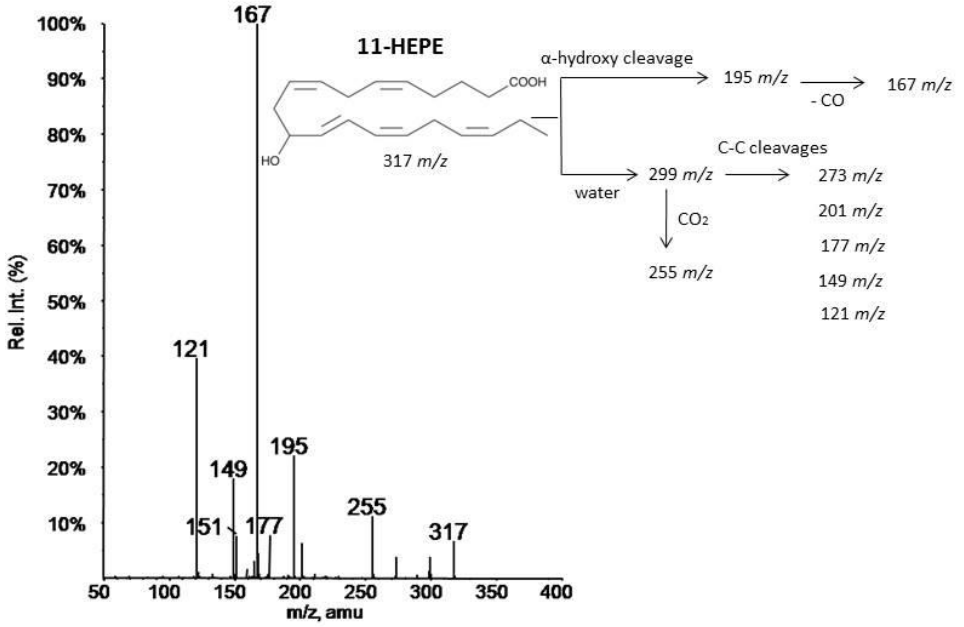

11-HETE
α-hydroxy cleavage
195 m/z
- CO
167 m/z
C-C cleavages
301 m/z
149 m/z
water
CO2
257 m/z
319 m/z
Rel. Int (%)
m/z, amu

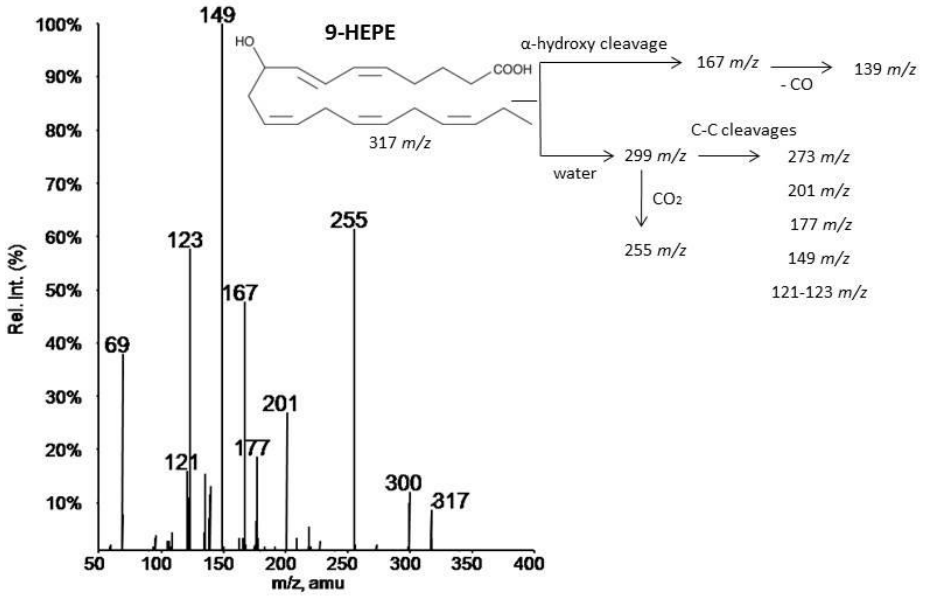

9-HETE
α-hydroxy cleavage
167 m/z
- CO
139 m/z
C-C cleavages
301 m/z
275 m/z
229 m/z
203 m/z
179 m/z
163 m/z
151 m/z
149 m/z
123 m/z
water
CO2
257 m/z
319 m/z
Rel. Int. (%)
m/z, amu

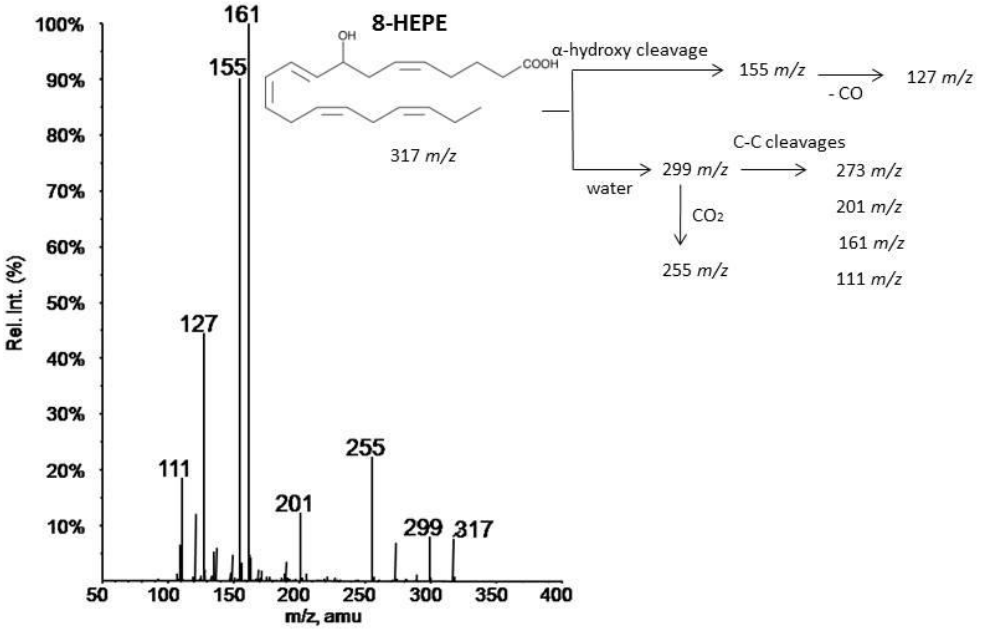

5-HETE
α-hydroxy cleavage
115 m/z
- CO
87 m/z
319 m/z
C-C cleavages
301 m/z
203 m/z
water
CO2
257 m/z
Rel. Int (%)
m/z, amu

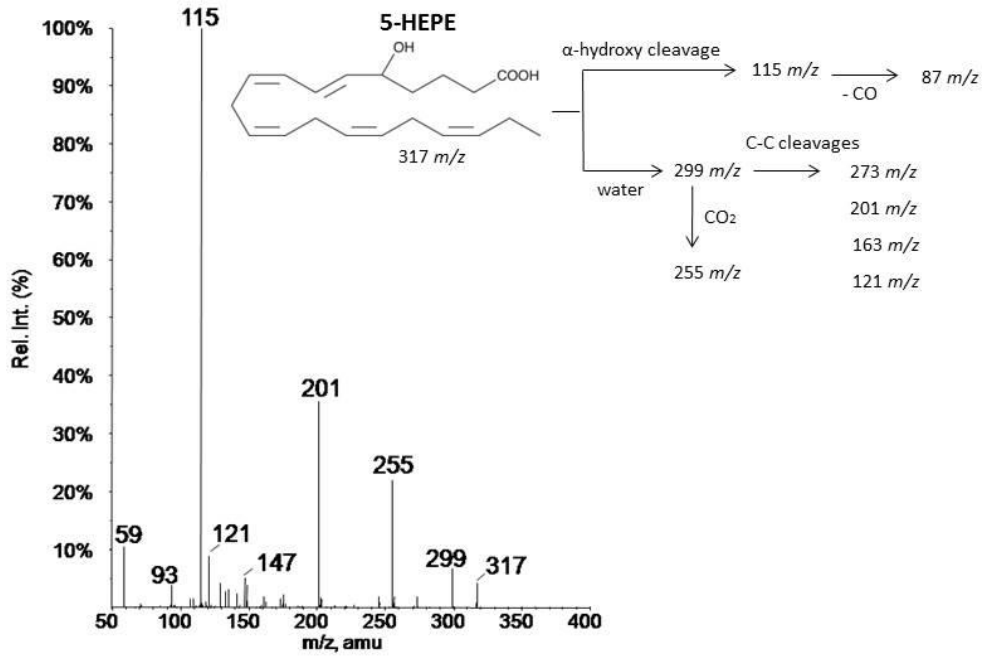

18-HEPE
α-hydroxy cleavage
287 m/z
- CO
259 m/z
317 m/z
C-C cleavages
299 m/z
273 m/z
water
CO2
255 m/z
215 m/z
201 m/z
175 m/z
161 m/z
149 m/z
133 m/z
121 m/z
107 m/z
Rel. Int. (%)
m/z, amu

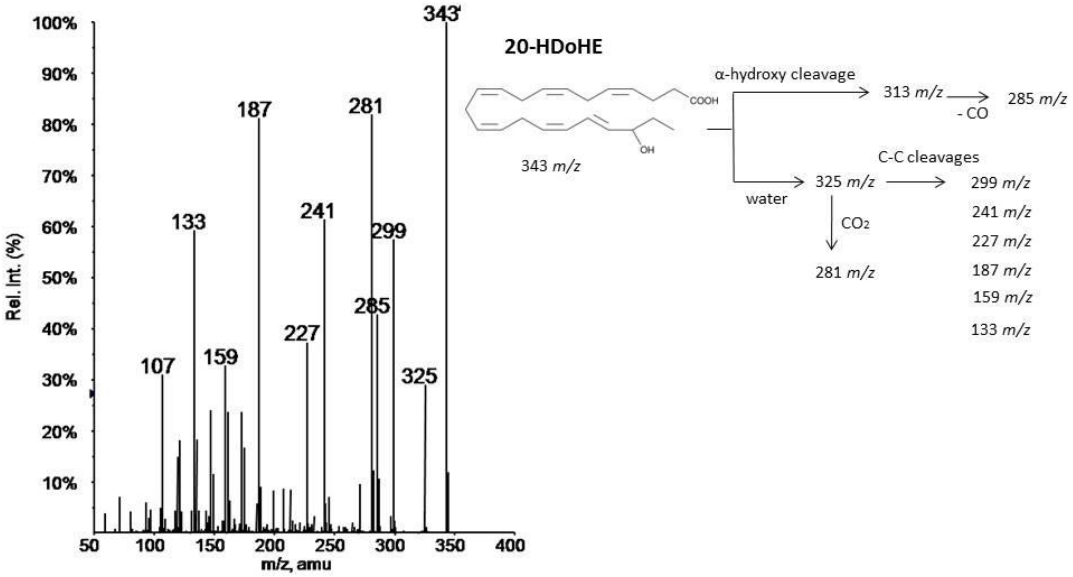

15-HEPE
α-hydroxy cleavage
247 m/z
- CO
219 m/z
317 m/z
C-C cleavages
299 m/z
273 m/z
water
CO2
255 m/z
203-201 m/z
175 m/z
163 m/z
149-147 m/z
121 m/z
111 m/z
Rel. Int. (%)
m/z, amu

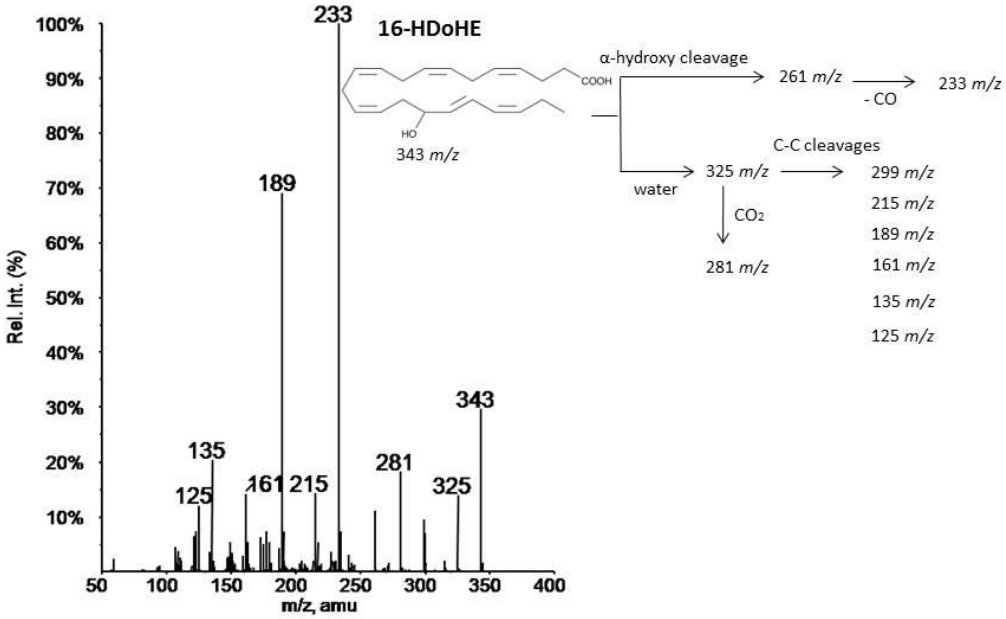

11-HEPE
167
121
149
195
151
177
255
317
Rel. Int. (%)
m/z, amu
α-hydroxy cleavage
317 m/z
195 m/z
- CO
167 m/z
C-C cleavages
299 m/z
273 m/z
201 m/z
177 m/z
149 m/z
121 m/z
water
CO2
255 m/z

