**Supplementary Information**

**Lipidomic reveals similar changes in serum phospholipids signatures of overweight and obese paediatric subjects**

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Figure S4. ESI-MS/MS spectrum of the [M+H]+ ion of SM 34:1 (*m/z* 703.50). Fragment ion characteristic for the SM class was highlighted in red.

Figure S5. ESI-MS/MS spectrum of the [M+H]+ ion of PE 38:6 (*m/z* 764.63). Fragment ion formed by the characteristic neutral loss of 141 Da for the PE class was highlighted in red.

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Figure S7. Representation of the distribution of the normalized peak area.

Figure S8. Principal component analysis in a three-dimensional score plot of phospholipid profiles obtained from children with normal weight (CT), overweight (OW) and obese children (OB).

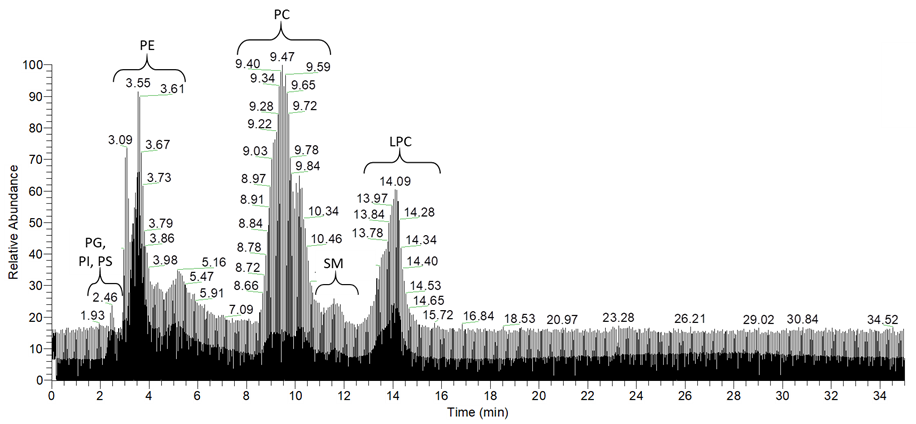
Figure S9. Loading plot for PCA analysis shown on figure 1.

Figure S10. Principal component analysis in a two-dimensional score plot of phospholipid profiles obtained from male and female individuals with overweight (EP) and obesity (OB).

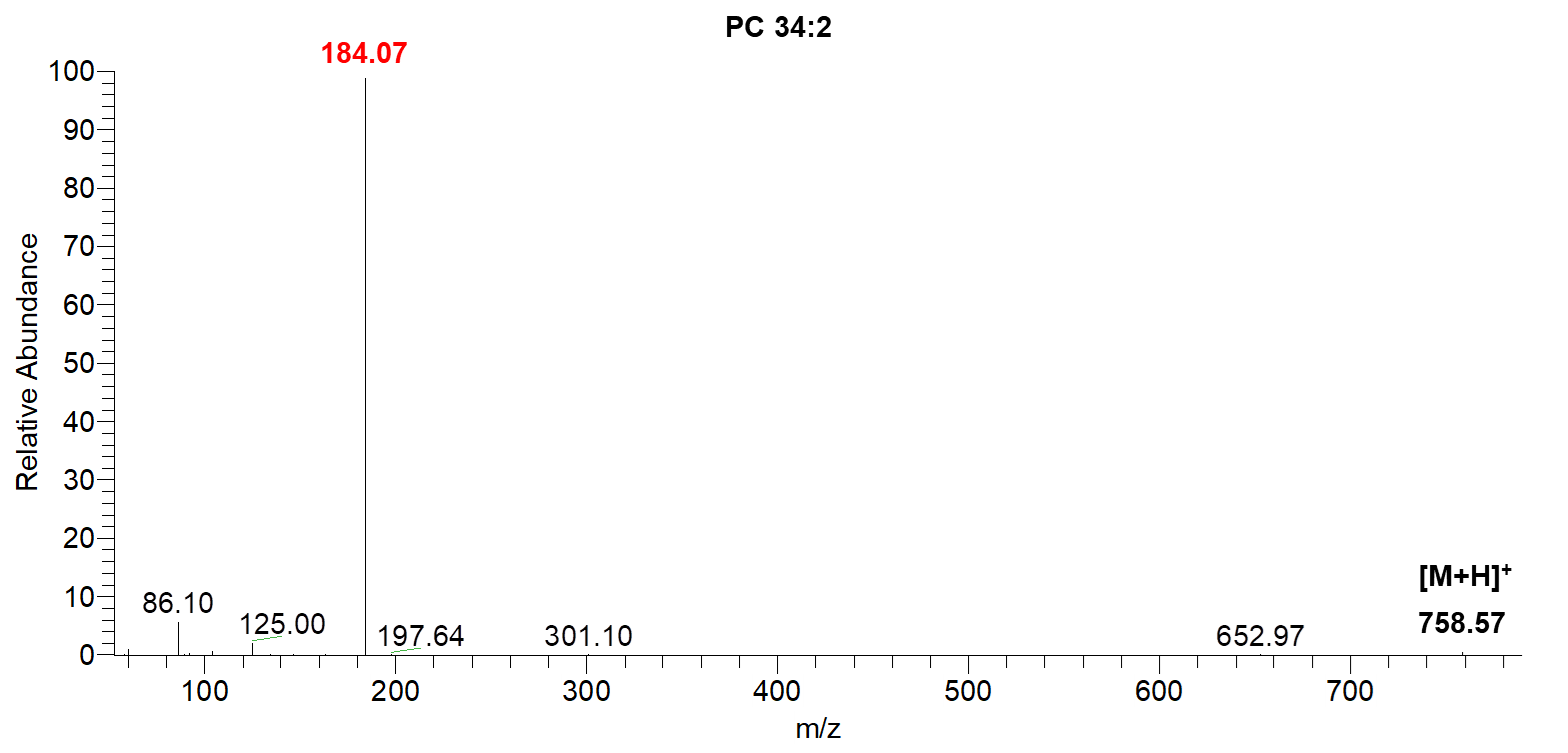
Figure S11. Loading plot for PLSDA analysis shown on figure 2.

