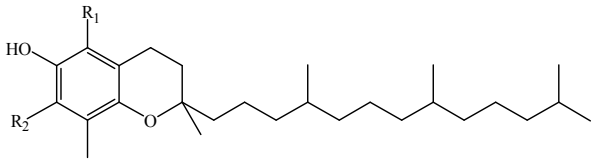
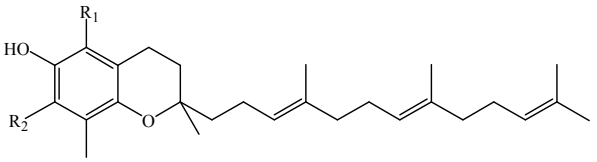
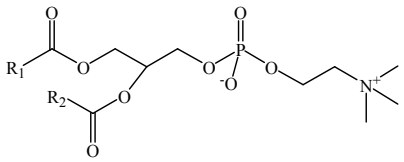
ChemDraw files as follows:



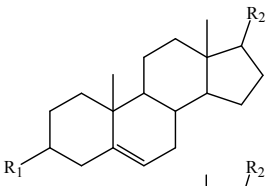
	R_1	R_2
α-T	CH_3	CH_3
β-T	CH_3	H
γ-T	H	CH_3
δ-T	H	H



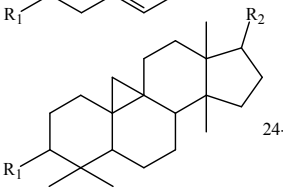
	R_1	R_2
α-T_3	CH_3	CH_3
β-T_3	CH_3	H
γ-T_3	H	CH_3
δ-T_3	H	H



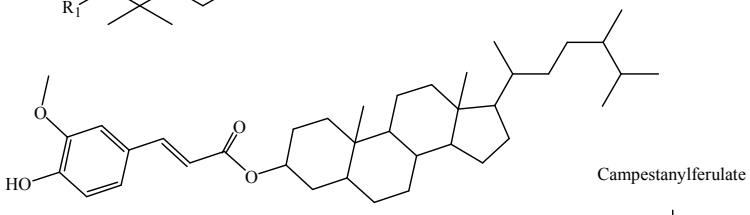
	R_1	R_2
PC(36:5)	$C_{15}H_{31}$	$C_{19}H_{29}$
PC(36:4)	$C_{15}H_{31}$	$C_{19}H_{31}$
PC(34:2)	$C_{15}H_{31}$	$C_{17}H_{31}$
PC(36:3)	$C_{15}H_{31}$	$C_{19}H_{33}$
PC(36:2)	$C_{17}H_{35}$	$C_{17}H_{31}$
PC(34:1)	$C_{15}H_{31}$	$C_{17}H_{33}$



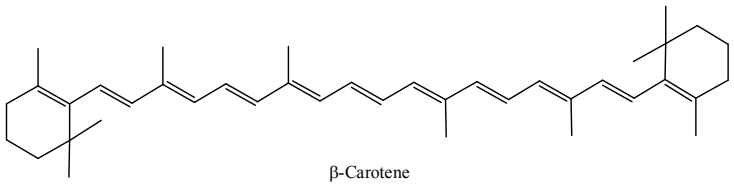
	R_1	R_2
Campesterylferulate	$C_{10}H_9O_4$	C_9H_{19}
β-Sitosterylferulate	$C_{10}H_9O_4$	$C_{10}H_{21}$



	R_1	R_2
Cycloartenylferulate	$C_{10}H_9O_4$	C_8H_{15}
Cycloartanylferulate	$C_{10}H_9O_4$	C_8H_{17}
24-Methylencycloartanylferulate	$C_{10}H_9O_4$	C_9H_{17}