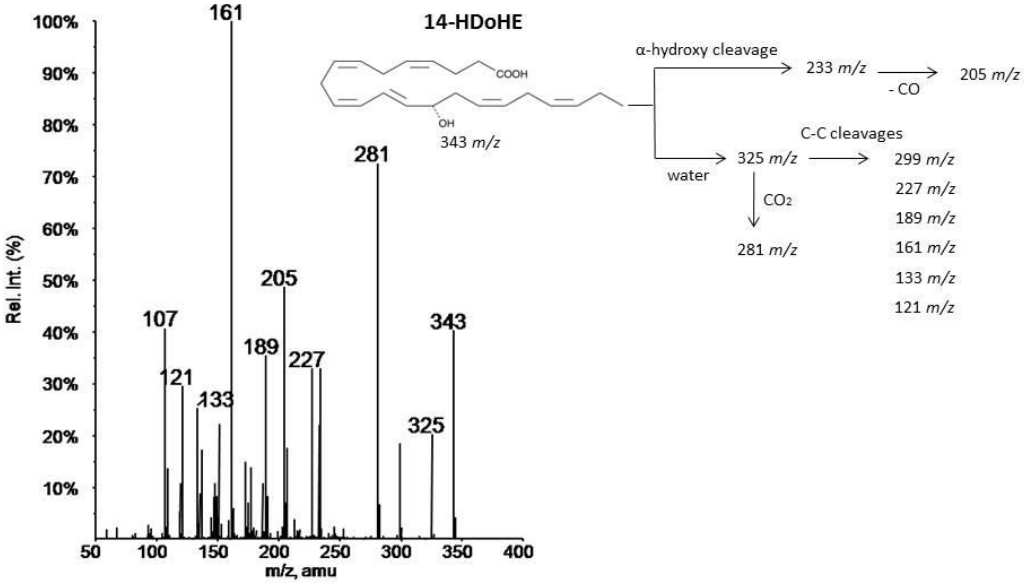

9-HEPE
149
123
255
167
69
201
177
121
300
317
Rel. Int. (%)
m/z, amu
α-hydroxy cleavage
317 m/z
167 m/z
- CO
139 m/z
C-C cleavages
299 m/z
273 m/z
201 m/z
177 m/z
149 m/z
121-123 m/z
water
CO2
255 m/z

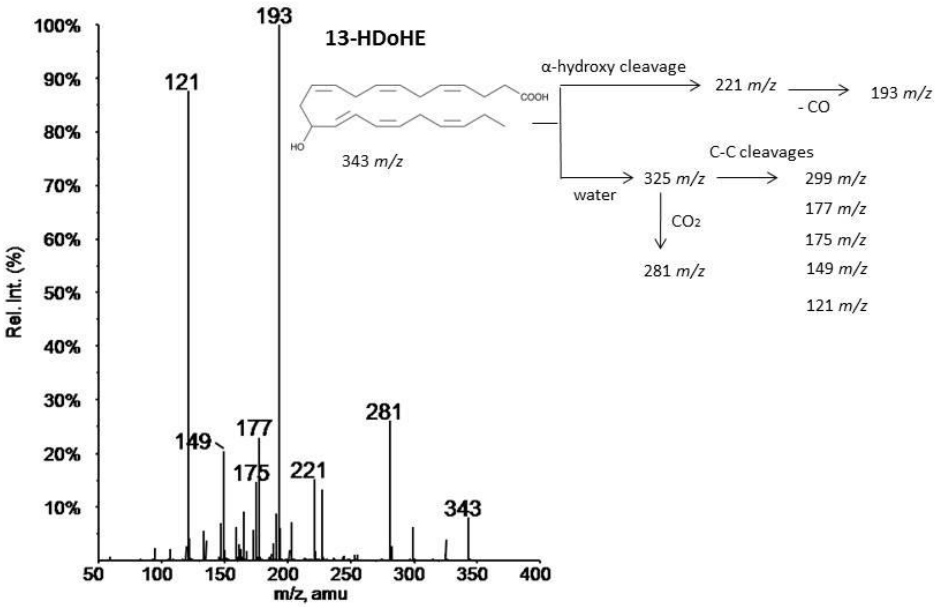

8-HEPE
161
155
127
111
255
201
299
317
Rel. Int. (%)
m/z, amu
α-hydroxy cleavage
317 m/z
155 m/z
- CO
127 m/z
C-C cleavages
299 m/z
273 m/z
201 m/z
161 m/z
111 m/z
water
CO2
255 m/z

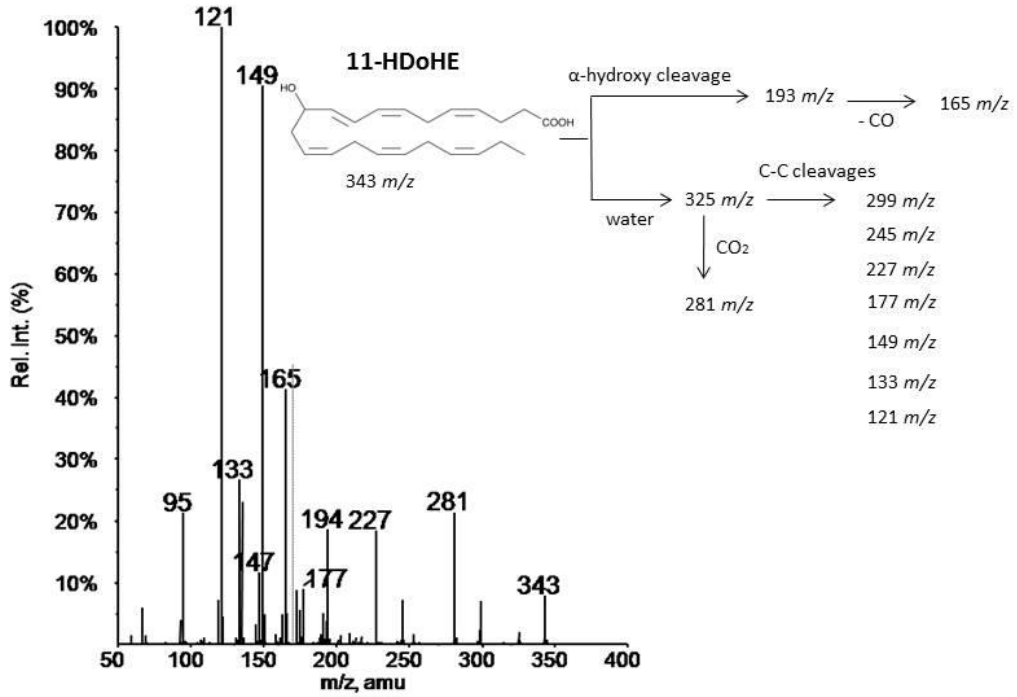

5-HEPE
115
201
255
59
121
147
93
299
317
Rel. Int. (%)
m/z, amu
OH
COOH
317 m/z
α-hydroxy cleavage
115 m/z
- CO
87 m/z
C-C cleavages
water
299 m/z
CO2
255 m/z
273 m/z
201 m/z
163 m/z
121 m/z

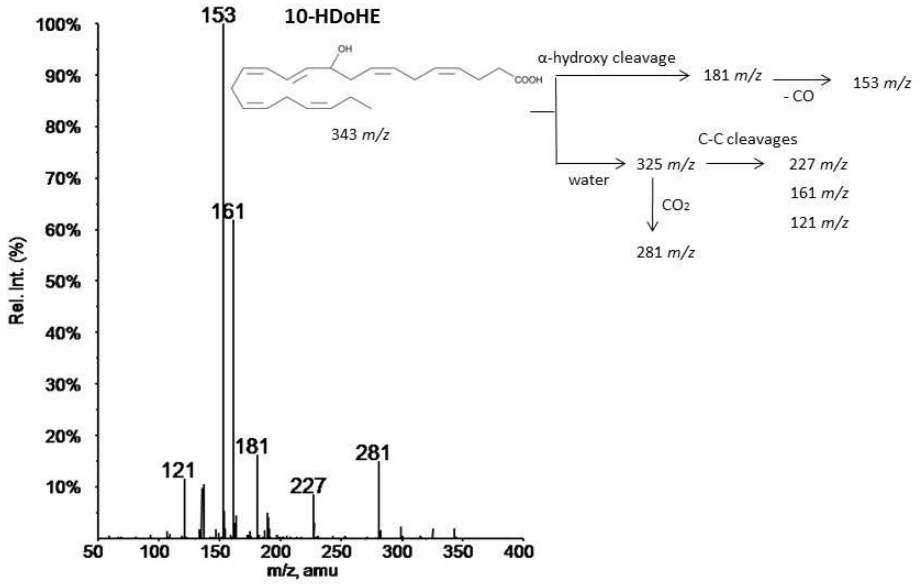

20-HDoHE
343
187
281
133
241
299
285
227
107
159
325
Rel. Int. (%)
m/z, amu
343 m/z
α-hydroxy cleavage
313 m/z
- CO
285 m/z
C-C cleavages
water
325 m/z
CO2
281 m/z
299 m/z
241 m/z
227 m/z
187 m/z
159 m/z
133 m/z

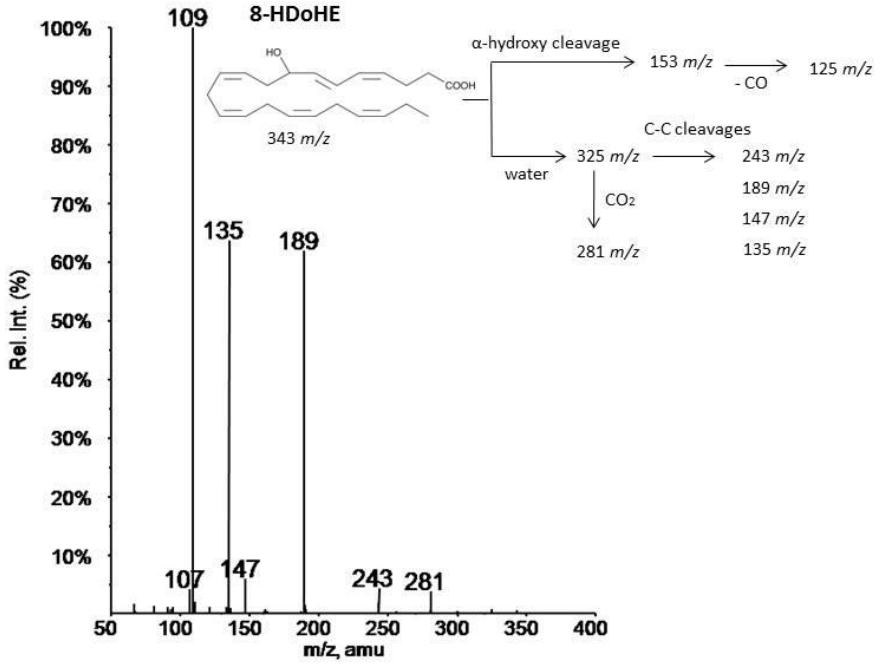

16-HDoHE
233
189
343
135
281
125
161
215
325
Rel. Int. (%)
m/z, amu
343 m/z
α-hydroxy cleavage
261 m/z
- CO
233 m/z
C-C cleavages
water
325 m/z
CO2
281 m/z
299 m/z
215 m/z
189 m/z
161 m/z
135 m/z
125 m/z

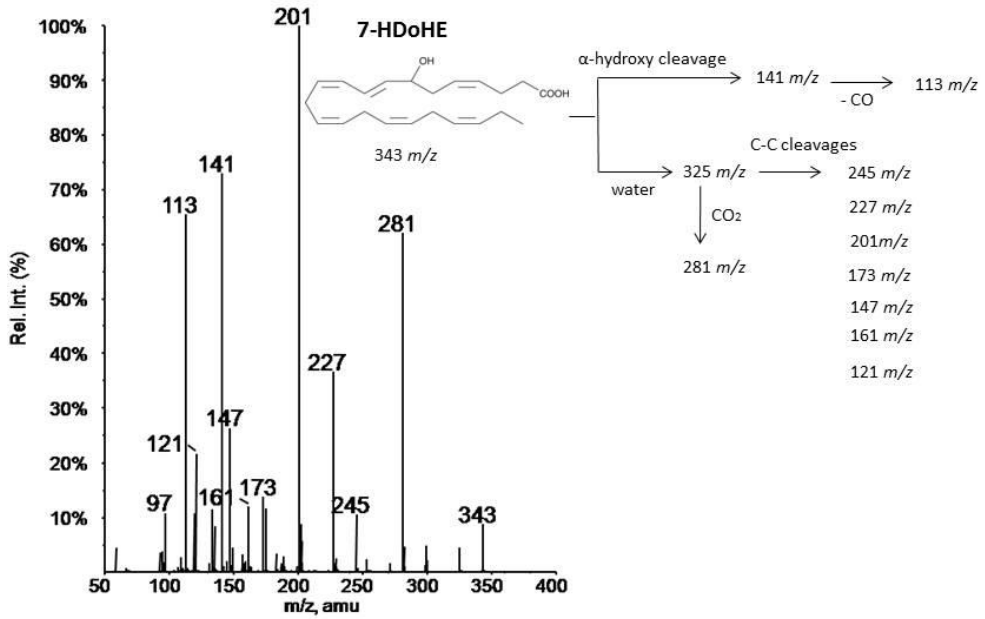

14-HDoHE
Rel. Int. (%)
m/z, amu
161
281
205
107
343
189
227
121
133
325
α-hydroxy cleavage
233 m/z
- CO
205 m/z
343 m/z
C-C cleavages
water
325 m/z
299 m/z
227 m/z
189 m/z
161 m/z
133 m/z
121 m/z
CO2
281 m/z