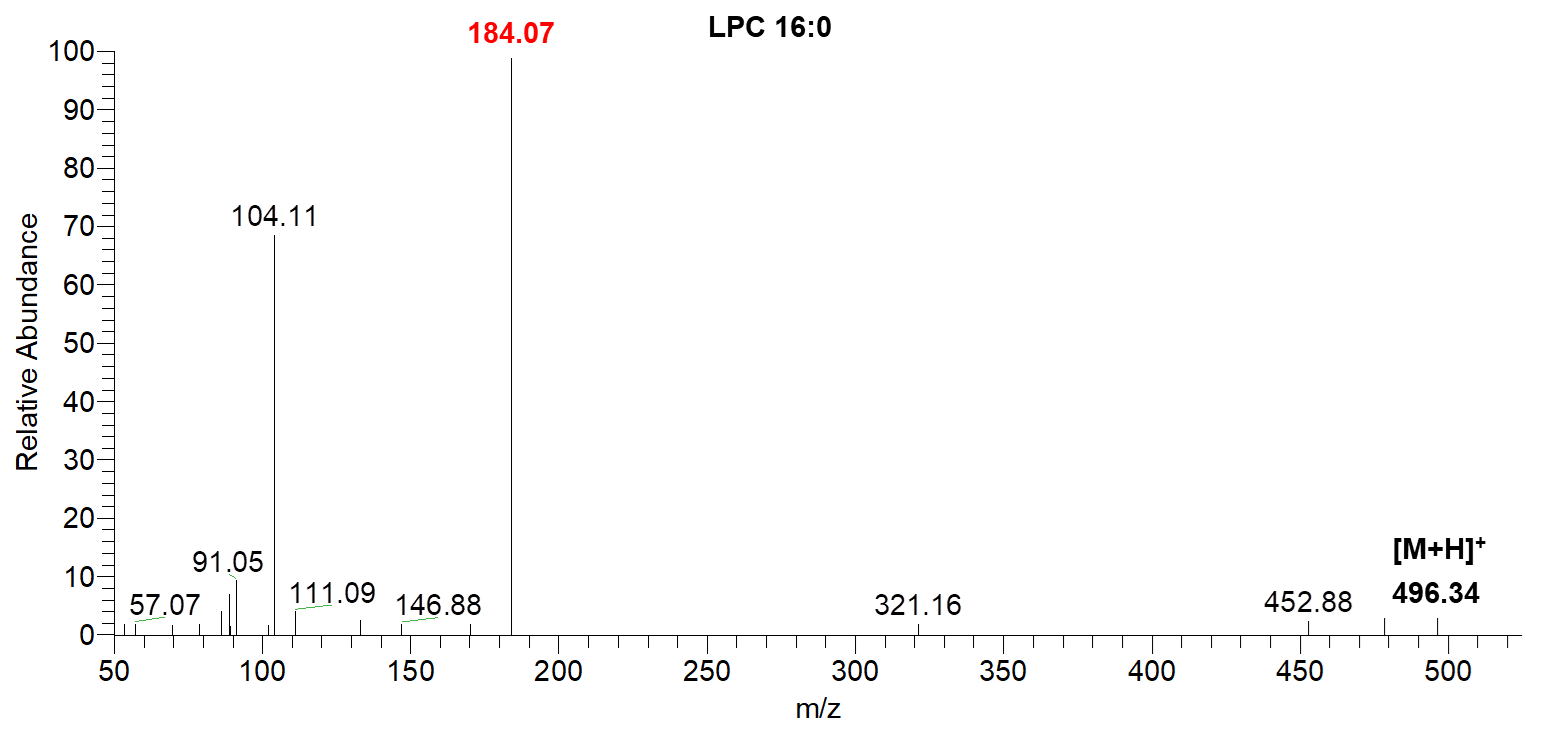
**Supplementary Table S1.** MS-based identification of the phospholipid molecular species quantified in the present study. The total chain length (C) and degree of unsaturation (N) are included.