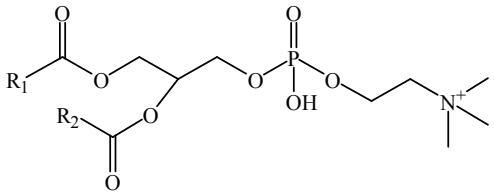


Campestanylferulate

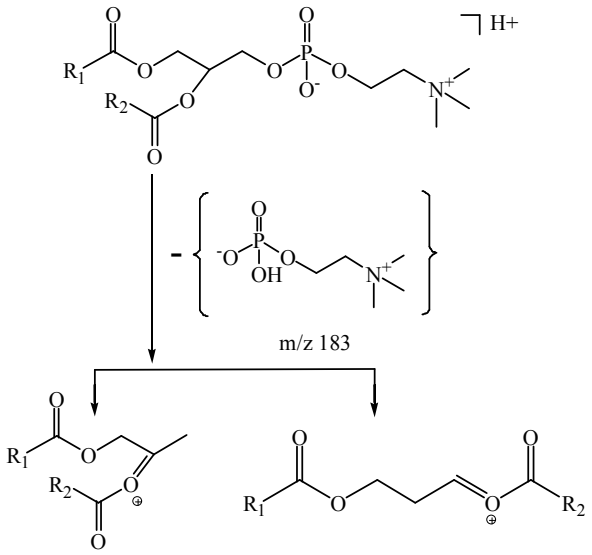


β-Carotene

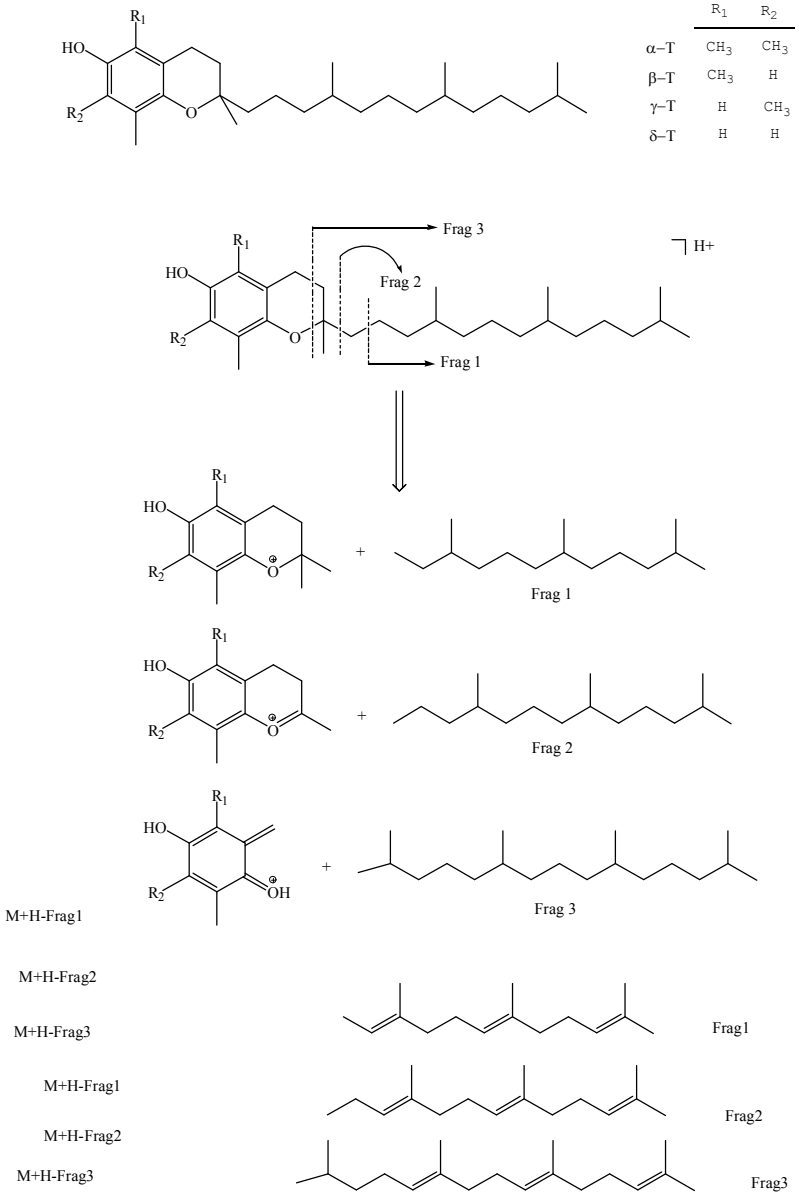
21 nutritional compositions



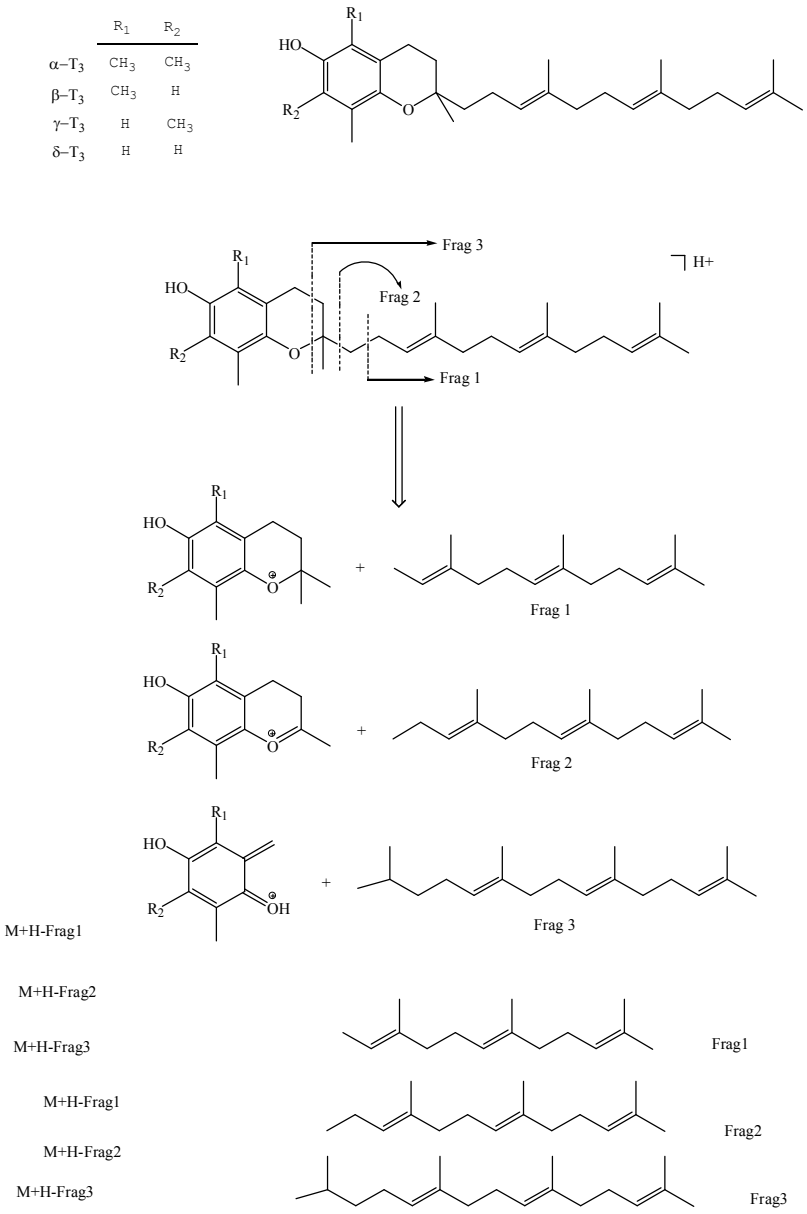
	R_1	R_2
PC(36:5)	$C_{15}H_{31}$	$C_{19}H_{29}$
PC(36:4)	$C_{15}H_{31}$	$C_{19}H_{31}$
PC(34:2)	$C_{15}H_{31}$	$C_{17}H_{31}$
PC(36:3)	$C_{15}H_{31}$	$C_{19}H_{33}$
PC(36:2)	$C_{17}H_{35}$	$C_{17}H_{31}$
PC(34:1)	$C_{15}H_{31}$	$C_{17}H_{33}$