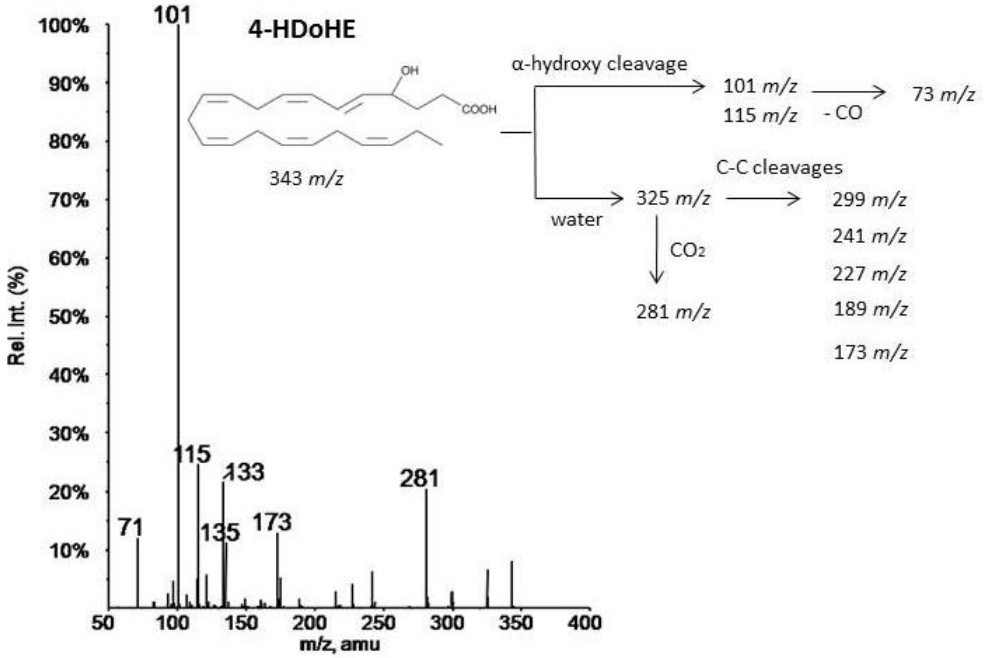

13-HDoHE
Rel. Int. (%)
m/z, amu
193
121
281
177
149
175
221
343
α-hydroxy cleavage
221 m/z
- CO
193 m/z
343 m/z
C-C cleavages
water
325 m/z
299 m/z
177 m/z
175 m/z
149 m/z
121 m/z
CO2
281 m/z


11-HDoHE
Rel. Int. (%)
m/z, amu
121
149
165
133
95
194
227
281
147
177
343
α-hydroxy cleavage
193 m/z
- CO
165 m/z
343 m/z
C-C cleavages
water
325 m/z
299 m/z
245 m/z
227 m/z
177 m/z
149 m/z
133 m/z
121 m/z
CO2
281 m/z

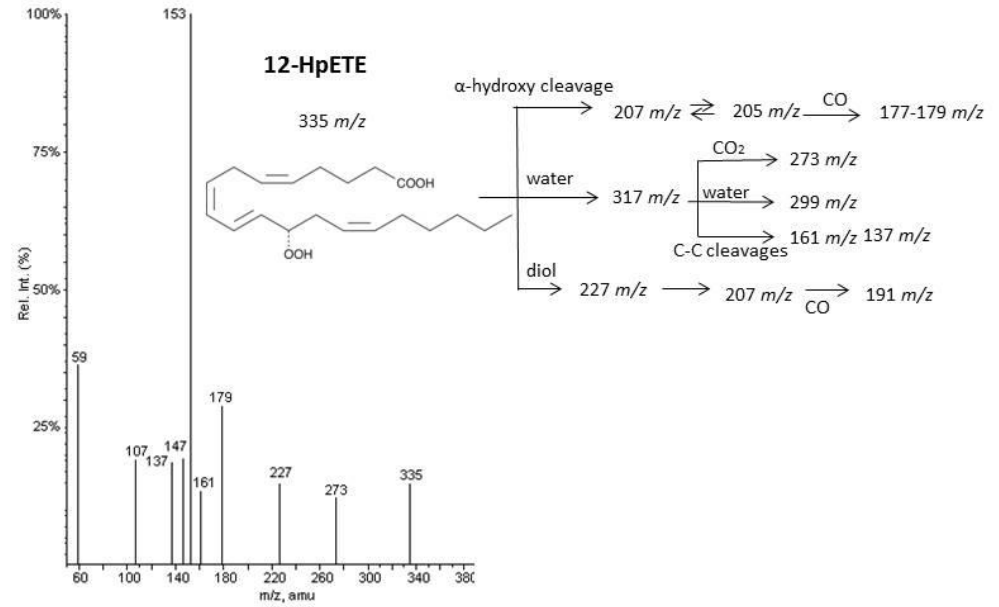

10-HDoHE
153
161
181
121
227
281
Rel. Int. (%)
m/z, amu
343 m/z
α-hydroxy cleavage
181 m/z
- CO
153 m/z
C-C cleavages
325 m/z
227 m/z
161 m/z
121 m/z
water
CO2
281 m/z

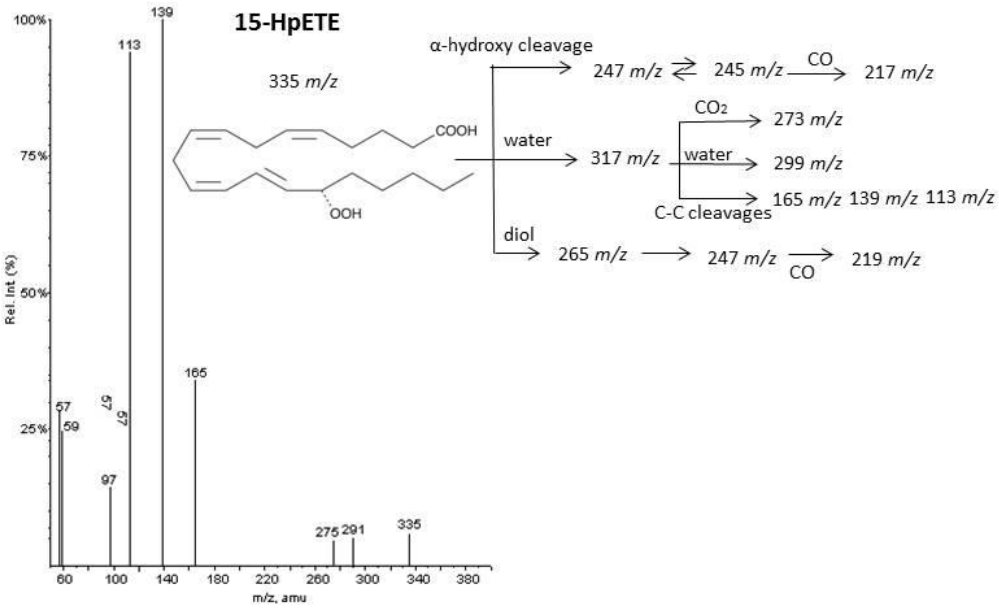

8-HDoHE
109
135
189
107
147
243
281
Rel. Int. (%)
m/z, amu
343 m/z
α-hydroxy cleavage
153 m/z
- CO
125 m/z
C-C cleavages
325 m/z
243 m/z
189 m/z
147 m/z
135 m/z
water
CO2
281 m/z

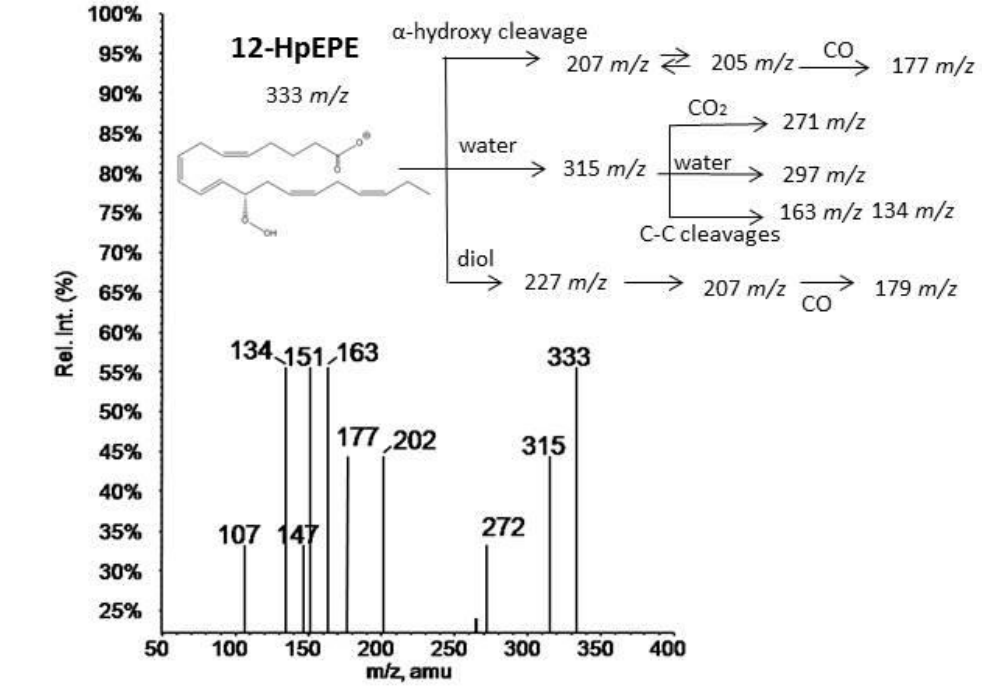

7-HDoHE
201
141
113
281
227
147
121
97
161
173
245
343
Rel. Int. (%)
m/z, amu
343 m/z
α-hydroxy cleavage
141 m/z
- CO
113 m/z
C-C cleavages
325 m/z
245 m/z
227 m/z
201m/z
173 m/z
147 m/z
161 m/z
121 m/z
water
CO2
281 m/z

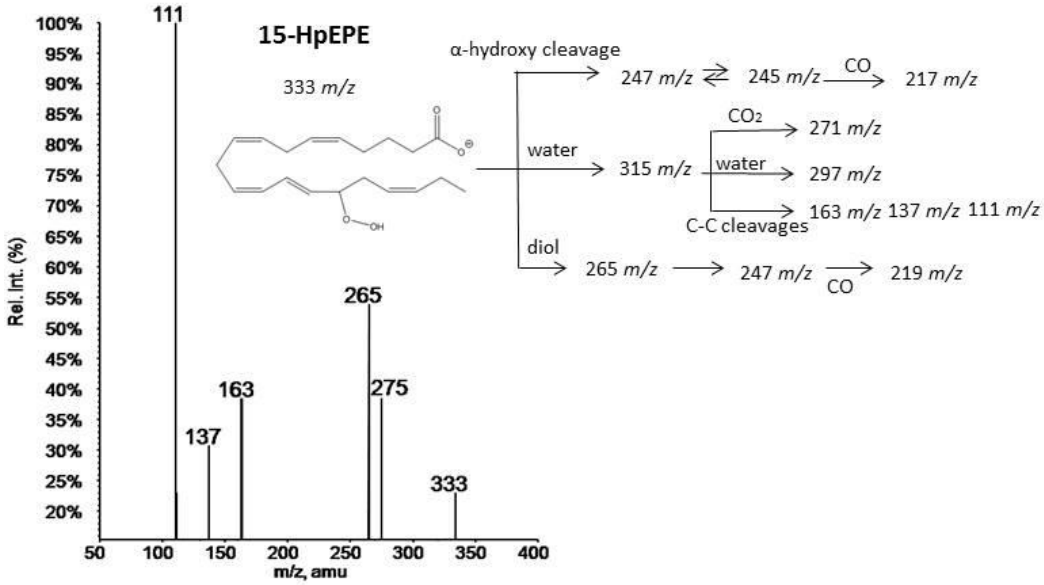

4-HDoHE
101
115
133
281
71
135
173
Rel. Int. (%)
m/z, amu
OH
COOH
343 m/z
α-hydroxy cleavage
101 m/z
115 m/z
- CO
73 m/z
C-C cleavages
325 m/z
water
CO2
281 m/z
299 m/z
241 m/z
227 m/z
189 m/z
173 m/z

Supplementary Material S2: Common and specific transitions suggested for 12 and 15 hydroperoxy-derivates of ARA and EPA. Product ion spectrum at *m/z* 335 for HpETEs, and *m/z* 333 for HpEPEs were obtained from database of *LIPID MAPS* at CID 30V.