|  |  |  |  |
| --- | --- | --- | --- |
| **PC, [M+H]+** | | | |
| **Espécie molecular (C:N)** | ***m/z* observado** | **Espécie molecular (C:N)** | ***m/z* observado** |
| PC(O-30:1) /PC(P-30:0) | 690,54 | PC(38:7) | 804,55 |
| PC(O-30:0) | 692,56 | PC(38:6) | 806,57 |
| PC(30:1) | 704,52 | PC(38:5) | 808,58 |
| PC(30:0) | 706,54 | PC(38:4) | 810,60 |
| PC(P-32:1) | 716,56 | PC(38:3) | 812,61 |
| PC(O-32:1) /PC(P-32:0) | 718,57 | PC(P-40:6) | 818,60 |
| PC(O-32:0) | 720,59 | PC(O-40:6) /PC(P-40:5) | 820,62 |
| PC(32:2) | 730,54 | PC(O-40:5) /PC(P-40:4) | 822,64 |
| PC(32:1) | 732,55 | PC(O-40:4) /PC(P-40:3) | 824,65 |
| PC(32:0) | 734,57 | PC(40:10) | 826,54 |
| PC(O-34:4) /PC(P-34:3) | 740,56 | PC(40:9) | 828,55 |
| PC(O-34:3) /PC(P-34:2) | 742,57 | PC(40:8) | 830,57 |
| PC(O-34:2) /PC(P-34:1) | 744,59 | PC(40:7) | 832,58 |
| PC(O-34:1) /PC(P-34:0) | 746,60 | PC(40:6) | 834,60 |
| PC(34:4) | 754,54 | PC(40:5) | 836,61 |
| PC(34:3) | 756,55 | PC(40:4) | 838,63 |
| PC(34:2) | 758,57 | PC(P-42:6) | 846,64 |
| PC(34:1) | 760,58 | PC(O-42:6) /PC(P-42:5) | 848,65 |
| PC(P-36:5) | 764,56 | PC(O-42:5) /PC(P-42:4) | 850,67 |
| PC(O-36:5) /PC(P-36:4) | 766,57 | PC(42:11) | 852,55 |
| PC(O-36:4) /PC(P-36:3) | 768,59 | PC(O-42:4) /PC(P-42:3) | 852,68 |
| PC(O-36:3) /PC(P-36:2) | 770,60 | PC(42:9) | 856,59 |
| PC(36:7) | 776,52 | PC(42:9) | 856,59 |
| PC(36:6) | 778,54 | PC(42:8) | 858,60 |
| PC(36:5) | 780,55 | PC(42:7) | 860,61 |
| PC(36:4) | 782,57 | PC(42:6) | 862,63 |
| PC(36:3) | 784,58 | PC(P-44:6) | 874,67 |
| PC(36:2) | 786,60 | PC(O-44:6) /PC(P-44:5) | 876,69 |
| PC(P-38:6) | 790,57 | PC(44:12) | 878,57 |
| PC(O-38:6) /PC(P-38:5) | 792,59 | PC(O-44:5) /PC(P-44:4) | 878,70 |
| PC(O-38:5) /PC(P-38:4) | 794,61 | PC(44:11) | 880,58 |
| PC(O-38:4) /PC(P-38:3) | 796,62 | PC(44:10) | 882,60 |
| PC(38:8) | 802,54 | PC(P-46:6) | 902,70 |
| **LPC, [M+H]+** | | | |
| **Espécie molecular (C:N)** | ***m/z* observado** | **Espécie molecular (C:N)** | ***m/z* observado** |
| LPC(14:1) | 466,29 | LPC(18:0) | 524,37 |
| LPC(14:0) | 468,31 | LPC(P-20:0) | 536,41 |
| LPC(O-16:1)/LPC(P-16:0) | 480,35 | LPC(O-20:0) | 538,42 |
| LPC(O-16:0) | 482,36 | LPC(20:5) | 542,32 |
| LPC(16:1) | 494,32 | LPC(20:4) | 544,34 |
| LPC(16:0) | 496,34 | LPC(20:3) | 546,35 |
| LPC(P-18:1) | 506,36 | LPC(20:2) | 548,37 |
| LPC(O-18:1) | 508,38 | LPC(20:1) | 550,39 |
| LPC(P-18:0) | 508,38 | LPC(20:0) | 552,40 |
| LPC(O-18:0) | 510,39 | LPC(22:6) | 568,34 |
| LPC(18:4) | 516,31 | LPC(22:5) | 570,36 |
| LPC(18:3) | 518,32 | LPC(22:4) | 572,37 |
| LPC(18:2) | 520,34 | LPC(24:0) | 608,47 |
| LPC(18:1) | 522,36 |  |  |
| **SM, [M+H]+** | | | |
| **Espécie molecular (C:N)** | ***m/z* observado** | **Espécie molecular (C:N)** | ***m/z* observado** |
| SM(d30:1) | 647,51 | SM(d36:1) | 731,61 |
| SM(d32:2) | 673,53 | SM(d38:3) | 755,61 |
| SM(d32:1) | 675,54 | SM(d38:2) | 757,62 |
| SM(d32:0) | 677,56 | SM(d38:1) | 759,64 |
| SM(d34:2) | 701,56 | SM(d40:3) | 783,64 |
| SM(d34:1) | 703,58 | SM(d40:2) | 785,65 |
| SM(d34:0) | 705,59 | SM(d40:1) | 787,67 |
| SM(d36:3) | 727,58 | SM(d42:3) | 811,67 |
| SM(d36:2) | 729,59 | SM(d42:2) | 813,68 |
| **PE, [M+H]+** | | | |
| **Espécie molecular (C:N)** | ***m/z* observado** | **Espécie molecular (C:N)** | ***m/z* observado** |
| PE(30:3) | 658,44 | PE(38:9) | 758,48 |
| PE(O-34:3) /PE(P-34:2) | 700,53 | PE(38:7) | 762,51 |
| PE(34:2) | 716,52 | PE(38:6) | 764,52 |
| PE(34:1) | 718,54 | PE(38:4) | 768,55 |
| PE(O-36:5) /PE(P-36:4) | 724,53 | PE(O-40:10) /PE(P-40:9) | 770,51 |
| PE(O-36:4) /PE(P-36:3) | 726,54 | PE(O-40:9) /PE(P-40:8) | 772,53 |
| PE(O-36:3) /PE(P-36:2) | 728,56 | PE(O-40:8) /PE(P-40:7) | 774,54 |
| PE(36:4) | 740,52 | PE(O-40:7)/PE(P-40:6) | 776,56 |
| PE(36:3) | 742,54 | PE(O-40:5) /PE(P-40:4) | 780,59 |
| PE(P-38:8) | 744,50 | PE(40:10) | 784,49 |
| PE(36:2) | 744,55 | PE(40:9) | 786,50 |
| PE(O-38:8) /PE(P-38:7) | 746,51 | PE(40:8) | 788,52 |
| PE(O-38:7) /PE(P-38:6) | 748,53 | PE(40:6) | 792,55 |
| PE(O-38:6) /PE(P-38:5) | 750,54 | PE(40:5) | 794,57 |
| PE(O-38:5) /PE(P-38:4) | 752,56 | PE(42:10) | 812,52 |
| PE(O-38:4) /PE(P-38:3) | 754,56 | PE(42:9) | 814,54 |
|  |  | PE(48:12) | 892,59 |
| **PE, [M-H]-** | | | |
| **Espécie molecular (C:N)** | ***m/z* observado** | **Espécie molecular (C:N)** | ***m/z* observado** |
| PE(O-34:3) /PE (P-34:2) | 698,51 | PE(O-38:4) /PE(P-38:3) | 752,56 |
| PE(O-34:2) /PE(P-34:1) | 700,53 | PE(38:6) | 762,51 |
| PE(34:2) | 714,51 | PE(38:5) | 764,52 |
| PE(34:1) | 716,52 | PE(38:4) | 766,54 |
| PE(O-36:5) /PE(P-36:5) | 720,50 | PE(38:3) | 768,55 |
| PE(O-36:5) /PE(P-36:4) | 722,51 | PE(O-40:9) /PE(P-40:8) | 770,51 |
| PE(O-36:4) /PE (P-36:3) | 724,53 | PE (O-40:8) /PE(P-40:7) | 772,53 |
| PE(O-36:3) /PE(P-36:2) | 726,55 | PE(O-40:7) /PE(P-40:6) | 774,55 |
| PE(O-36:2) /PE(P-36:1) | 728,56 | PE(O-40:6)/PE(P-40:5) | 776,56 |
| PE(O-38:7) /PE(P-38:6) | 746,51 | PE(O-40:5) /PE(P-40:4) | 778,57 |
| PE(O-38:6) /PE(P-38:5) | 748,59 | PE(40:7) | 788,52 |
| PE(O-38:5) /PE(P-38:4) | 750,55 | PE(40:5) | 792,55 |
| **PG, [M-H]-** | | | |
| **Espécie molecular (C:N)** | ***m/z* observado** |  |  |
| PG(38:7) | 791,49 |  |  |
| **PI, [M-H]-** | | | |
| **Espécie molecular (C:N)** | ***m/z* observado** | **Espécie molecular (C:N)** | ***m/z* observado** |
| PI(30:2) | 777,45 | PI(36:1) | 863,56 |
| PI(34:2) | 833,52 | PI(38:5) | 883,53 |
| PI(34:1) | 835,53 | PI(38:4) | 885,55 |
| PI(36:4) | 857,52 | PI (38:3) | 887,57 |
| PI(36:3) | 859,53 | PI(42:0) | 949,67 |
| PI(36:2) | 861,55 |  |  |
| **PS, [M-H]-** | | | |
| **Espécie molecular (C:N)** | ***m/z* observado** | **Espécie molecular (C:N)** | ***m/z* observado** |
| PS(30:2) | 702,43 | PS(48:12) | 934,56 |