The fragmentation patterns of phospholipids

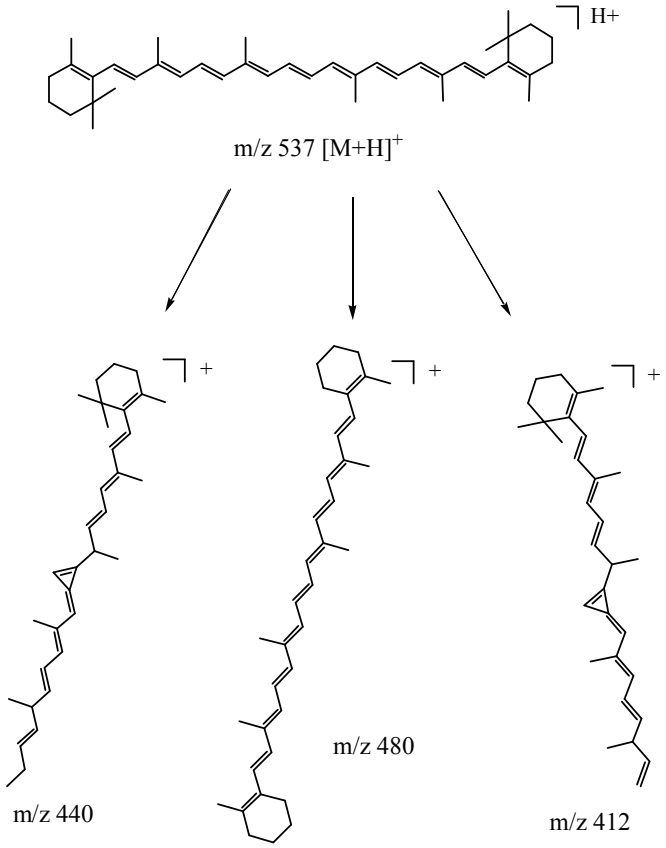


The fragmentation patterns of tocopherols

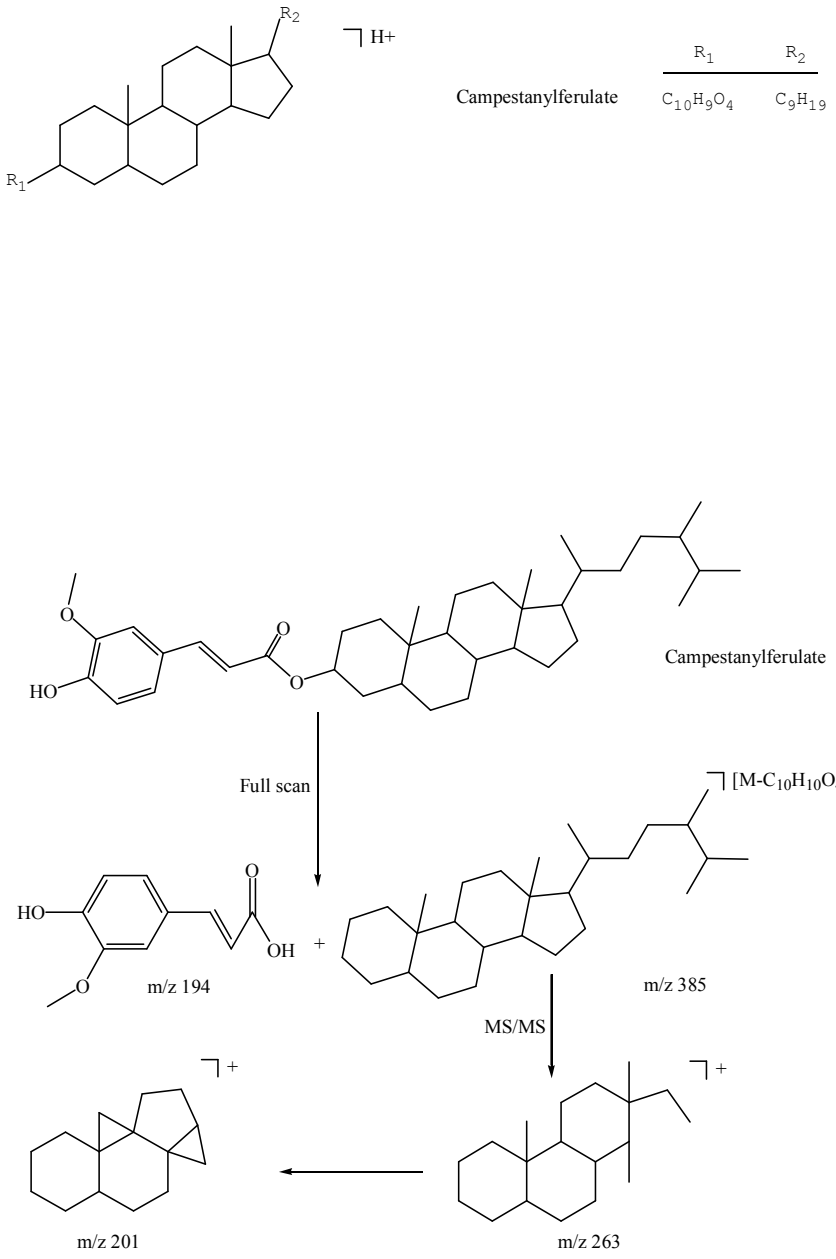


The fragmentation patterns of tocotrienols

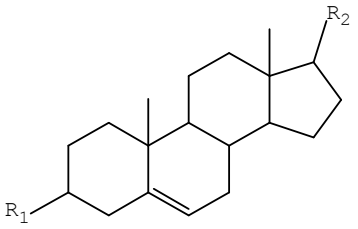
β-Carotene



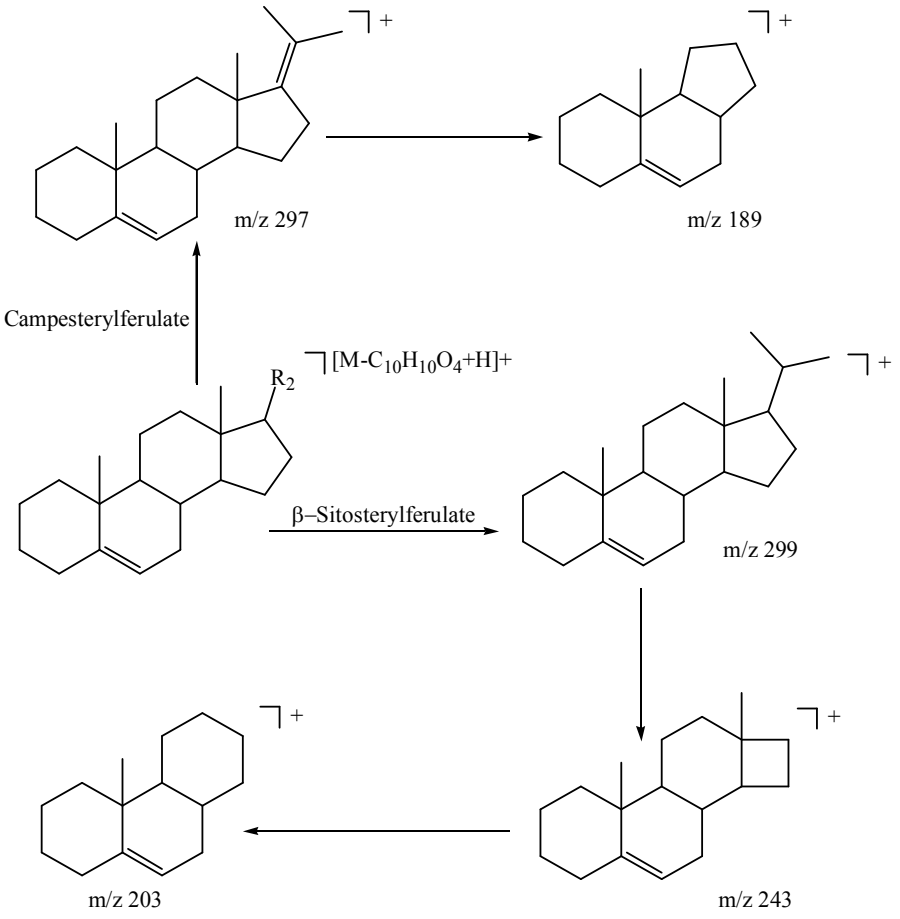
The fragmentation patterns of β-carotene



The fragmentation patterns of γ-oryzanol (1)

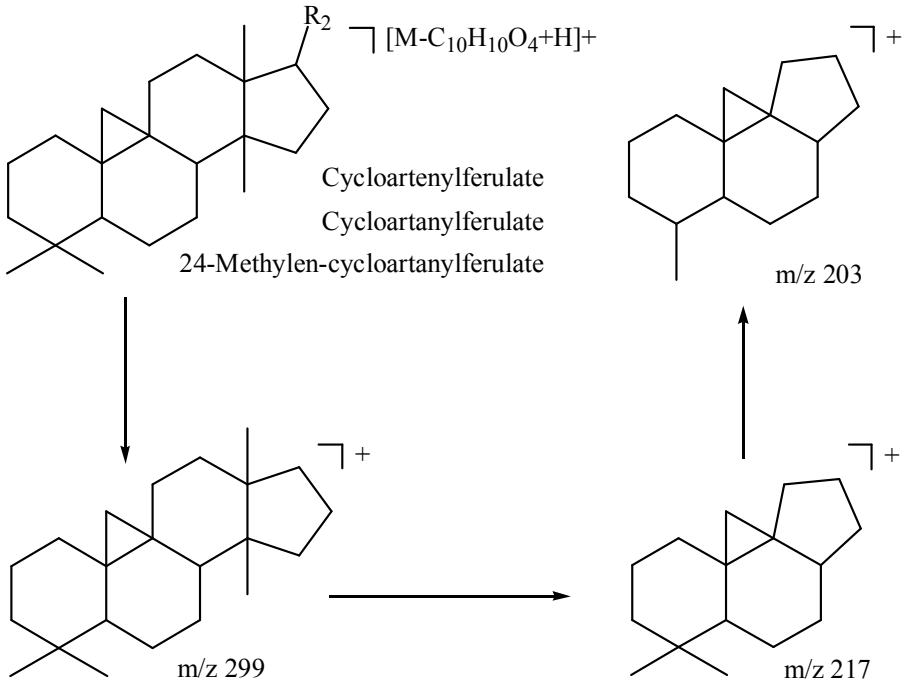


	R_1	R_2
Campesterylferulate	$C_{10}H_9O_4$	C_9H_{19}
β–Sitosterylferulate	$C_{10}H_9O_4$	$C_{10}H_{21}$



The fragmentation patterns of γ-oryzanols (2)

R_1	R_2
$C_{10}H_9O_4$	C_8H_{15}
$C_{10}H_9O_4$	C_8H_{17}
$C_{10}H_9O_4$	C_9H_{17}



The fragmentation patterns of γ-oryzanols (3)

The source files of ChemDraw as follows:

21 nutritional compositions.cdx

The fragmentation patterns of phospholipids.cdx

The fragmentation patterns of tocopherols.cdx

The fragmentation patterns of tocotrienols.cdx

The fragmentation patterns of β-carotene.cdx

The fragmentation patterns of γ-oryzanol(1).cdx

The fragmentation patterns of γ-oryzanols(2).cdx

The fragmentation patterns of γ-oryzanols(3).cdx

Figures A.1-A.3 as follows:

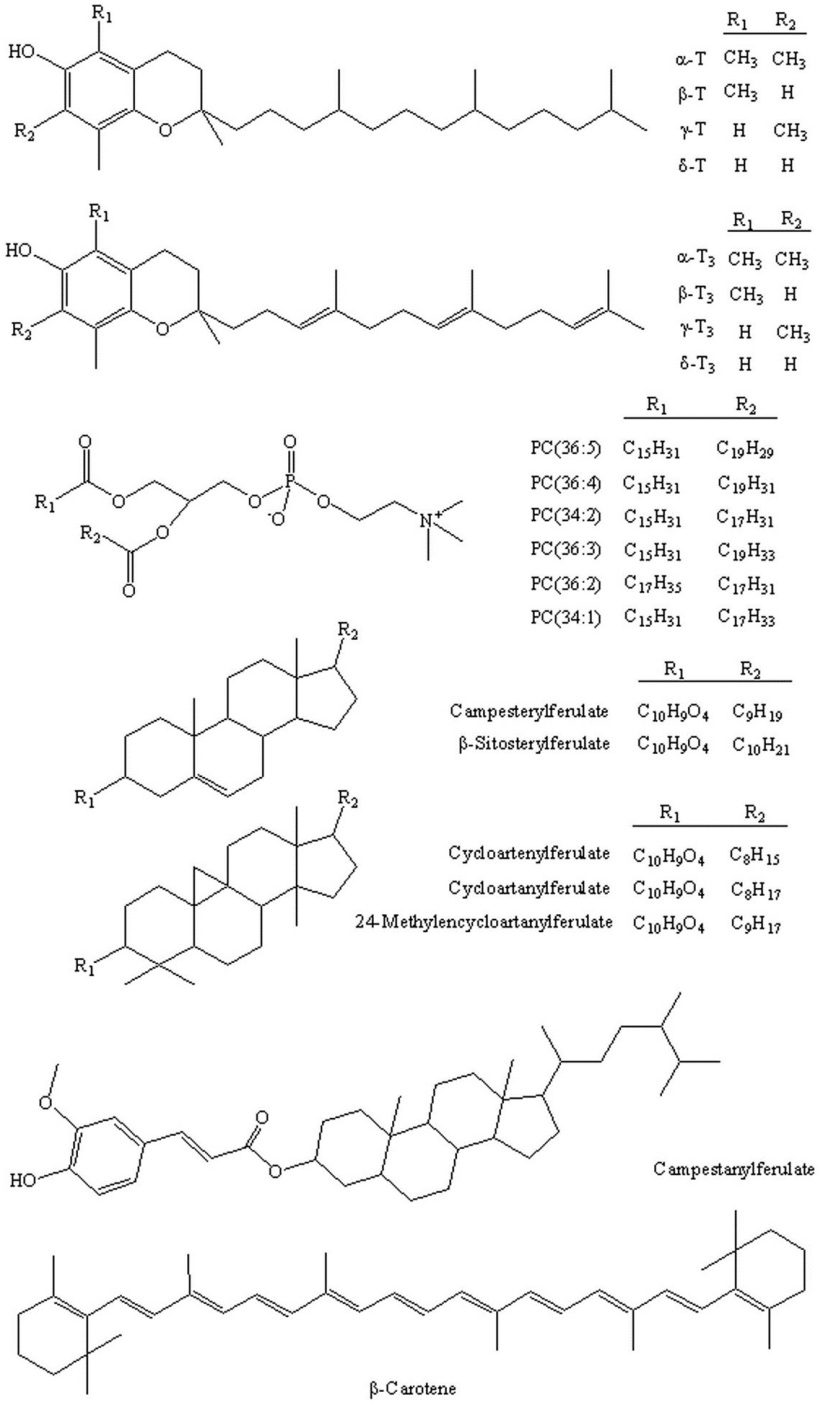


Figure A.1. The basic chemical structures of 21 nutrients in rice.

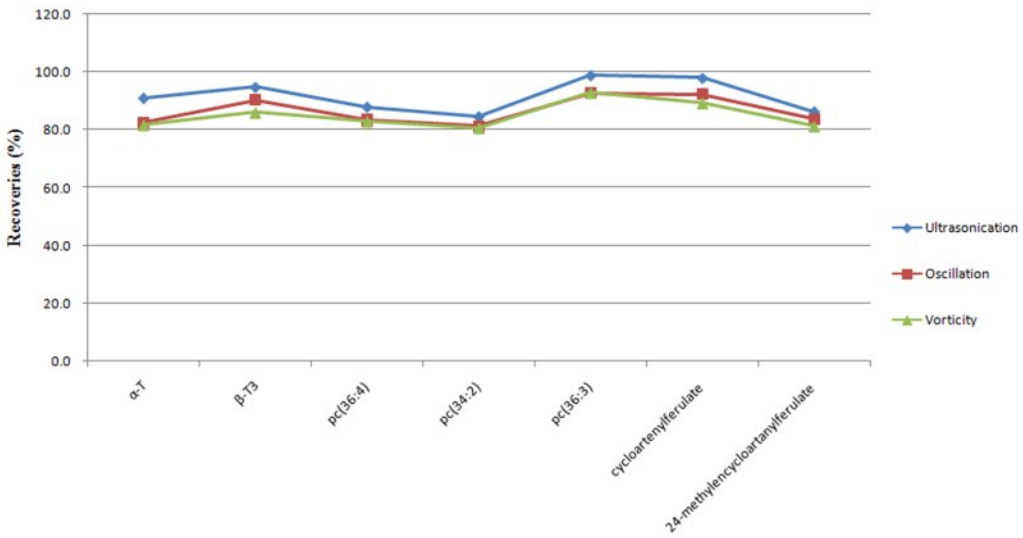


Figure A.2. Recoveries of nutritional compounds extracted by ultrasonication, oscillation and vorticity methods in white rice.

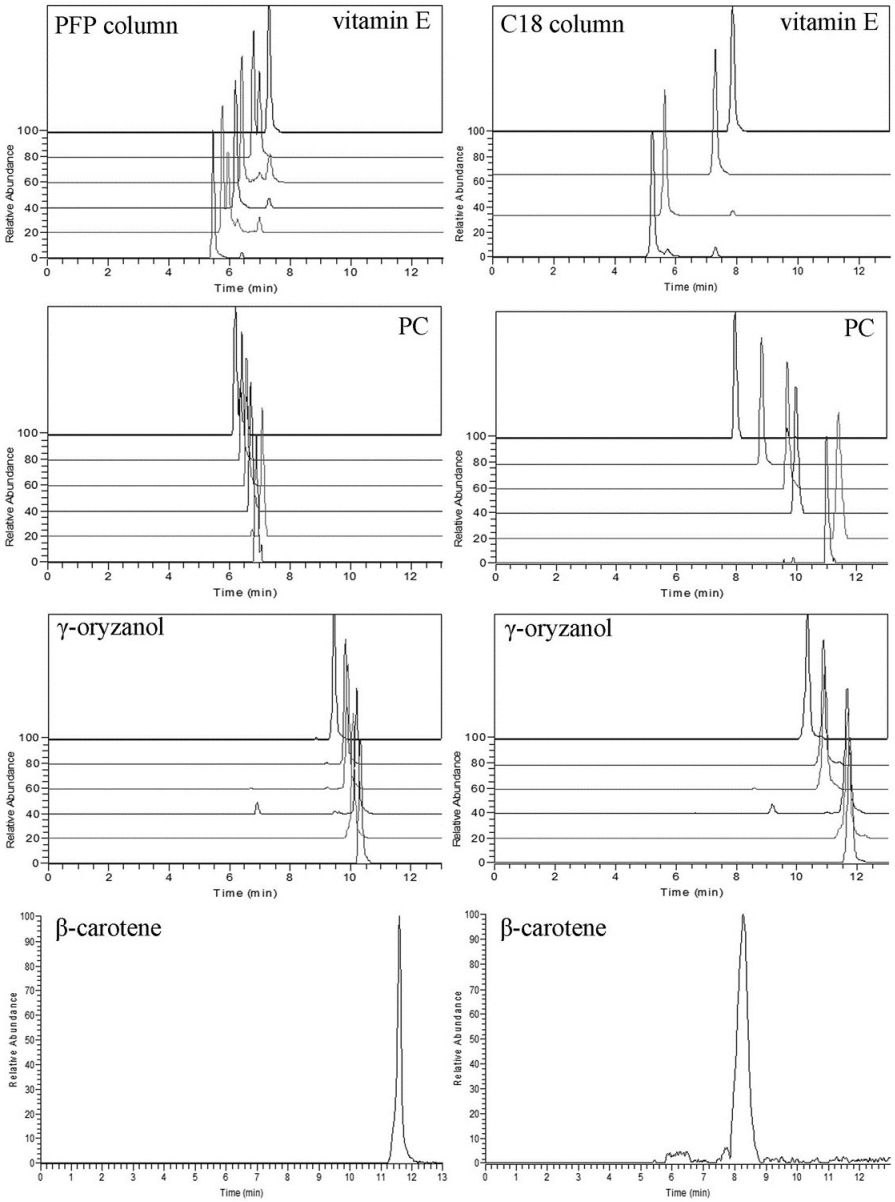


Figure A.3. The separation of chromatographic columns: PFP and C18 columns.