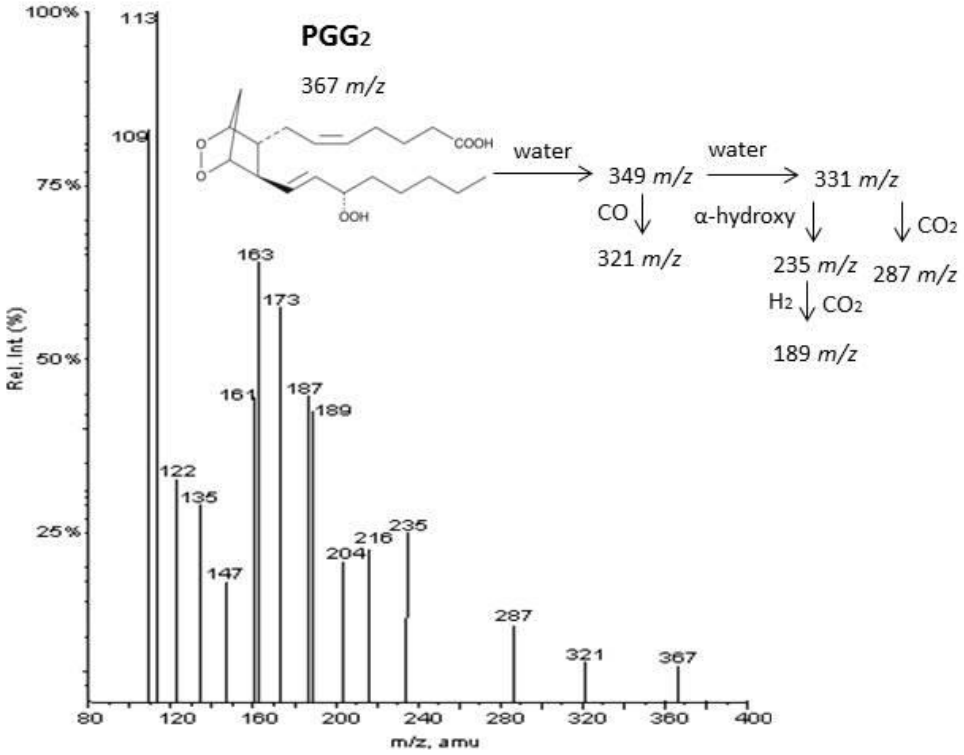


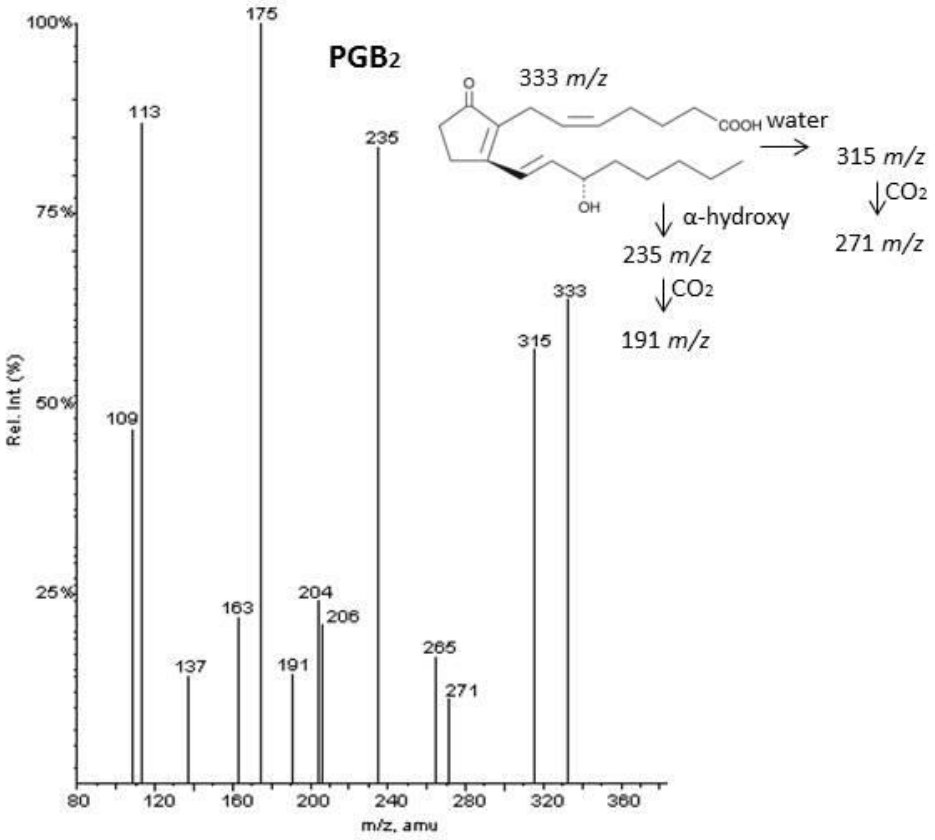


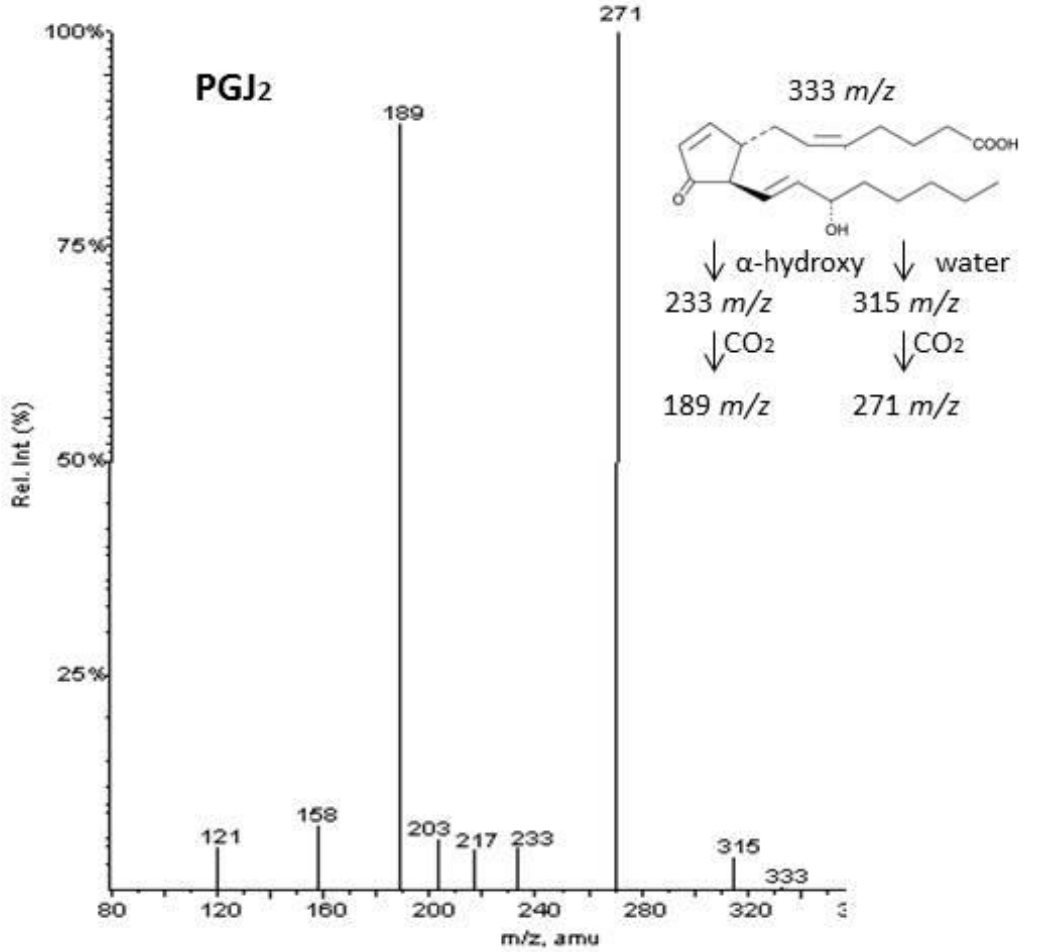

12-HpEPE
333 m/z
α-hydroxy cleavage
207 m/z
205 m/z
CO
177 m/z
CO2
271 m/z
water
315 m/z
water
297 m/z
163 m/z
134 m/z
C-C cleavages
diol
227 m/z
207 m/z
CO
179 m/z
Rel. Int. (%)
m/z, amu
134
151
163
333
177
202
315
107
147
272

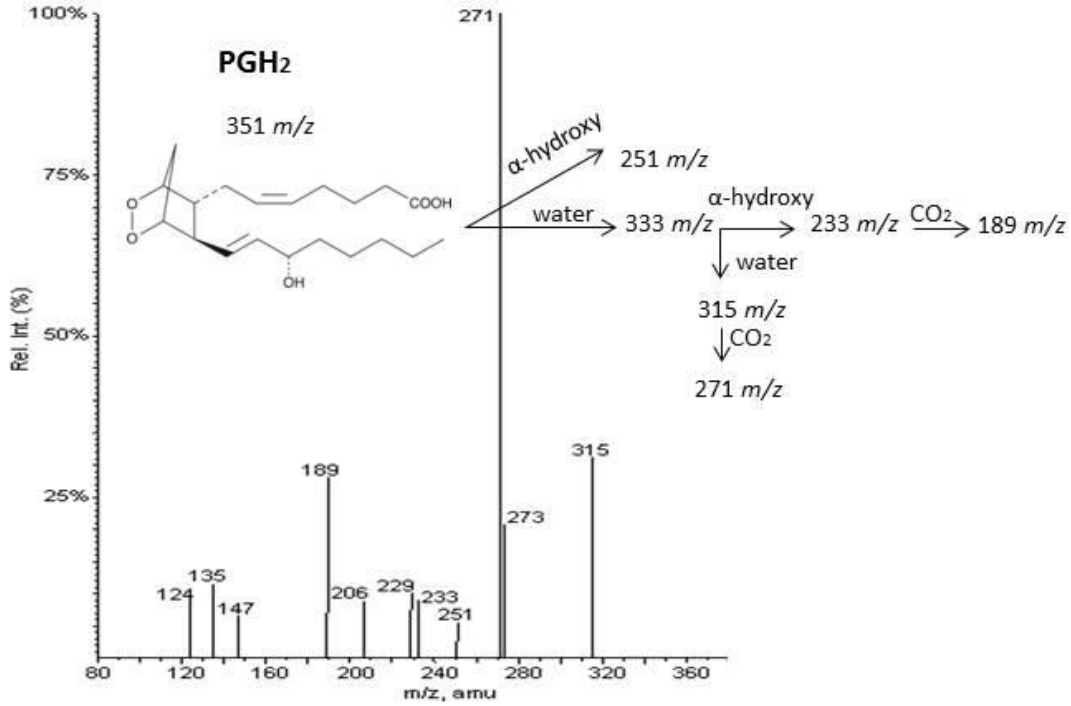

15-HpEPE
333 m/z
α-hydroxy cleavage
247 m/z
245 m/z
CO
217 m/z
CO2
271 m/z
water
315 m/z
water
297 m/z
163 m/z
137 m/z
111 m/z
C-C cleavages
diol
265 m/z
247 m/z
CO
219 m/z
Rel. Int. (%)
m/z, amu
111
265
163
275
137
333

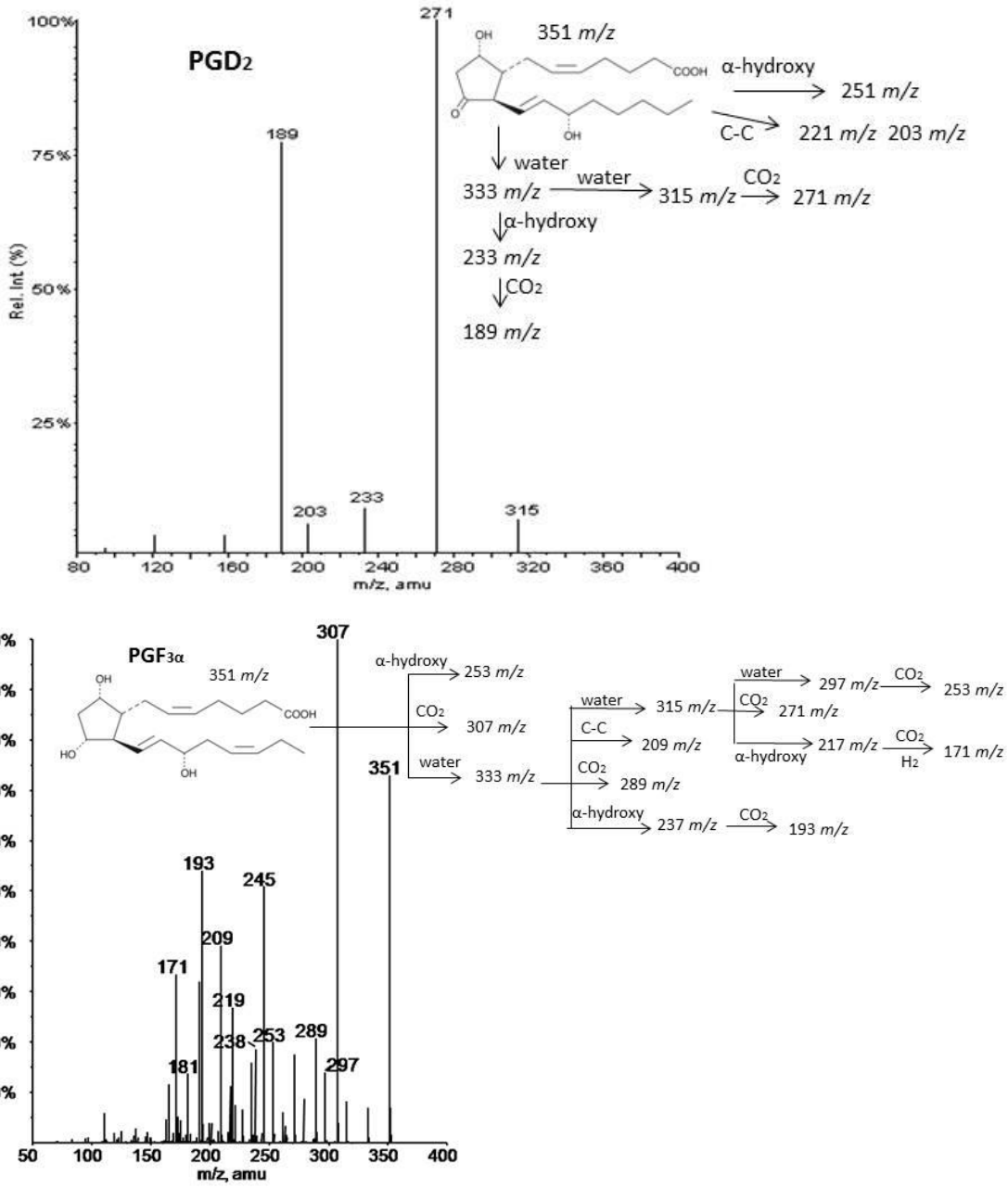
Supplementary Materials S3: Fragmentation pattern suggested for prostaglandins derived from ARA and EPA. Product ion spectrum at *m/z* 331, *m/z* 333, *m/z* 351, and *m/z* 367 were obtained from database of *LIPID MAPS* at CID 30V.