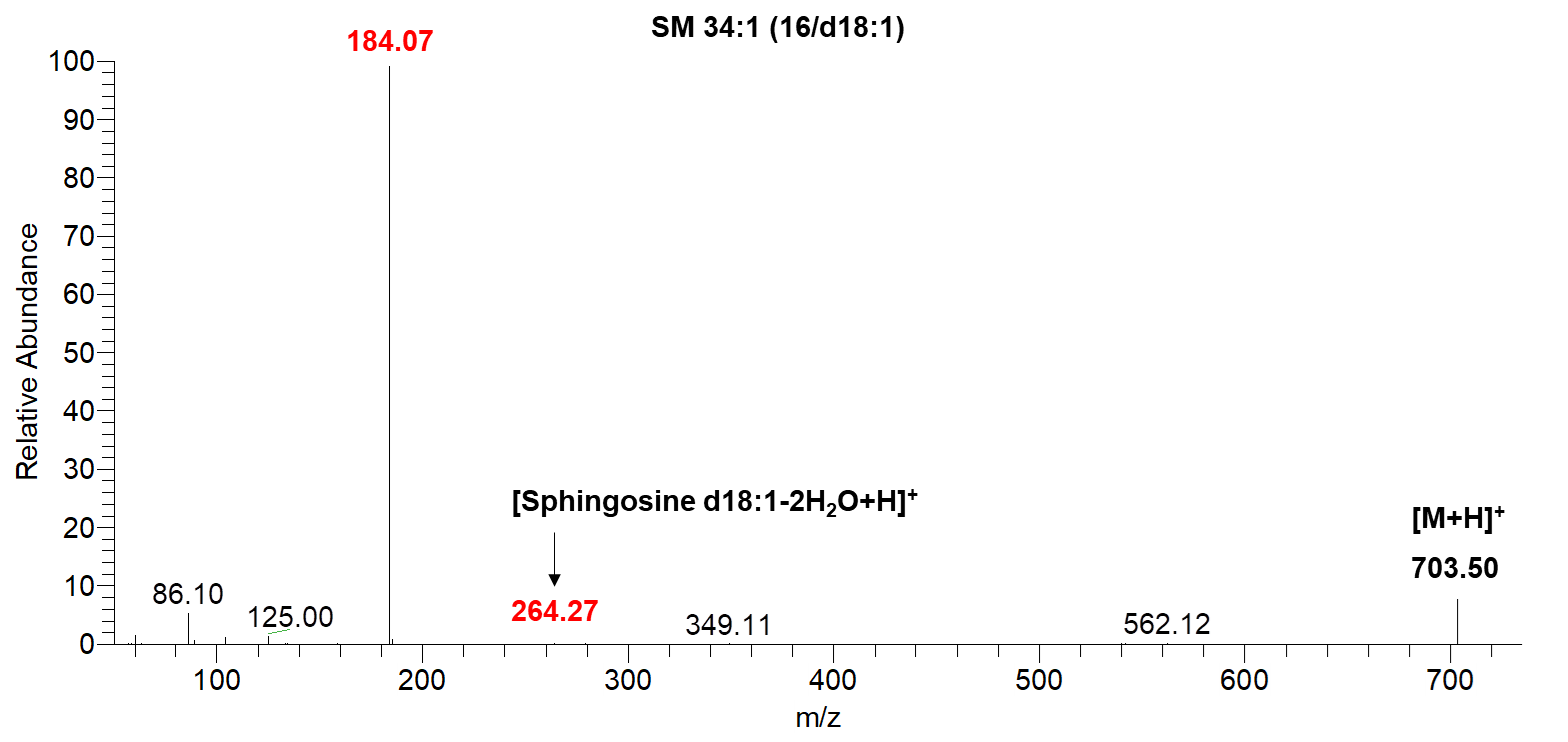


Supplementary Figure S1. An example of the total ion chromatogram (TIC)