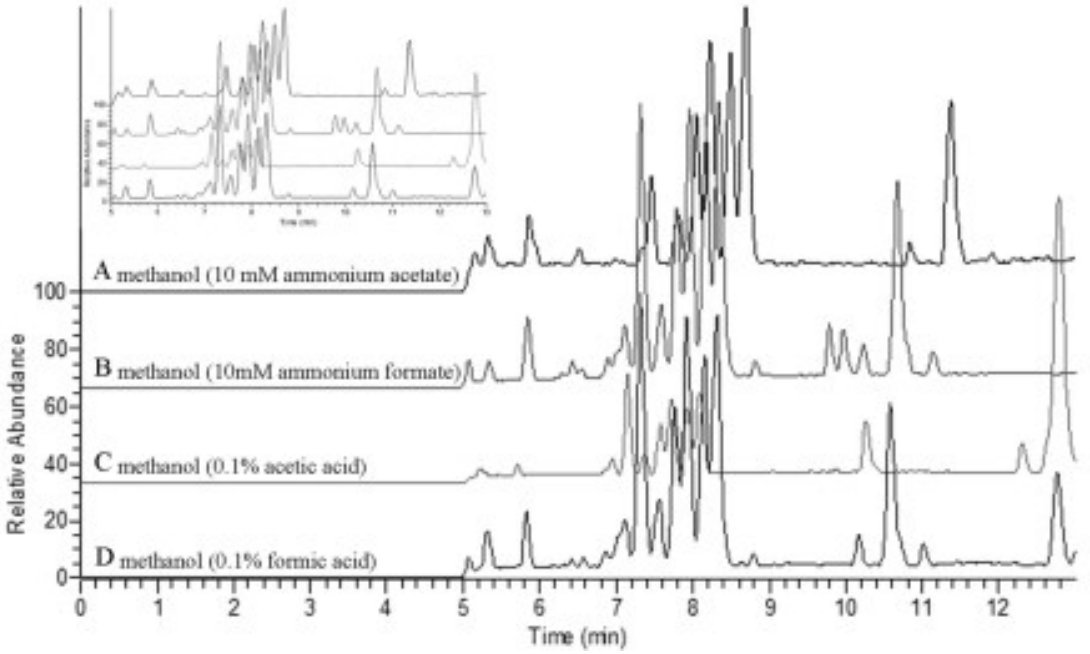


Figure A.4. The optimization of elution system (A: methanol-10 mM ammonium acetate, B: methanol-10mM ammonium formate, C: methanol-0.1% acetic acid, D: methanol-0.1% formic acid).

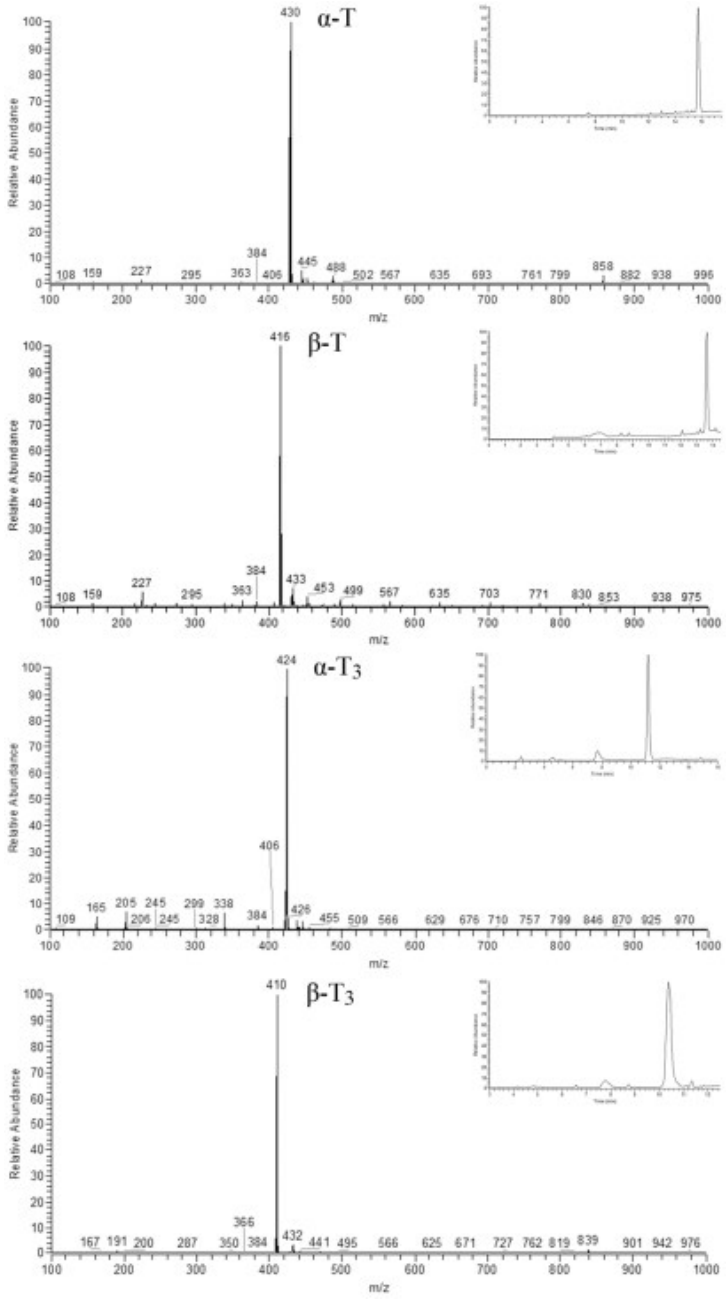


Figure A.5. The molecular peaks of vitamin E with non-ionization in the ESI source.