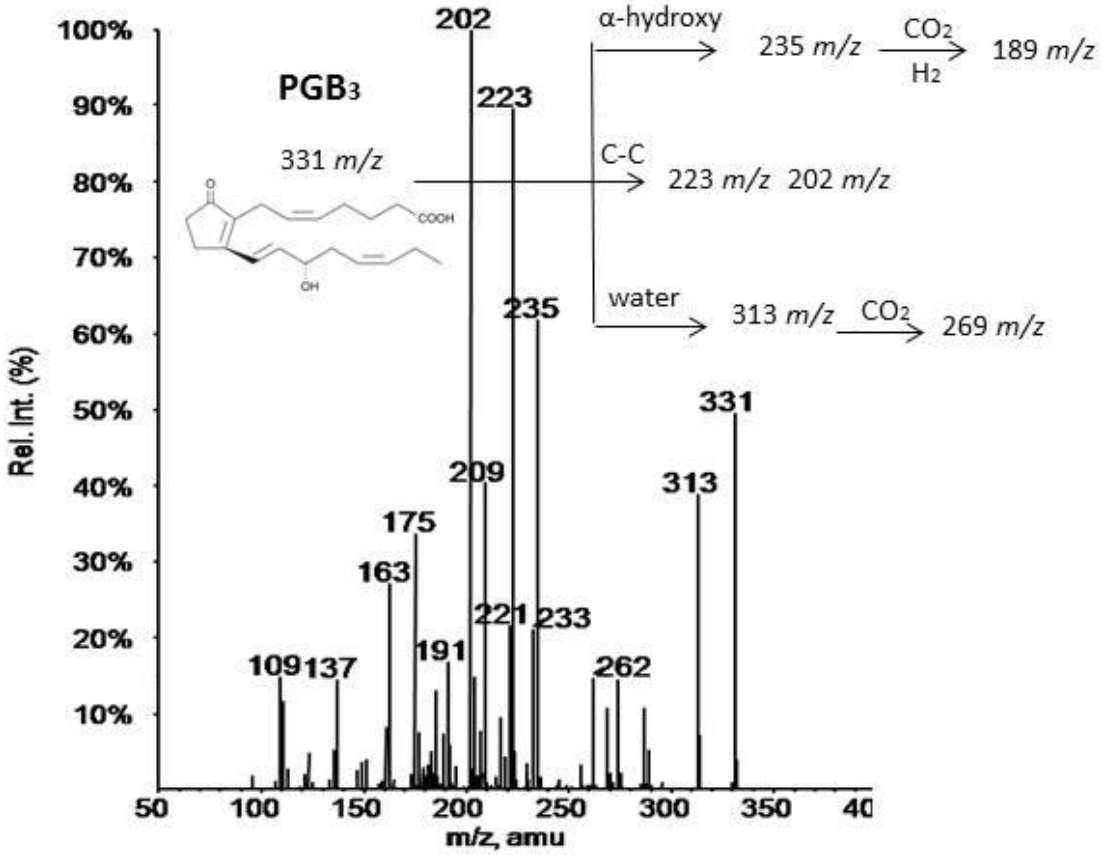


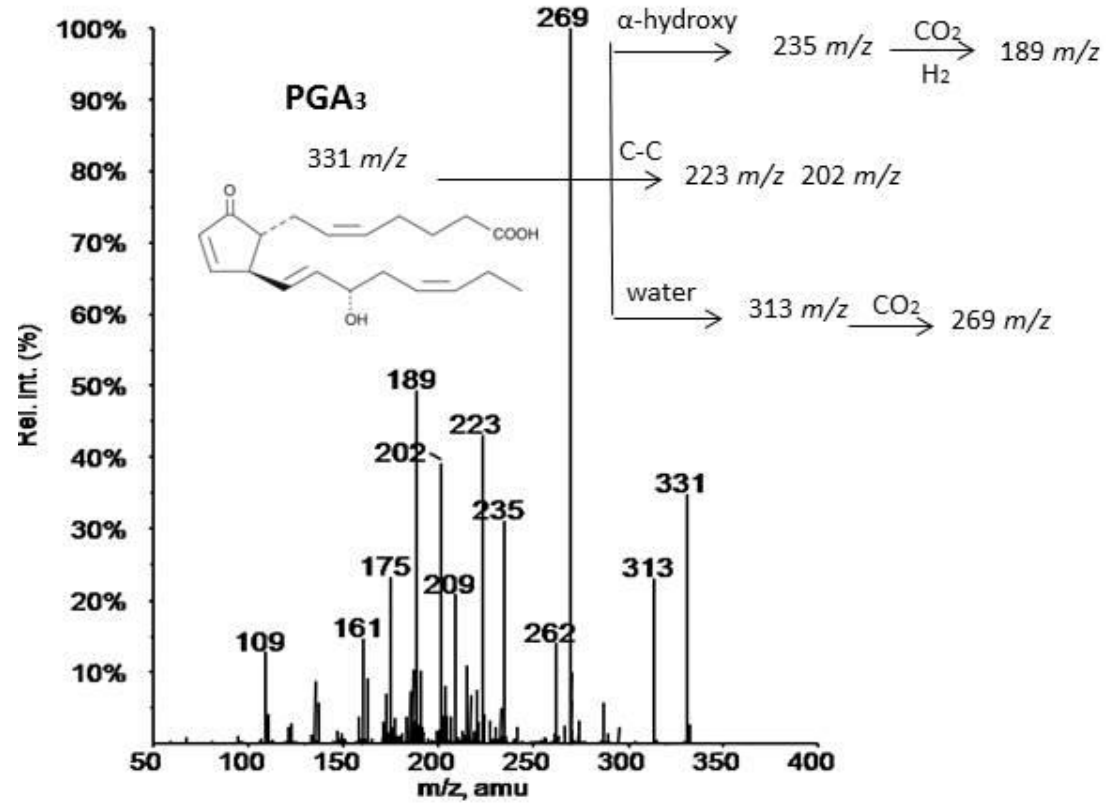



PGJ2
100%
75%
50%
25%
Rel. Int (%)
271
189
158
121
203
217
233
315
333
80
120
160
200
240
280
320
m/z, amu
333 m/z
COOH
OH
α-hydroxy
water
233 m/z
315 m/z
CO2
CO2
189 m/z
271 m/z

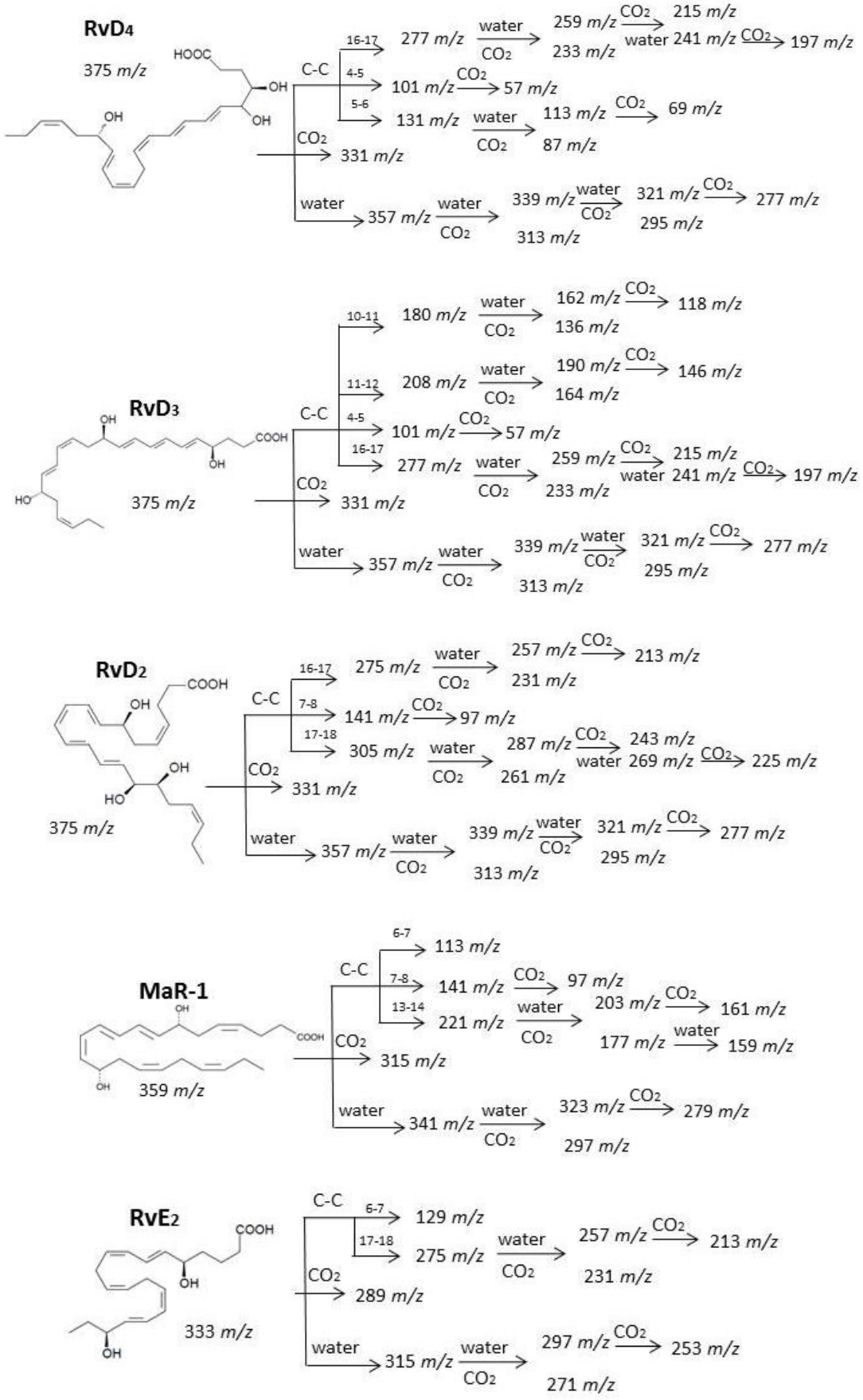

PGH2
100%
75%
50%
25%
Rel. Int (%)
271
351 m/z
COOH
OH
α-hydroxy
251 m/z
water
333 m/z
α-hydroxy
233 m/z
CO2
189 m/z
water
315 m/z
CO2
271 m/z
189
315
273
135
124
147
206
229
233
251
80
120
160
200
240
280
320
360
m/z, amu


PGD2
271
189
203
233
315
Rel. Int (%)
m/z, amu
351 m/z
α-hydroxy
251 m/z
C-C
221 m/z
203 m/z
water
333 m/z
water
315 m/z
CO2
271 m/z
α-hydroxy
233 m/z
CO2
189 m/z
PGF3α
307
351
193
245
209
171
219
238
253
289
297
181
α-hydroxy
253 m/z
CO2
307 m/z
water
333 m/z
water
315 m/z
C-C
209 m/z
CO2
289 m/z
α-hydroxy
237 m/z
CO2
193 m/z
water
297 m/z
CO2
253 m/z
CO2
271 m/z
α-hydroxy
217 m/z
CO2
H2
171 m/z

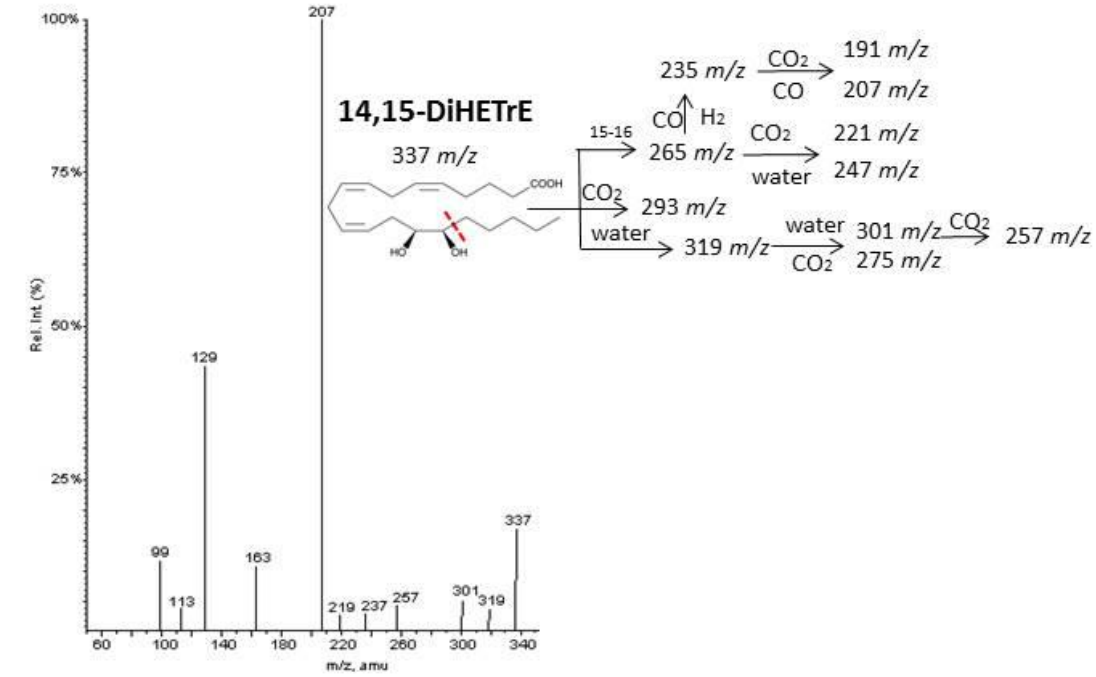

PGB3
331 m/z
α-hydroxy
235 m/z
CO2
H2
189 m/z
C-C
223 m/z 202 m/z
water
313 m/z
CO2
269 m/z
Rel. Int. (%)
m/z, amu

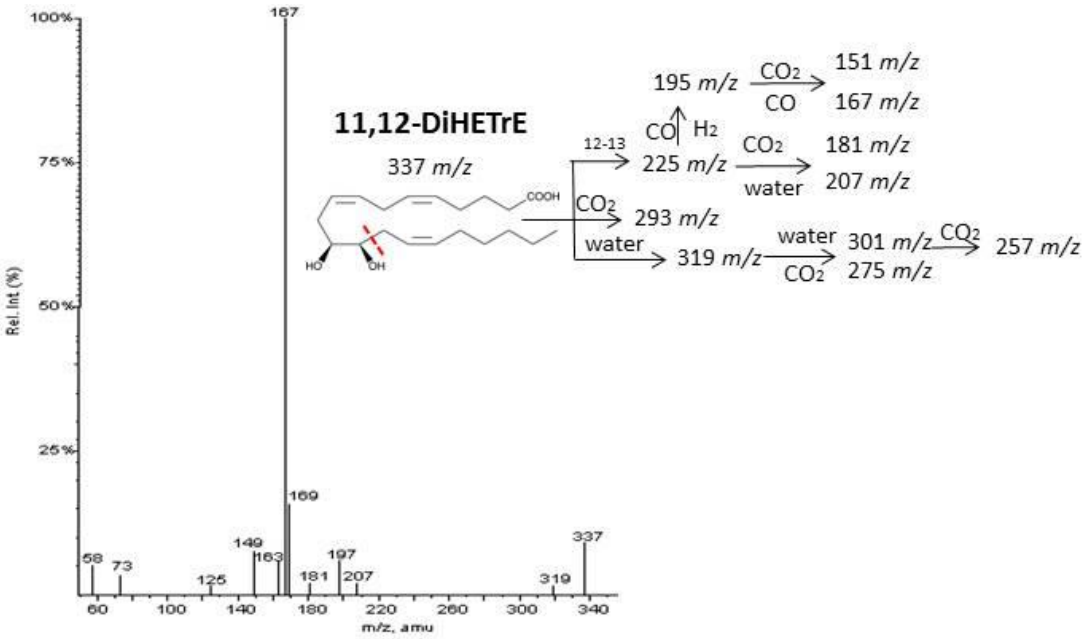

PGA3
331 m/z
α-hydroxy
235 m/z
CO2
H2
189 m/z
C-C
223 m/z 202 m/z
water
313 m/z
CO2
269 m/z
Rel. Int. (%)
m/z, amu