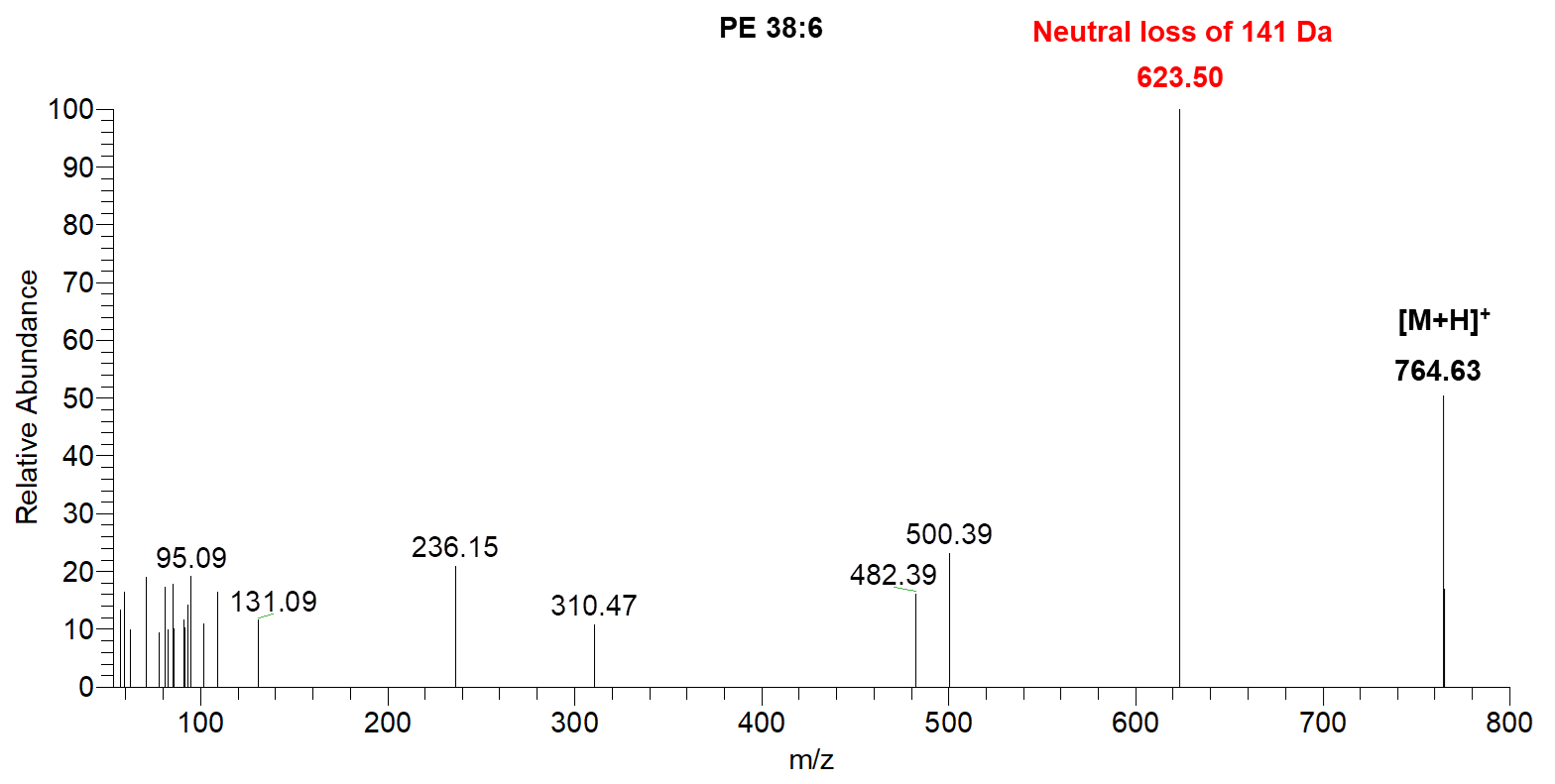
**Supplementary Figure S2.** ESI-MS/MS spectrum of the [M+H]+ ion of PC 34:2 (*m/z* 758.57). Fragment ion characteristic for the PC class was highlighted in red.