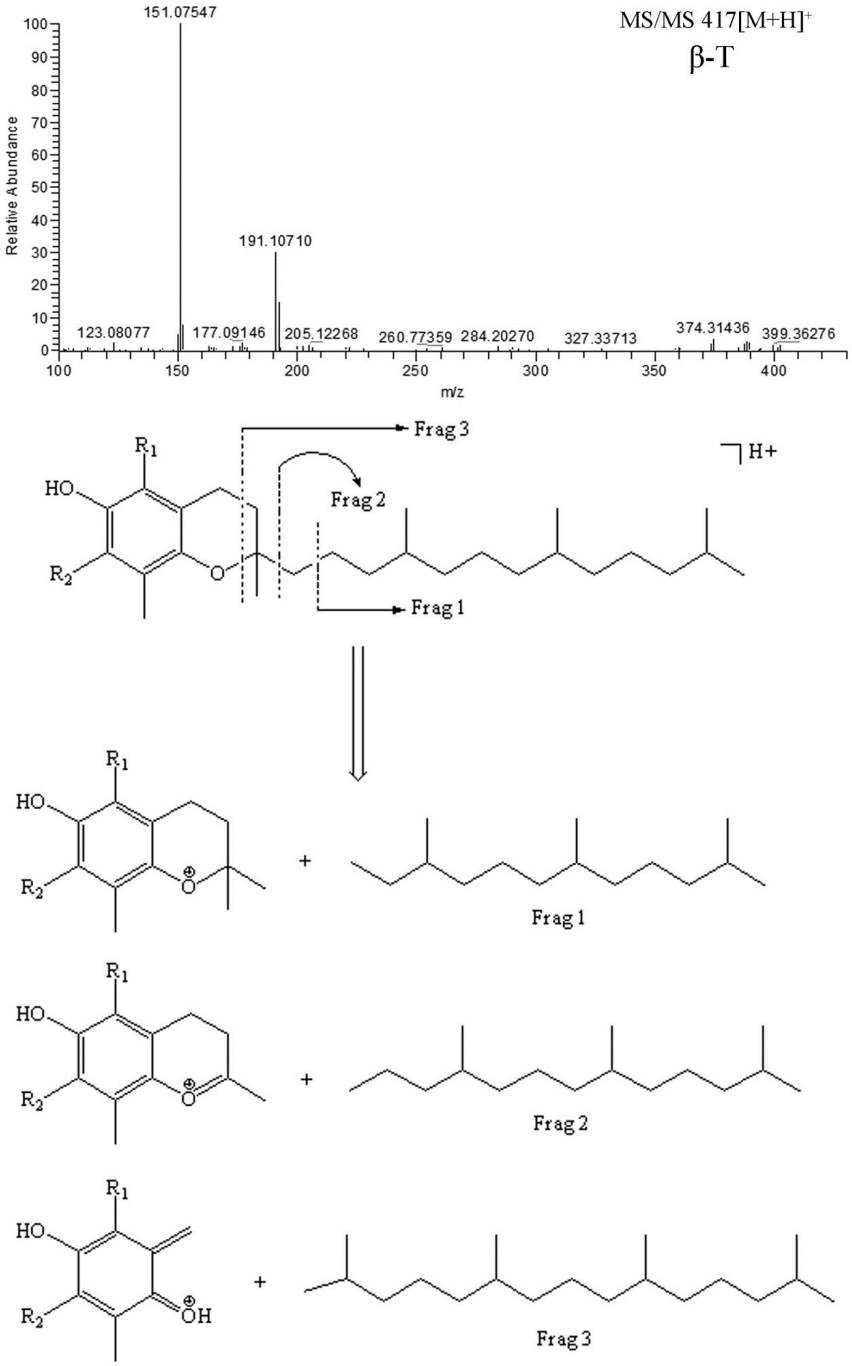


Figure A.6. The fragmentation patterns of tocopherols.

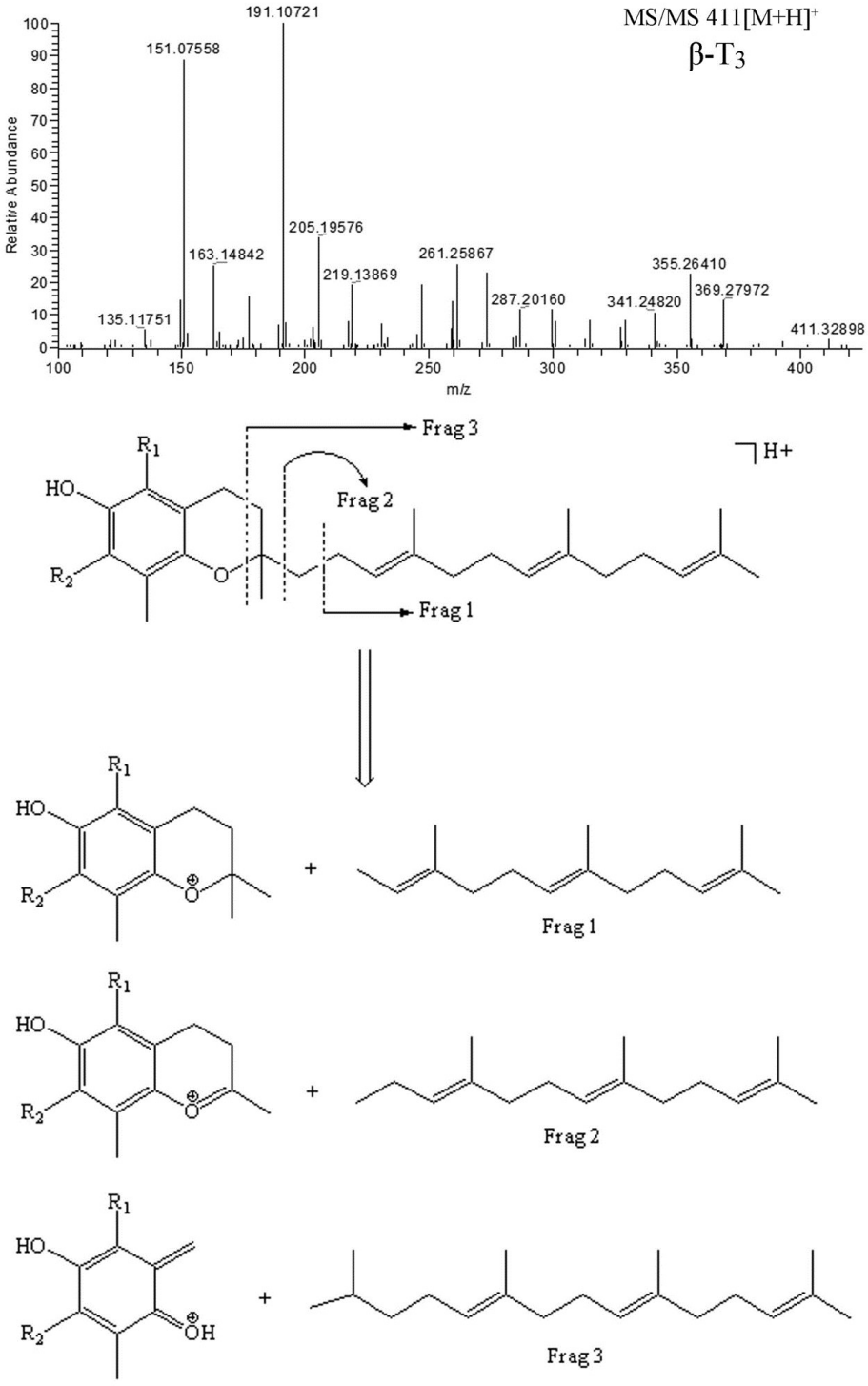


Figure A.7. The fragmentation patterns of tocotrienols.