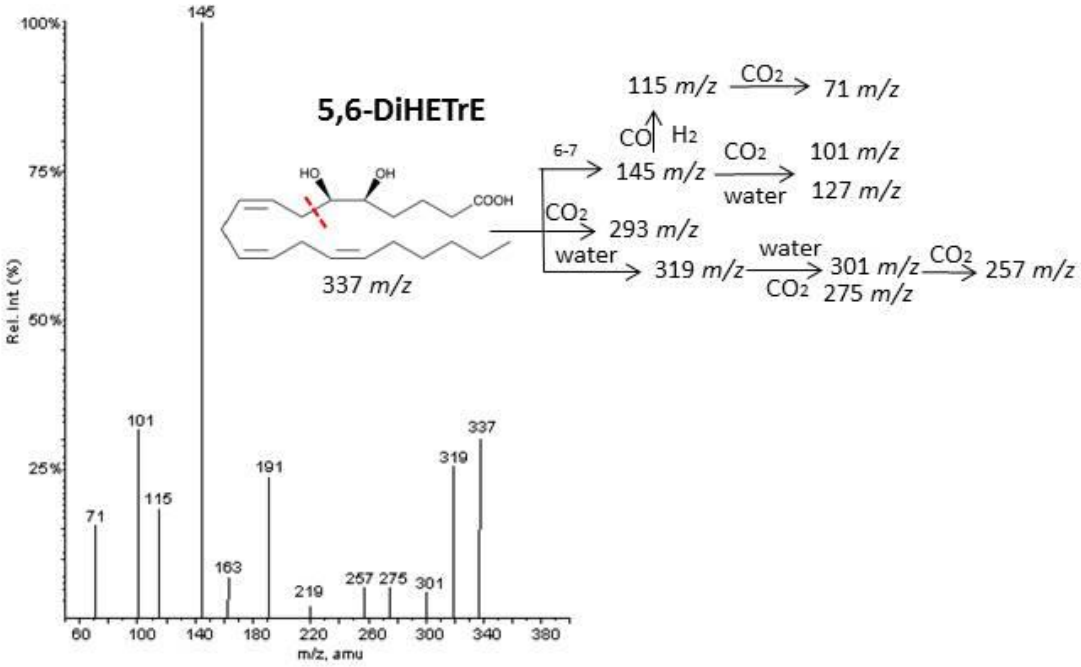
Supplementary Materials S4: Possible fragments for identification of RvD_2, RvD_3, RvD_4, RvE_2, and MaR-1.

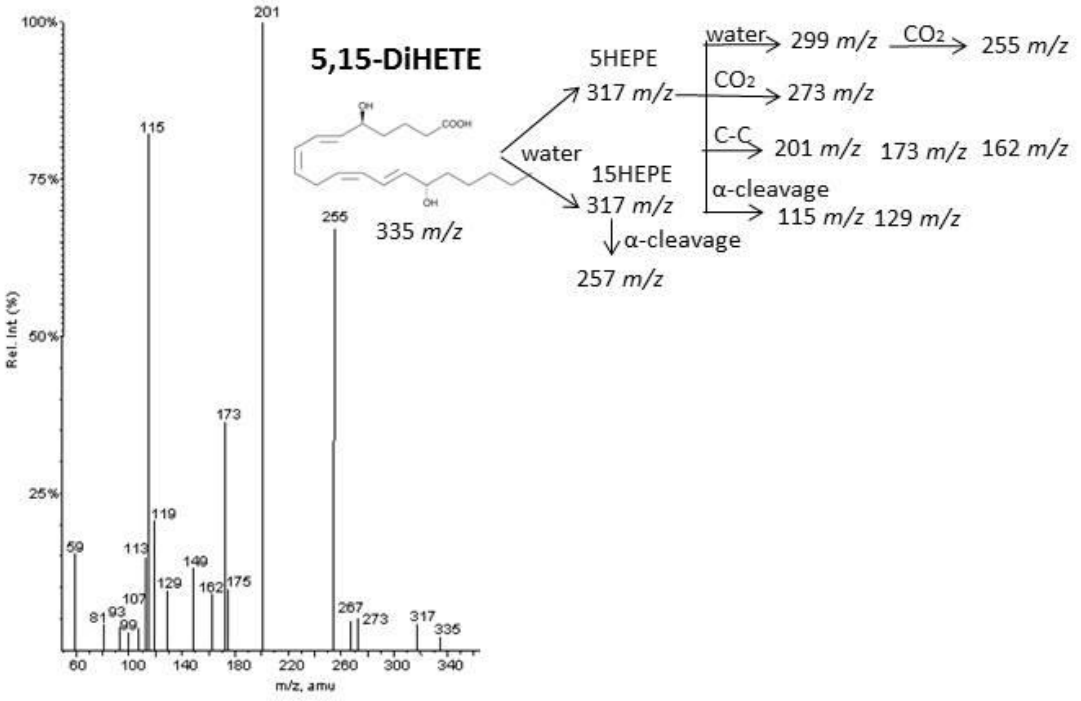


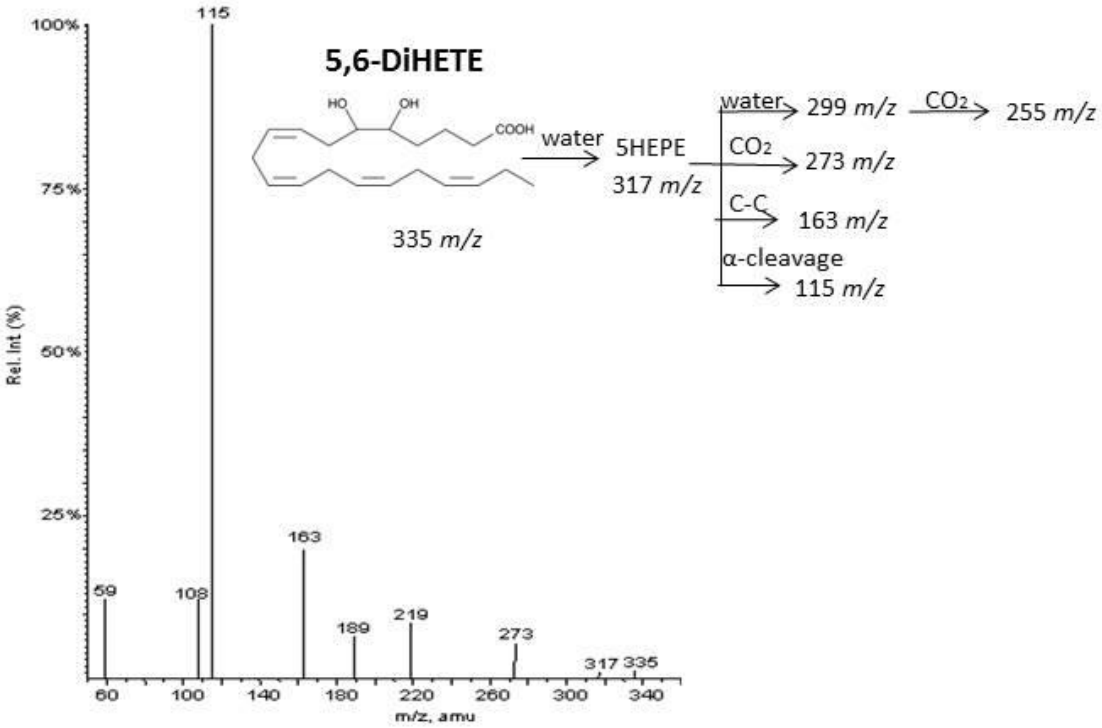
Supplementary Materials S5: Fragmentation pattern suggested for LxB_4 (product ion spectrum at *m/z* 351 [33]), and several DiHETEs and DiHETrEs (product ion spectrum at *m/z* 335 and *m/z* 337 obtained from *LIPID MAPS* at CID 30V). MS/MS spectrum was not found for LxA_5, 8,15-DiHETE, 14,15-DiHETE, and 17,18-DiHETE; thus, possible fragments for identification were suggested based on lipid structure.

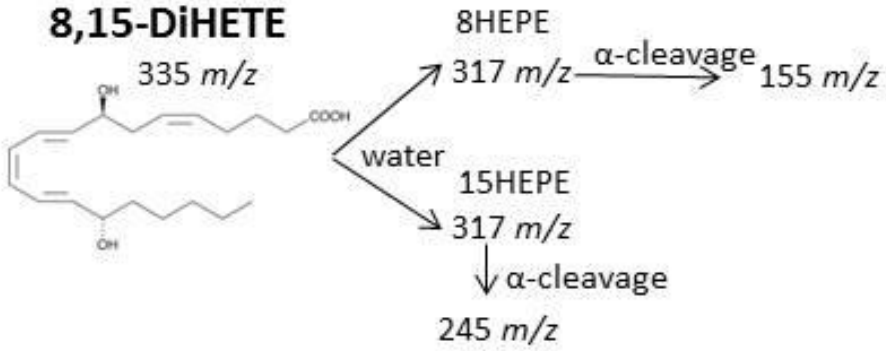


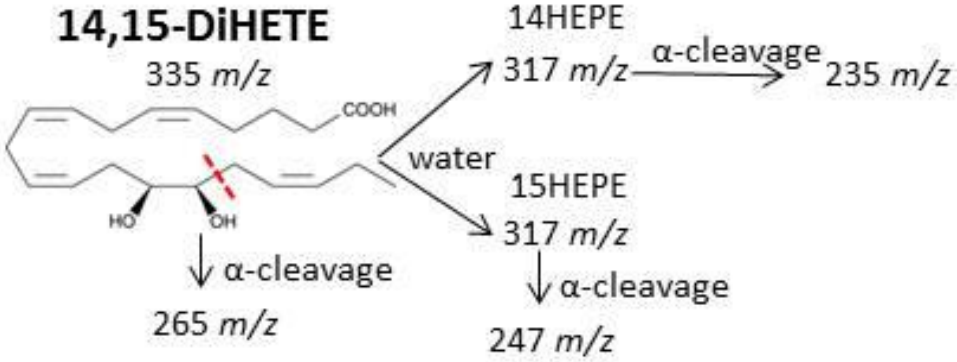


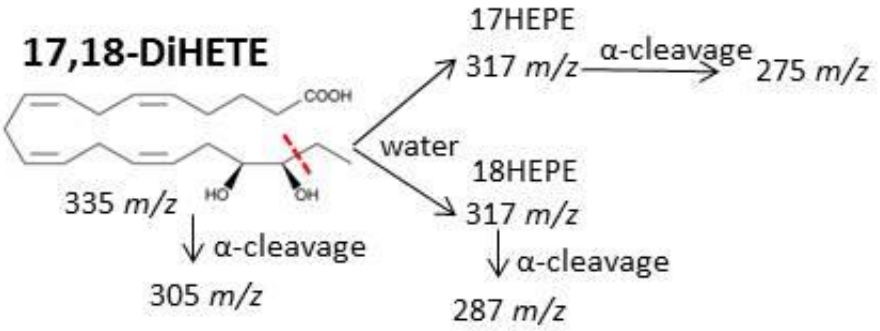

5,6-DiHETrE
337 m/z
115 m/z
CO2
71 m/z
CO
H2
6-7
145 m/z
CO2
101 m/z
water
127 m/z
CO2
293 m/z
water
319 m/z
water
CO2
301 m/z
275 m/z
CO2
257 m/z
Rel. Int (%)
m/z, amu

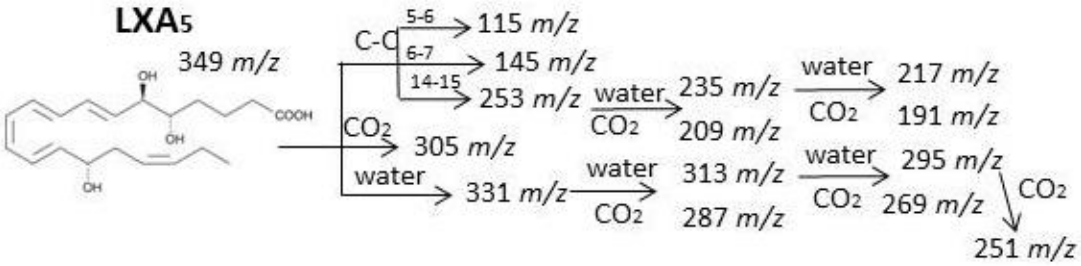

5,15-DiHETE
335 m/z
5HEPE
317 m/z
water
299 m/z
CO2
255 m/z
CO2
273 m/z
C-C
201 m/z
173 m/z
162 m/z
water
15HEPE
317 m/z
α-cleavage
115 m/z
129 m/z
α-cleavage
257 m/z
Rel. Int (%)
m/z, amu

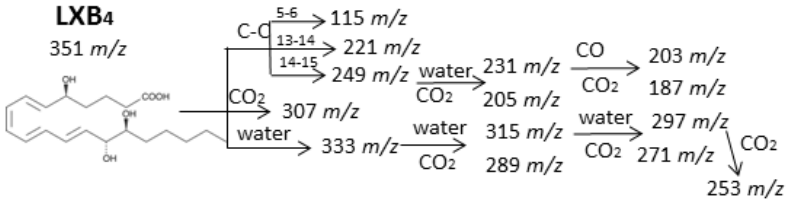

5,6-DiHETE
335 m/z
water
5HEPE
317 m/z
water
299 m/z
CO2
255 m/z
CO2
273 m/z
C-C
163 m/z
α-cleavage
115 m/z
Rel. Int (%)
m/z, amu


8,15-DiHETE
335 m/z
8HEPE
317 m/z
α-cleavage
155 m/z
water
15HEPE
317 m/z
α-cleavage
245 m/z