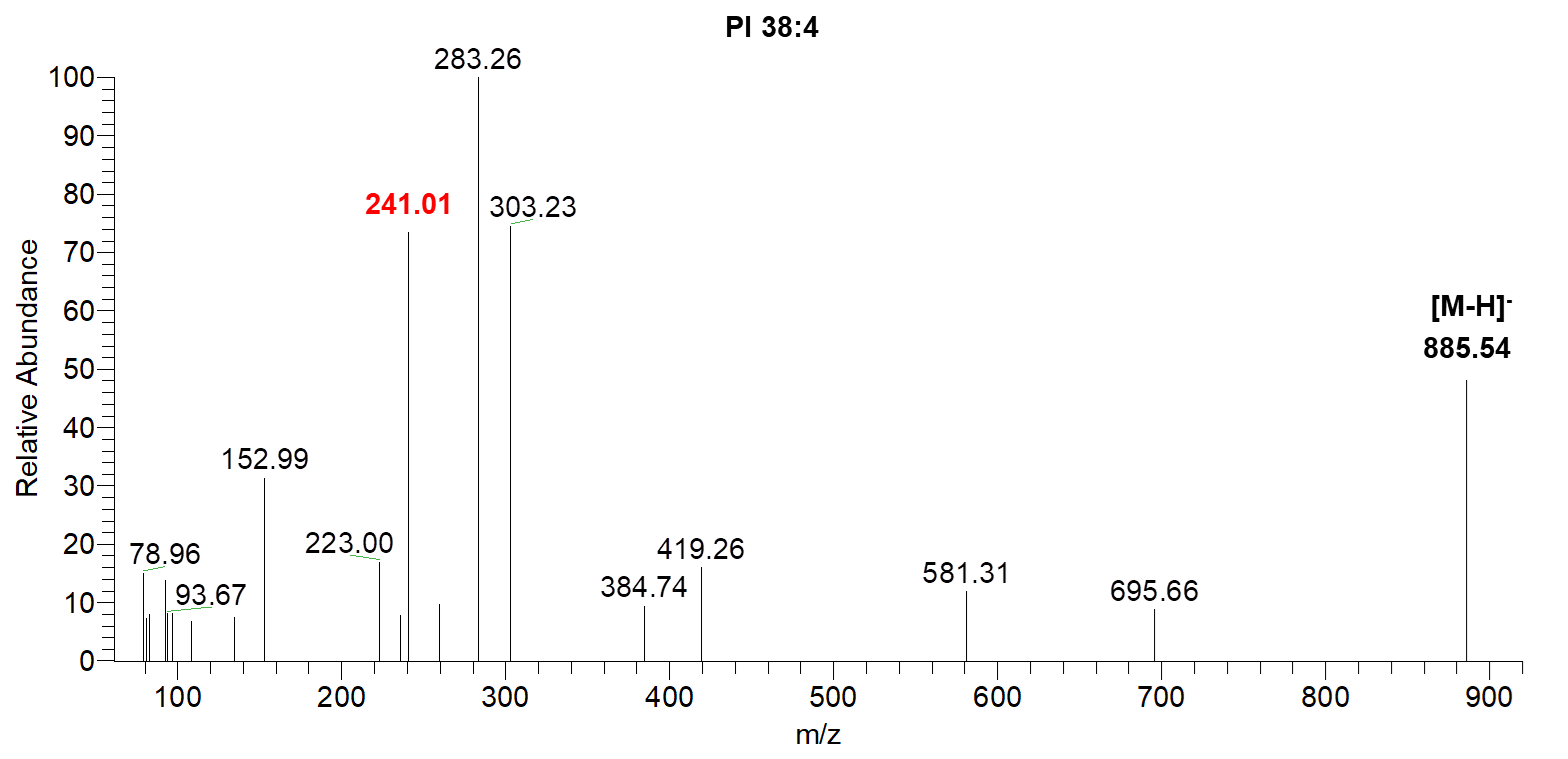


**Supplementary Figure S2.** ESI-MS/MS spectrum of the [M+H]+ ion of LPC 16:0 (*m/z* 496.34). Fragment ion characteristic for the LPC class was highlighted in red.

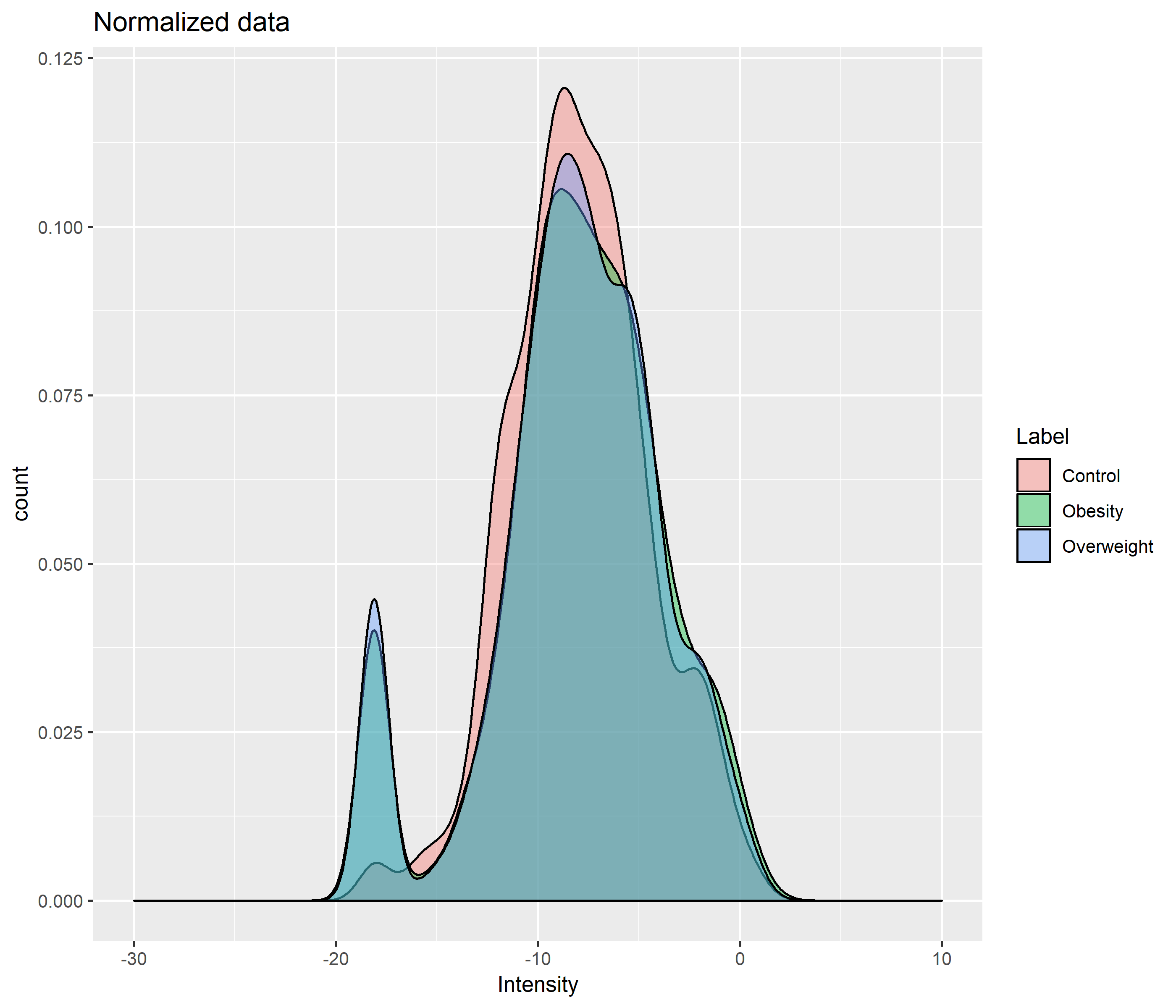


**Supplementary Figure S2.** ESI-MS/MS spectrum of the [M+H]+ ion of SM 34:1 (*m/z* 703.50). Fragment ion characteristic for the SM class was highlighted in red.