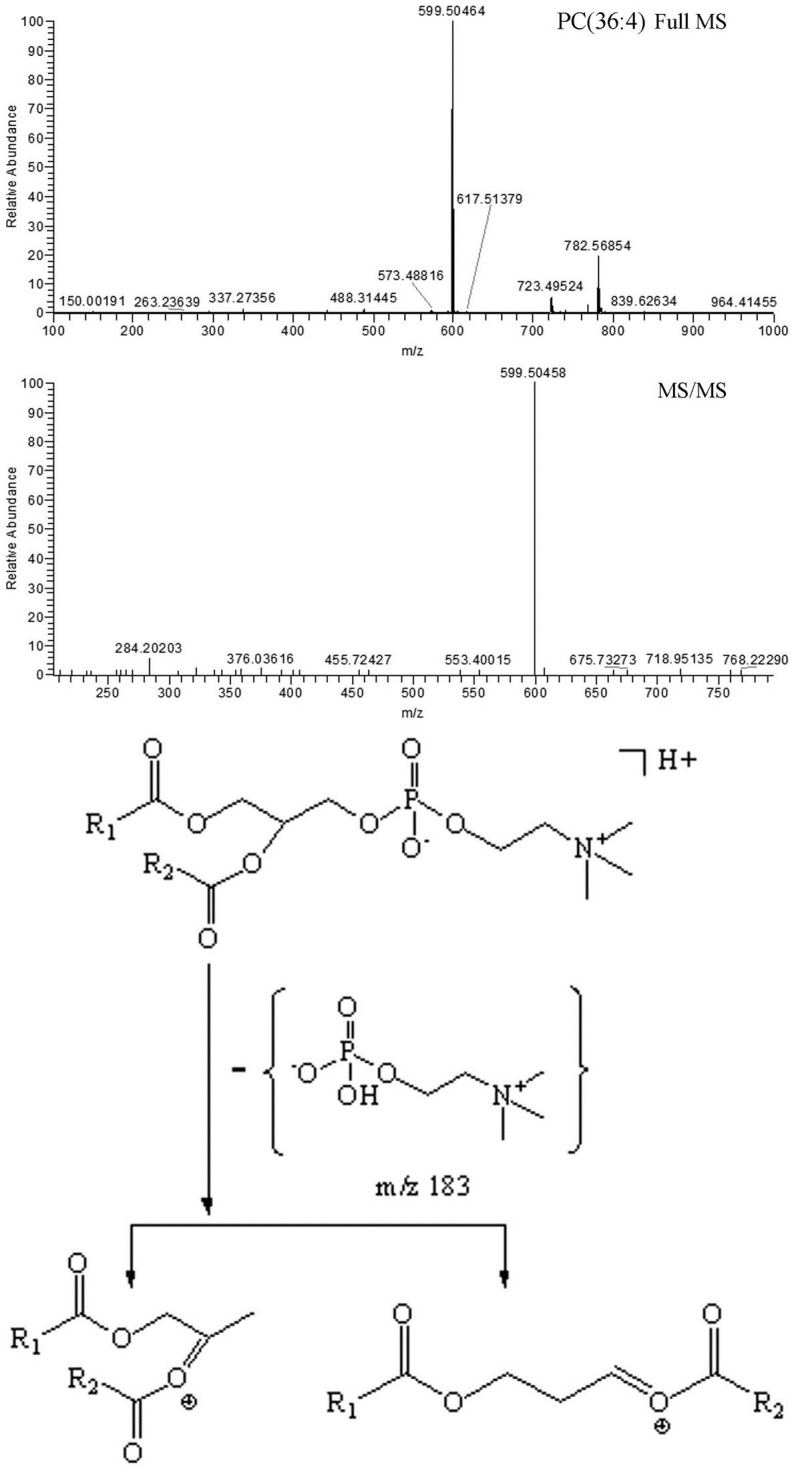


Figure A.8. The fragmentation patterns of phospholipids.

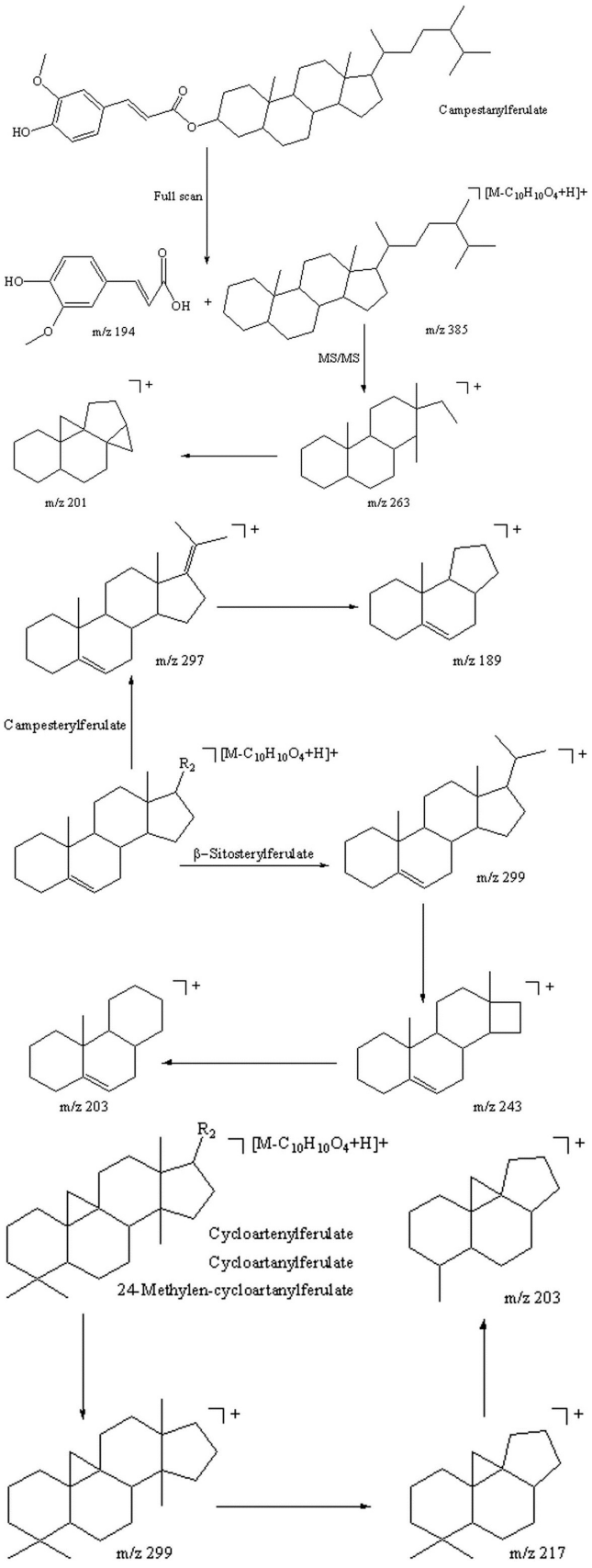


Figure A.9. The fragmentation patterns of γ-oryzanols.