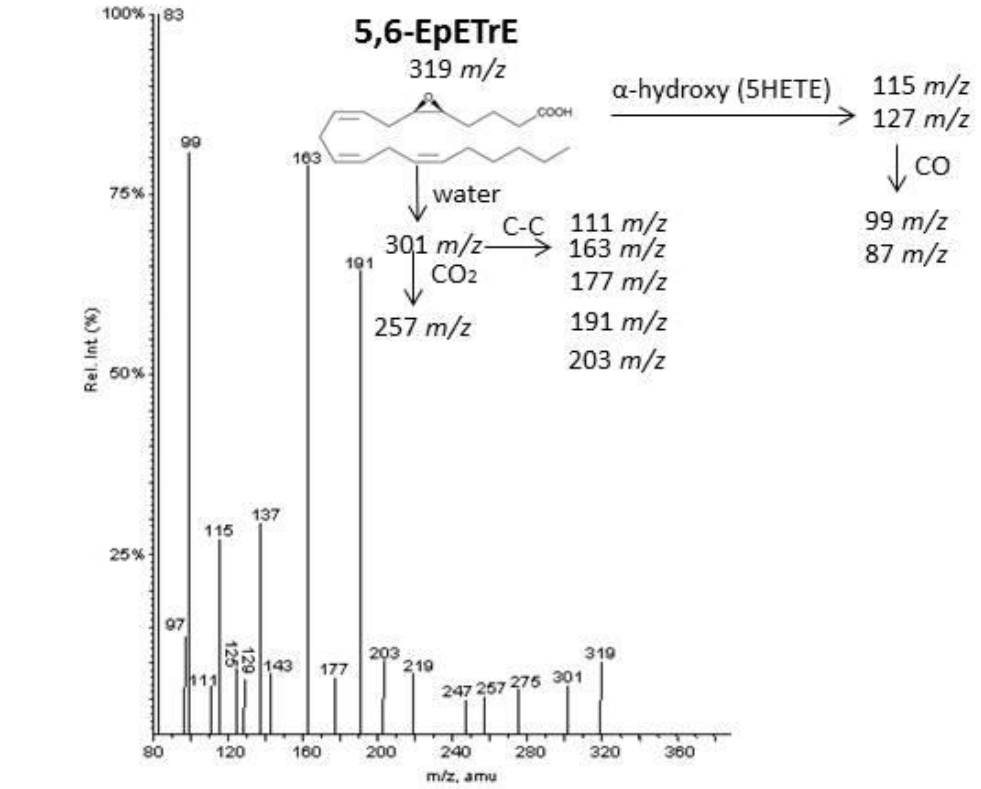

14,15-DiHETE
335 m/z
14HEPE
317 m/z
α-cleavage
235 m/z
water
15HEPE
317 m/z
α-cleavage
265 m/z
α-cleavage
247 m/z

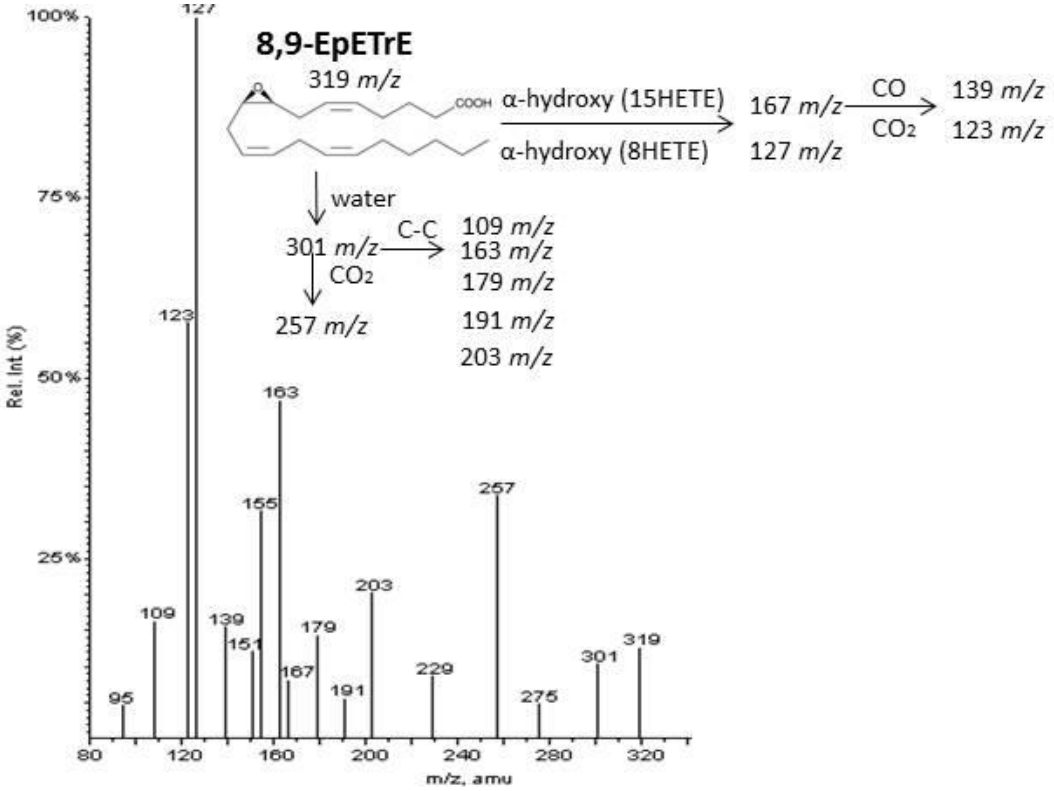

17,18-DiHETE
COOH
HO
OH
335 m/z
α-cleavage
305 m/z
water
17HEPE
317 m/z
α-cleavage
275 m/z
18HEPE
317 m/z
α-cleavage
287 m/z

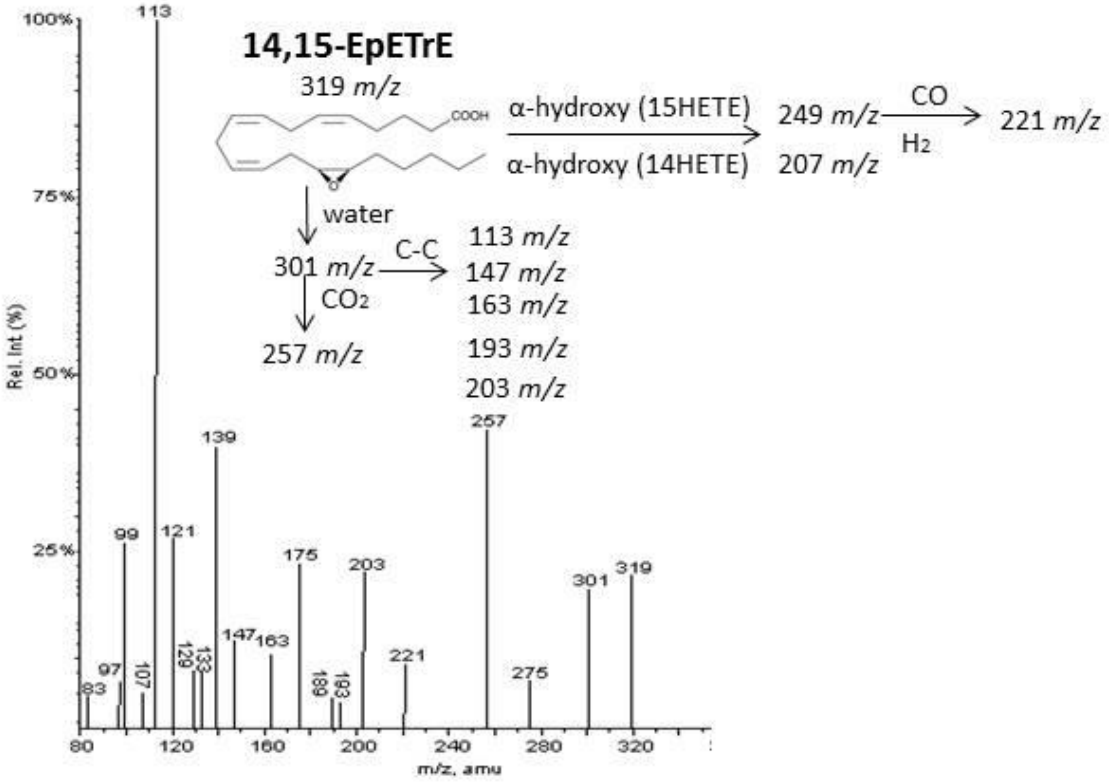

LXA5
349 m/z
OH
COOH
OH
OH
C-C
5-6
115 m/z
6-7
145 m/z
14-15
253 m/z
CO2
305 m/z
water
331 m/z
water
CO2
235 m/z
209 m/z
water
CO2
313 m/z
287 m/z
water
CO2
217 m/z
191 m/z
water
CO2
295 m/z
269 m/z
CO2
251 m/z

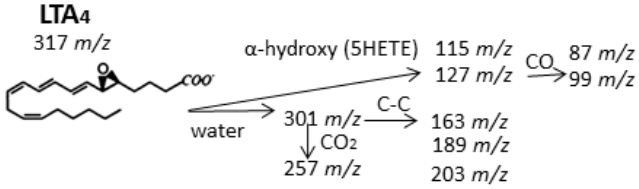

LXB4
351 m/z
OH
COOH
OH
OH
C-C
5-6
115 m/z
13-14
221 m/z
14-15
249 m/z
CO2
307 m/z
water
333 m/z
water
CO2
231 m/z
205 m/z
water
CO2
315 m/z
289 m/z
CO
CO2
203 m/z
187 m/z
water
CO2
297 m/z
271 m/z
CO2
253 m/z

Supplementary Materials S6: Fragmentation pattern suggested for EpETrE isomers and LTA_4. Product ion spectrum at *m/z* 319 were obtained from database of *LIPID MAPS* at CID 30V, and *m/z* 317 was obtained from Murphy et al [33].