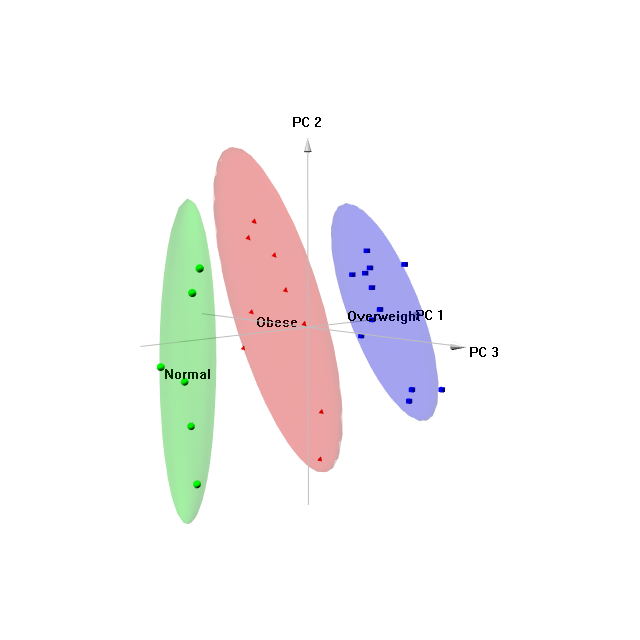
**Supplementary Figure S5.** ESI-MS/MS spectrum of the [M+H]+ ion of PE 38:6 (*m/z* 764.63). Fragment ion formed by the characteristic neutral loss of 141 Da for the PE class was highlighted in red.



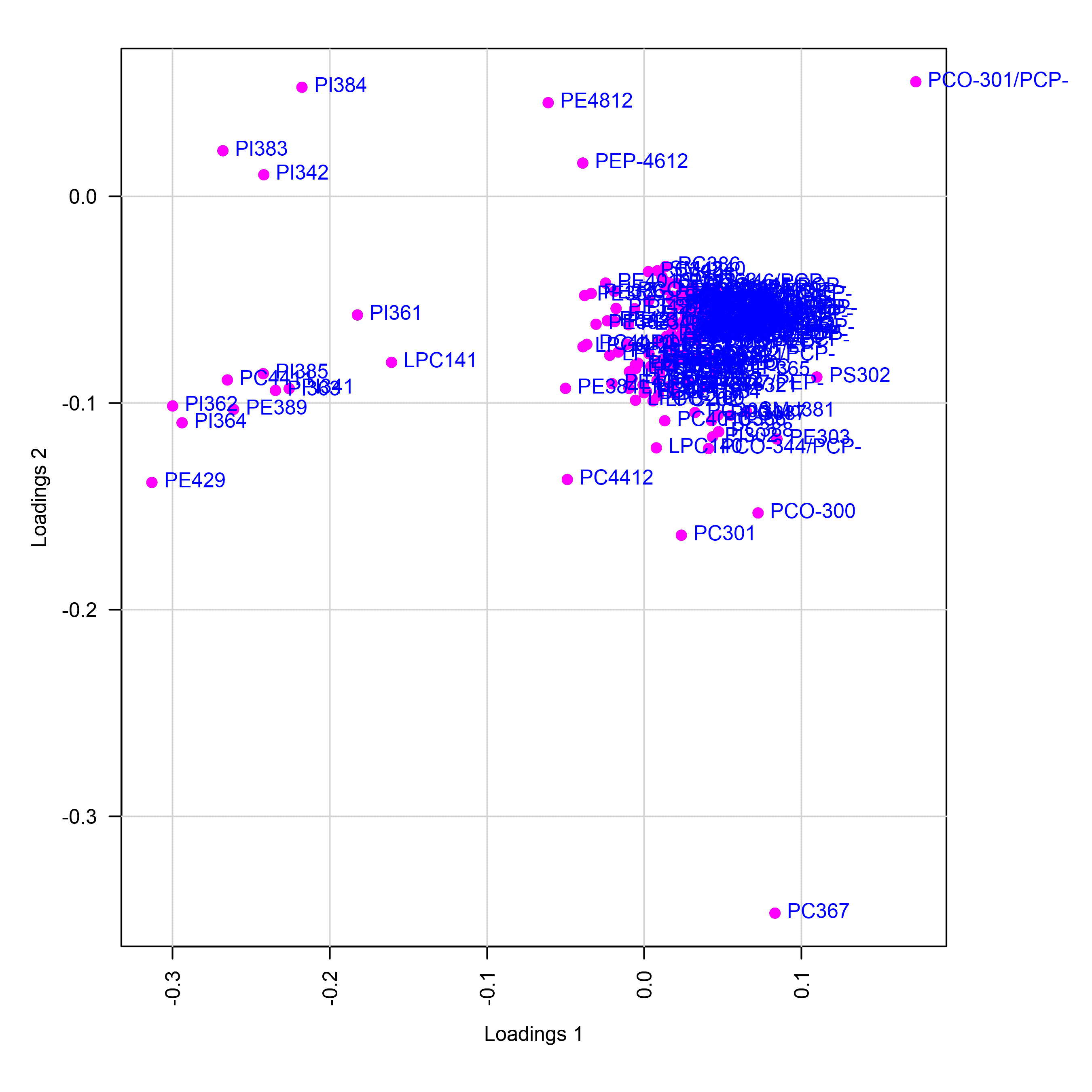
**Supplementary Figure S6.** ESI-MS/MS spectrum of the [M-H]- ion of PI 38:4 (*m/z* 885.54). Fragment ion at *m/z* 241 characteristic for the PI class was highlighted in red.