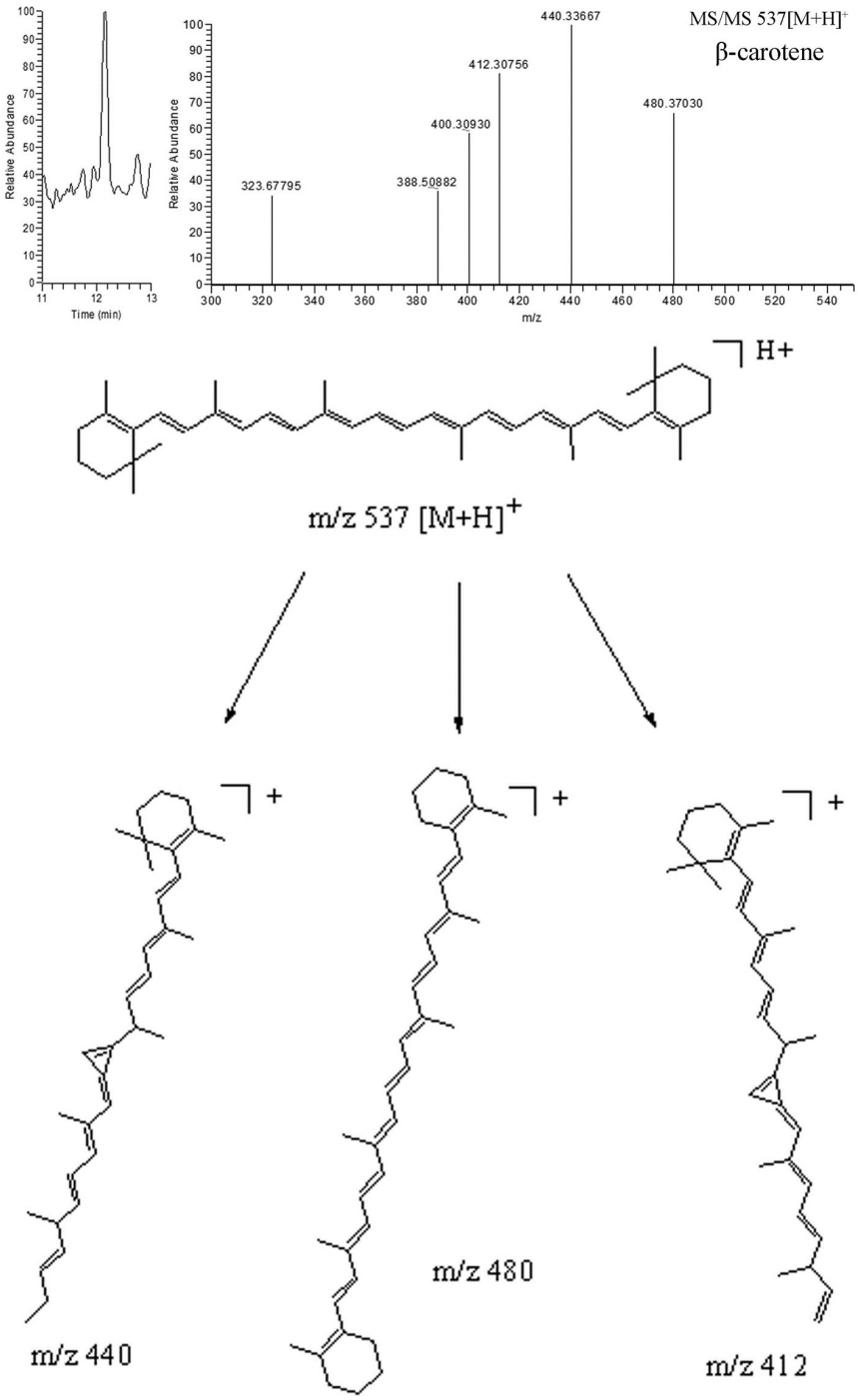


Figure A.10. The fragmentation patterns of β-carotene.

Table A.1-A.3 as follows:

Table A.1 Identification of 21 components using UHPLC-LTQ-Orbitrap MS.

NO.	Tr (min)	Ion mode	Measured mass (m/z)	Calculated mass (m/z)	Mass error (ppm)	Fragment ion information (MS/MS)	Molecular formula	Compounds
1	7.54	$[M+H]^+$	431.38901	431.38836	1.5	MS: 205(98%),165(100%)	$C_{29}H_{50}O_2$	α-T
2	7.20	$[M+H]^+$	417.37314	417.37271	1.0	MS: 191(30%),151(100%)	$C_{28}H_{48}O_2$	β-T
3	6.99	$[M+H]^+$	417.37268	417.37271	-0.1	MS: 191(26%),151(100%)	$C_{28}H_{48}O_2$	r-T
4	6.58	$[M+H]^+$	403.35754	403.35706	1.2	MS: 191(100%),177(64%),163(70%)	$C_{27}H_{46}O_2$	δ-T
5	6.37	$[M+H]^+$	425.34219	425.34141	1.8	MS: 199(100%),151(62%)	$C_{29}H_{44}O_2$	α-T3
6	6.12	$[M+H]^+$	411.32599	411.32576	0.6	MS: 205(34%),191(100%),151(89%)	$C_{28}H_{42}O_2$	β-T3
7	5.92	$[M+H]^+$	411.32553	411.32576	-0.6	MS: 205(36%),191(100%),151(96%)	$C_{28}H_{42}O_2$	r-T3
8	5.6	$[M+H]^+$	397.31000	397.31011	-0.3	MS: 201(100%),187(69%)	$C_{27}H_{40}O_2$	δ-T3
9	6.46	$[M+H]^+$	780.55267	780.55378	-1.4	MS: 597(100%)	$C_{44}H_{78}O_8NP$	PC(36:5)
10	6.71	$[M+H]^+$	782.56976	782.56943	0.4	MS: 599(100%)	$C_{44}H_{80}O_8NP$	PC(36:4)
11	6.89	$[M+H]^+$	758.56946	758.56943	0.0	MS: 575(100%)	$C_{42}H_{80}O_8NP$	PC(34:2)
12	7.03	$[M+H]^+$	784.58569	784.58508	0.8	MS: 601(100%)	$C_{44}H_{82}O_8NP$	PC(36:3)
13	7.45	$[M+H]^+$	786.60077	786.60073	0.1	MS: 603(100%)	$C_{44}H_{84}O_8NP$	PC(36:2)
14	7.24	$[M+H]^+$	760.58508	760.58508	0.0	MS: 577(100%)	$C_{42}H_{82}O_8NP$	PC(34:1)
15	9.85	$[M-C_{10}H_{10}O_4+H]^+$	409.38351	409.38288	1.5	MS: 299(57%),217(100%),203(57%)	$C_{40}H_{48}O_4$	cycloartenyl ferulate
16	10.25	$[M-C_{10}H_{10}O_4+H]^+$	423.39978	423.39853	3.0	MS: 299(100%),217(83%)	$C_{41}H_{60}O_4$	24-methylencycloartanylferulate
17	10.35	$[M-C_{10}H_{10}O_4+H]^+$	383.36765	383.36723	1.1	MS: 297(59%),189(100%)	$C_{38}H_{56}O_4$	campesteryl ferulate
18	10.66	$[M-C_{10}H_{10}O_4+H]^+$	397.38303	397.38288	0.4	MS: 299(35%),243(100%),203(52%)	$C_{39}H_{58}O_4$	β-sitosterylferulate
19	10.51	$[M-C_{10}H_{10}O_4+H]^+$	411.39905	411.39853	1.3	MS: 299(68%),217(100%),203(96%)	$C_{40}H_{60}O_4$	cycloartanyl ferulate
20	10.79	$[M-C_{10}H_{10}O_4+H]^+$	385.38300	385.38288	0.3	MS: 263(69%),201(100%)	$C_{38}H_{58}O_4$	campestanyl ferulate
21	12.12	$[M+H]^+$	537.44653	537.44548	2.0	MS: 480(65%),440(100%),412(80%)	$C_{40}H_{56}$	β-carotene

Table A.2 Recoveries yielded

Compounds	R% (n=3)					
	White rice			Brown rice		
	High level	Medium level	Lower level	High level	Medium level	Lower level
α-T	90.7	91.0	90.7	99.2	91.1	99.4
β-T	94.9	97.7	81.4	91.9	97.9	96.4
γ-T	92.0	98.8	89.7	94.8	98.8	92.2
δ-T	92.1	97.1	99.4	87.7	98.2	97.2
α-T3	82.5	95.7	83.7	84.9	95.8	94.1
β-T3	97.6	94.9	98.4	93.4	96.9	89.8
γ-T3	82.8	90.8	97.7	84.8	94.1	94.5
δ-T3	88.8	91.4	92.0	86.1	92.4	93.2
PC(36:5)	86.6	83.3	99.9	95.8	96.8	98.8
PC(36:4)	98.2	87.6	96.1	96.1	90.9	84.9
PC(34:2)	80.6	83.7	94.7	84.3	84.5	97.8
PC(36:3)	92.9	98.7	87.1	96.7	98.7	90.0
PC(36:2)	90.0	96.1	91.7	85.6	83.6	99.1
PC(34:1)	109.6	104	105.3	106.7	103	101.9
cycloartenylferulate	94.6	97.7	99.5	93.7	93.1	95.0
24-methylencycloartanylferulate	97.0	85.9	85.9	97.1	87.6	95.8
campesterylferulate	95.2	98.1	93.5	87.4	89.2	98.3
β-sitosterylferulate	90.9	86.5	94.3	92.5	97.7	96.2
cycloartanylferulate	90.3	97.7	93.7	91.5	94.8	92.2
campestanylferulate	93.2	87.6	86.2	95.4	90.4	97.5
β-carotene	86.3	97.3	83.2	99.0	81.1	83.5

Table A.3 Classification results of the discriminant analysis.

		Single	Predicted Group Membership					
		Linkage	1	2	3	4	5	Total
Original	Count	1	6	0	0	0	0	6
		2	0	6	0	0	0	6
		3	0	0	6	0	0	6
		4	0	0	0	6	0	6
		5	0	0	0	0	6	6
	(%)a	1	100.0	.0	.0	.0	.0	100.0
		2	.0	100.0	.0	.0	.0	100.0
		3	.0	.0	100.0	.0	.0	100.0
		4	.0	.0	.0	100.0	.0	100.0
		5	.0	.0	.0	.0	100.0	100.0

[a] 100.0% of original grouped cases correctly classified.