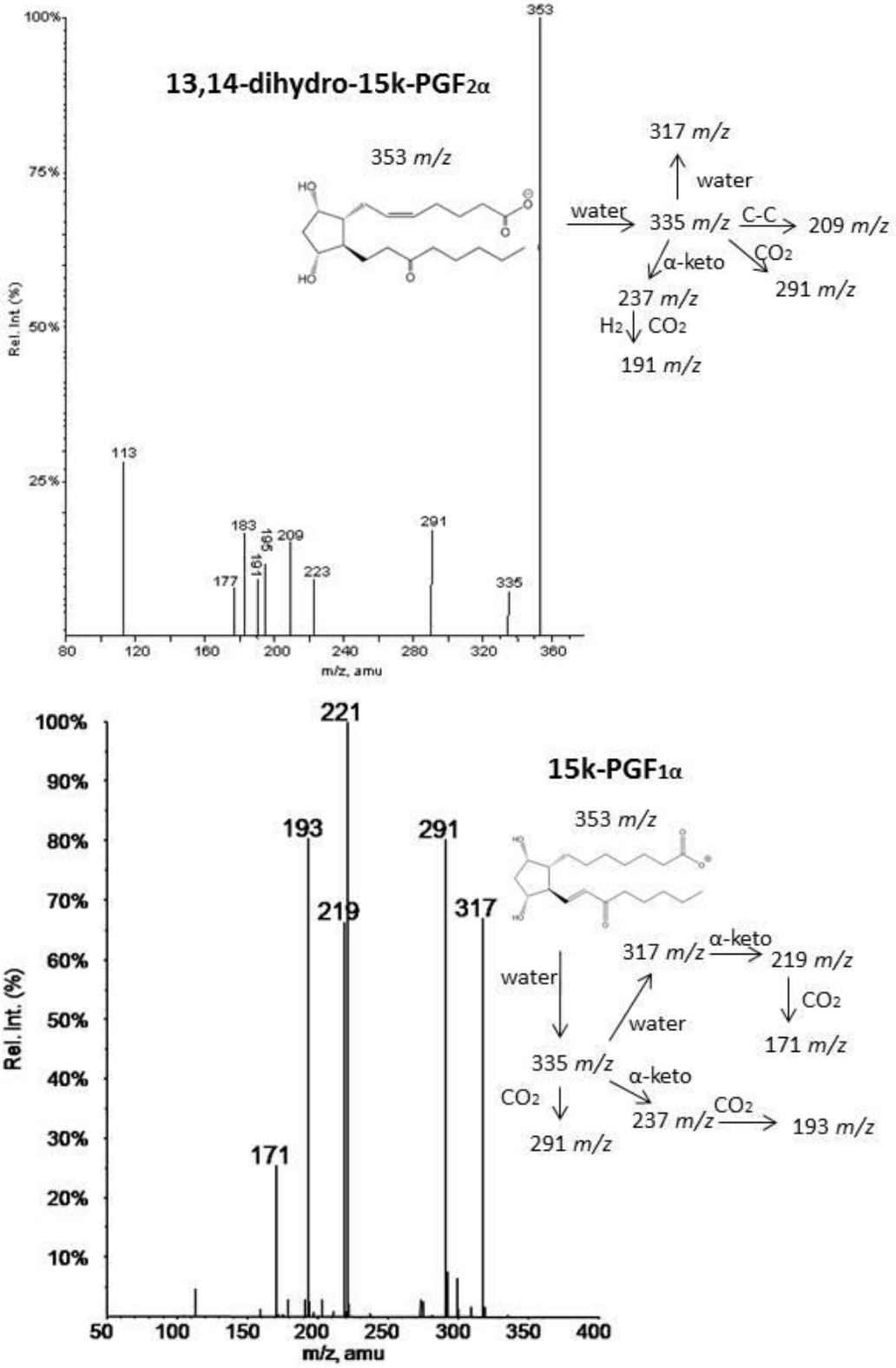


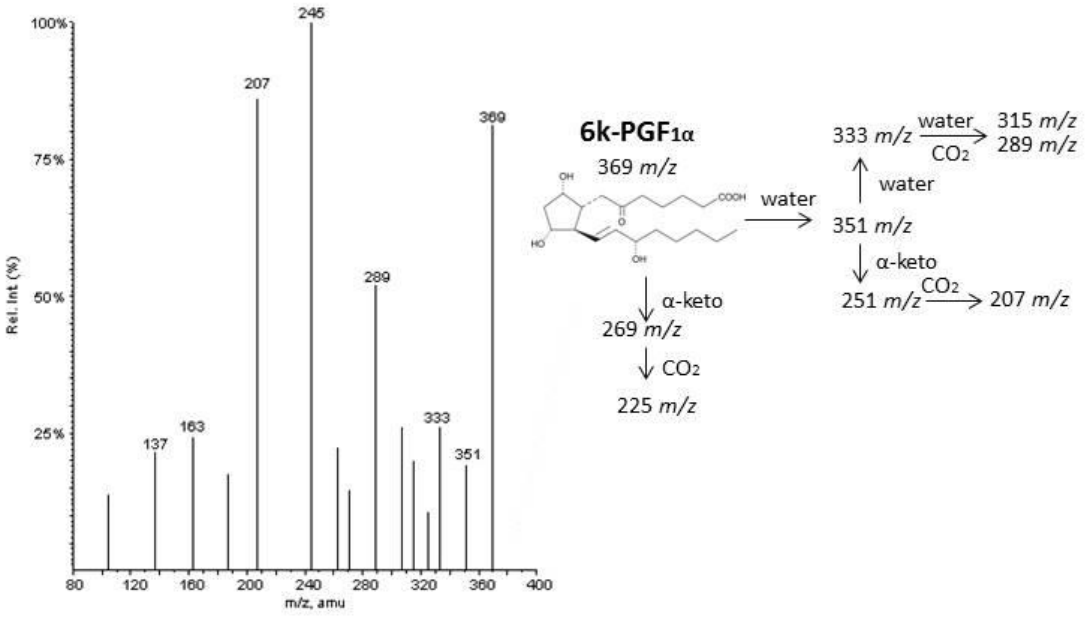


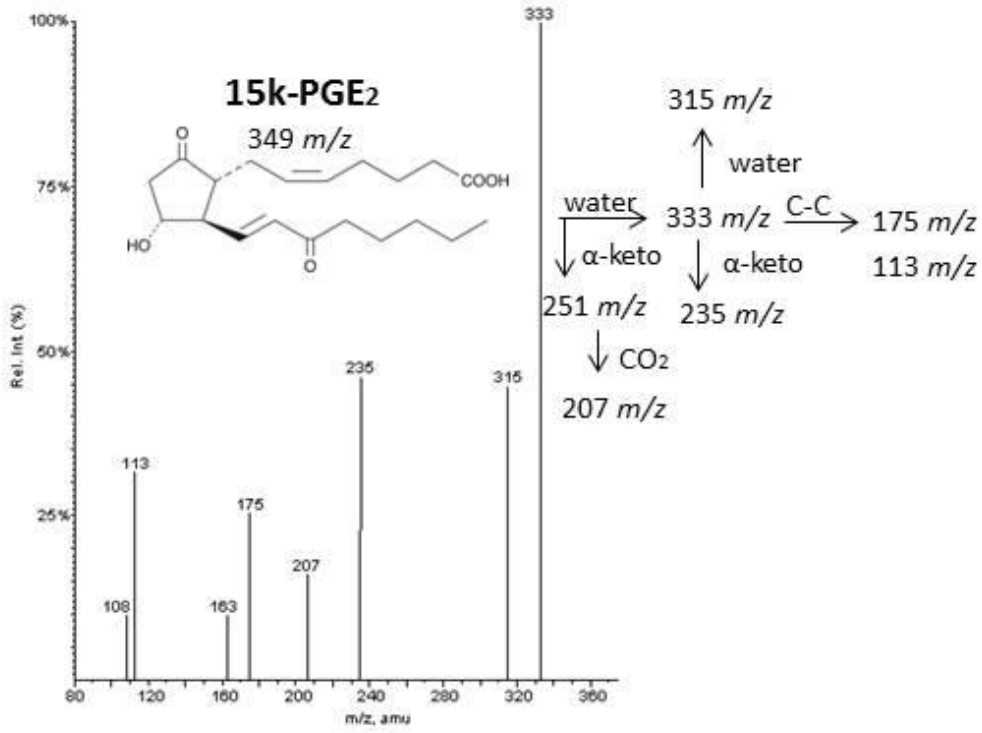

14,15-EpETrE
319 m/z
COOH
α-hydroxy (15HETE)
249 m/z
CO
H2
221 m/z
α-hydroxy (14HETE)
207 m/z
water
301 m/z
C-C
CO2
257 m/z
113 m/z
147 m/z
163 m/z
193 m/z
203 m/z
Rel. Int (%)
100%
75%
50%
25%
m/z, amu
80
120
160
200
240
280
320
113
99
121
139
175
203
257
301
319
147
163
221
275
97
107
129
133
83
188
193

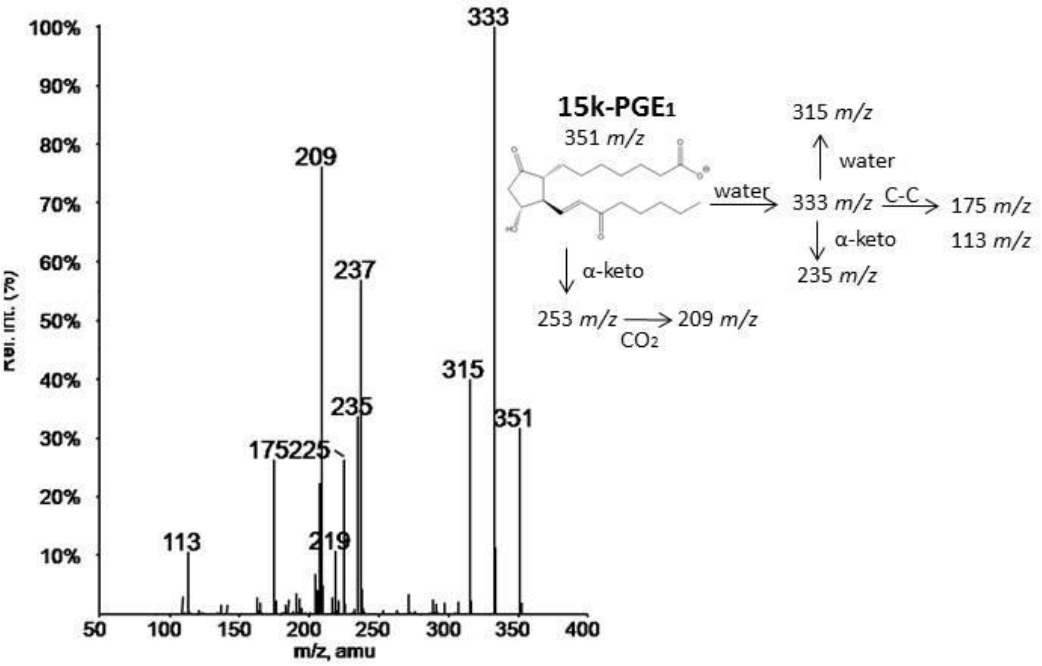

LTA4
317 m/z
α-hydroxy (5HETE)
115 m/z
127 m/z
CO
87 m/z
99 m/z
water
301 m/z
C-C
CO2
257 m/z
163 m/z
189 m/z
203 m/z

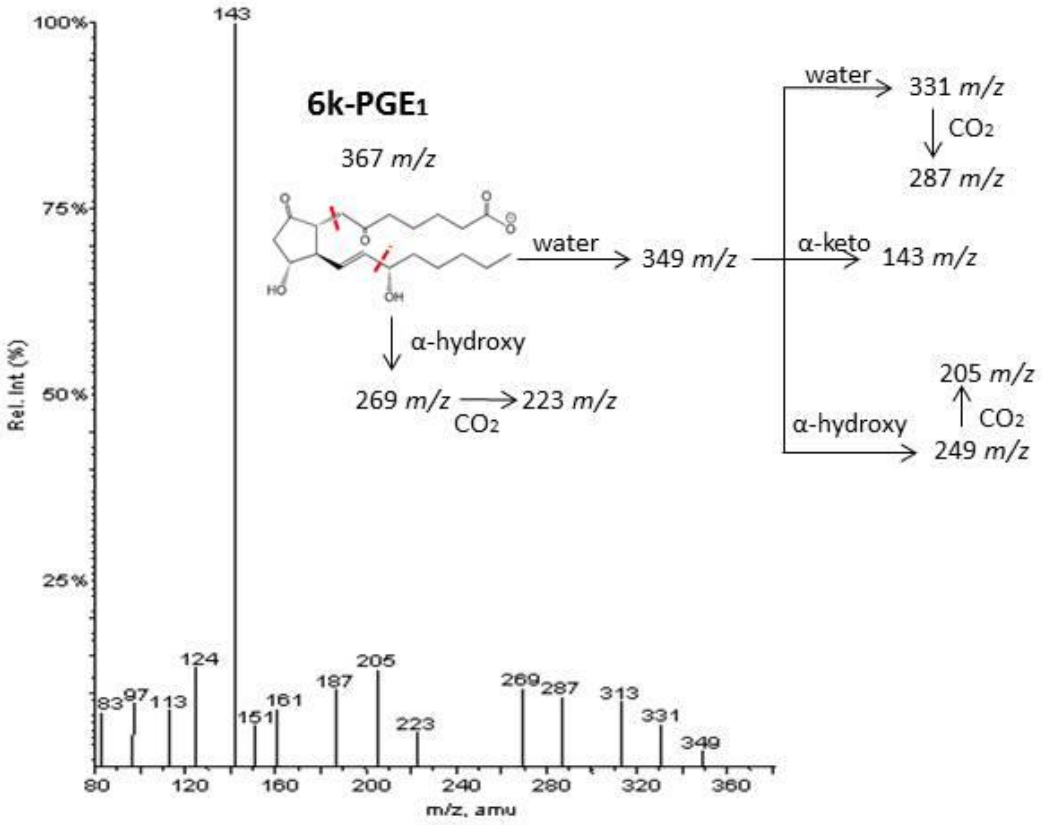
Supplementary Materials S7: Fragmentation pattern suggested for several keto-PGs. Product ion spectrum at *m/z* 349, *m/z* 351, *m/z* 353, *m/z* 367, and *m/z* 369 were obtained from database of *LIPID MAPS* at CID 30V.

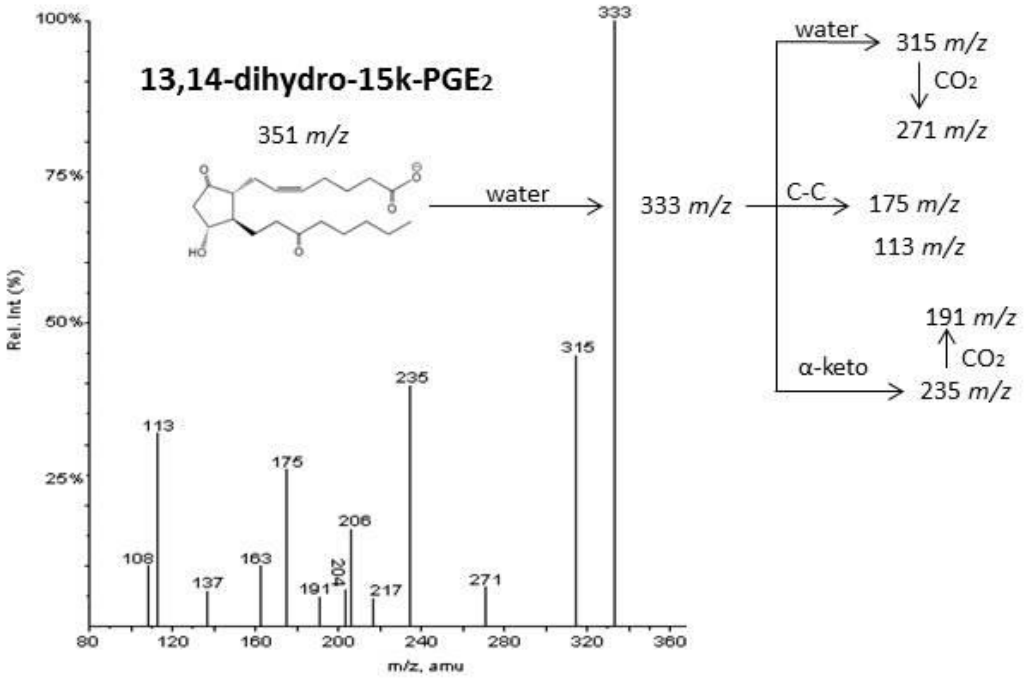



100%
75%
50%
25%
Rel. Int (%)
245
207
369
289
163
137
333
351
80
120
160
200
240
280
320
360
400
m/z, amu
6k-PGF1α
369 m/z
water
333 m/z
water
CO2
315 m/z
289 m/z
water
351 m/z
α-keto
251 m/z
CO2
207 m/z
α-keto
269 m/z
CO2
225 m/z


100%
75%
50%
25%
Rel. Int (%)
333
315
235
113
175
207
108
163
80
120
160
200
240
280
320
360
m/z, amu
15k-PGE2
349 m/z
COOH
HO
O
315 m/z
water
water
333 m/z
C-C
175 m/z
113 m/z
α-keto
α-keto
251 m/z
235 m/z
CO2
207 m/z


15k-PGE1
351 m/z
315 m/z
water
333 m/z
C-C
175 m/z
113 m/z
α-keto
235 m/z
253 m/z
209 m/z
CO2
Rel. Int. (%)
m/z, amu


6k-PGE1
367 m/z
water
349 m/z
α-keto
143 m/z
α-hydroxy
269 m/z
223 m/z
CO2
331 m/z
287 m/z
205 m/z
249 m/z
Rel. Int (%)
m/z, amu


13,14-dihydro-15k-PGE2
351 m/z
water
333 m/z
C-C
175 m/z
113 m/z
water
315 m/z
CO2
271 m/z
α-keto
191 m/z
CO2
235 m/z
Rel. Int (%)
m/z, amu
100%
75%
50%
25%
80
120
160
200
240
280
320
360
333
315
235
113
175
206
108
163
204
137
191
217
271

Supplementary Materials S8: Fragmentation pattern suggested for TXB_2 and TXA_2. The product ion spectrum at and *m/z* 369 was obtained from *LIPID MAPS* at CID 30V. Characteristic MS/MS transitions were suggested for TXA_2 based on lipid structure.