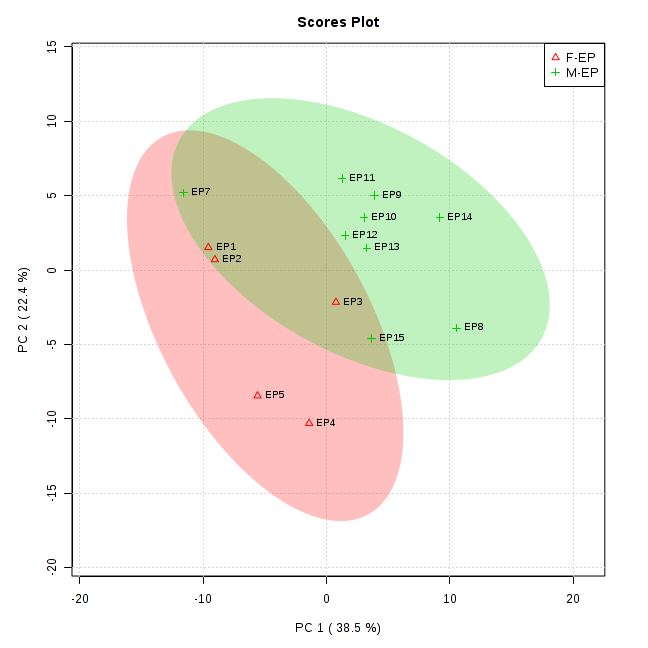
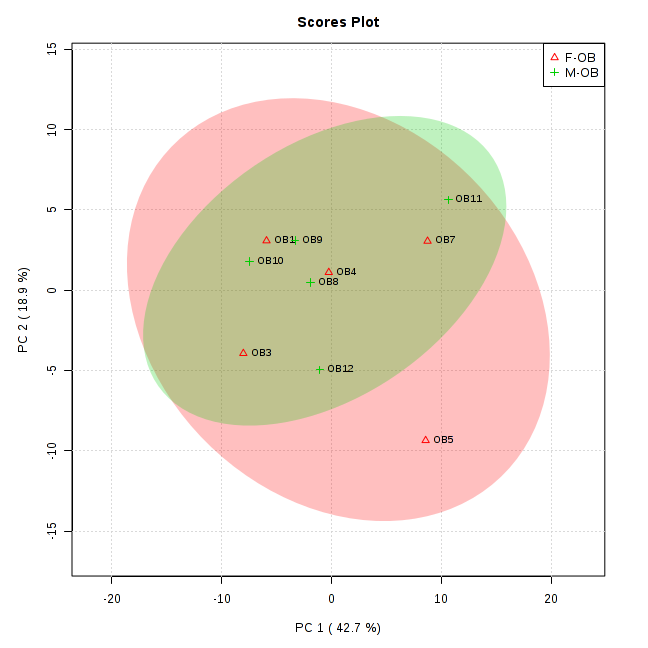
Supplementary Figure S7. Representation of the distribution of the normalized peak area.

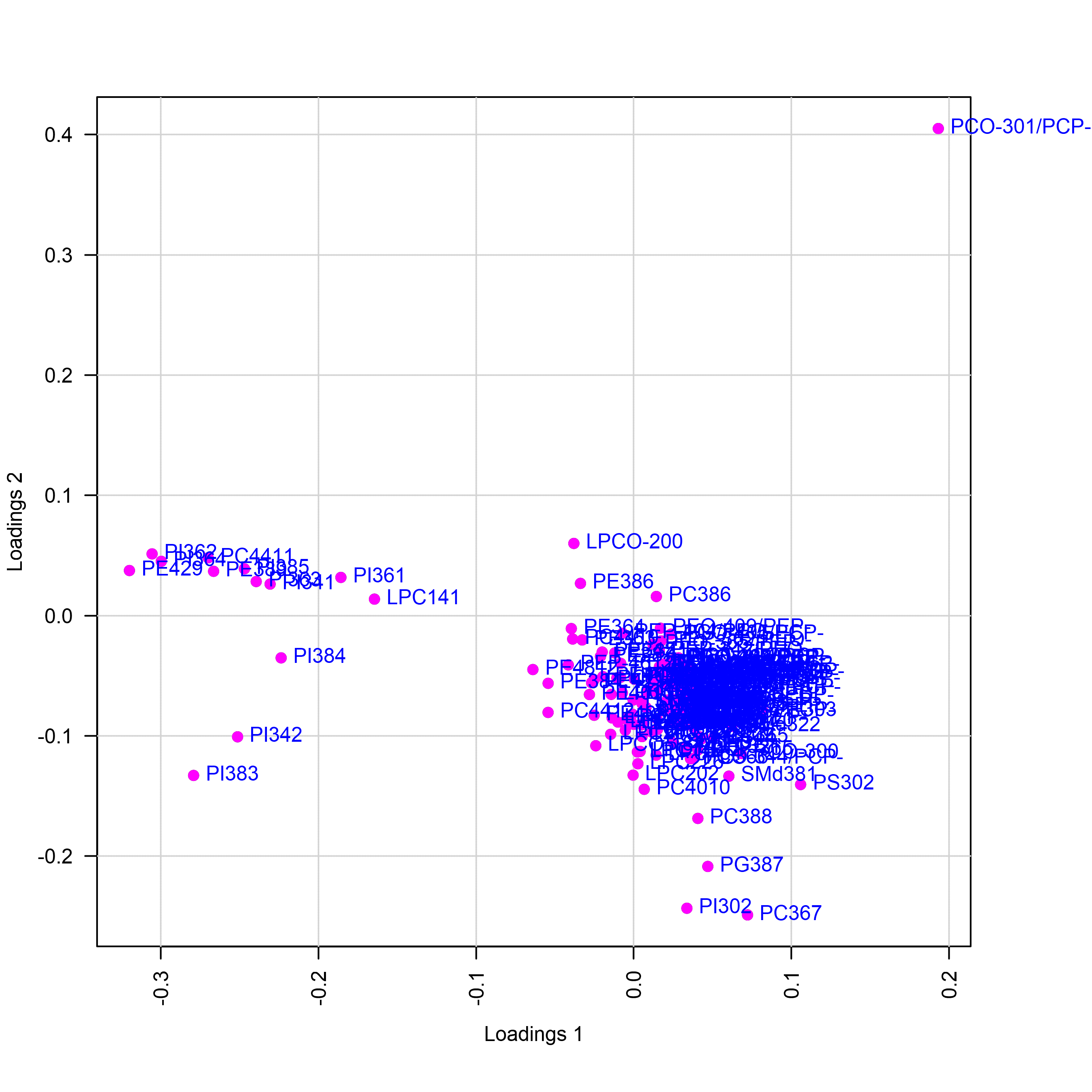


**Supplementary Figure S8**. Principal component analysis in a three-dimensional score plot of phospholipid profiles obtained from children with normal weight (CT), overweight (OW) and obese children (OB).



Supplementary Figure S9. Loading plot for PCA analysis shown on figure 1.

**Supplementary Figure S10.** Principal component analysis in a two-dimensional score plot of phospholipid profiles obtained from male and female individuals with overweight (EP) and obesity (OB).



Supplementary Figure S11. Loading plot for PCA analysis shown on figure 2.